RAILWAY HERITAGE FOR SUSTAINABLE TOURISM DEVELOPMENT

RAIL 4V4+V

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CONTENT

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RAILWAY HERITAGE FOR SUSTAINABLE TOURISM DEVELOPMENT

Railway Heritage for Sustainable Tourism Development – Rail4V4+V aimed to highlight the tourist potential of the railway, peculiarly through its history and heritage, recalling the role that rail has played in creating the Central European collective identity. In line with the aim of the European Year of Rail and the strategic priorities of the Visegrad Group in 2021, the main goal of the Project was to raise awareness about the role of railways in V4 sustainable tourism development, through unique branding and presentation of railway heritage, in situ and on a digital platform.

Rail is an ecological, comfortable and safe means of transport, which will play a crucial role in the Europen Union's efforts to achieve climate neutrality by 2050, within the framework of a new growth strategy – the European Green Deal. In line with that, the European Parliament reached a provisional agreement on designating 2021 as the European Year of Rail. One of the objectives of the European Year was to create public awareness of the potential role of rail in sustainable tourism development. The tourism economy is heavily affected by the coronavirus (COVID-19) pandemic. Policy Brief: COVID-19 and Transforming Tourism underline that rebuilding tourism should be based on innovation, digitalization, sustainability, and partnerships. Tourism innovation should be focused on creating a new sustainable approach that links users with creative industries, empower communities and promote new digital products and experiences.

Considering the circumstances in the field of heritage and tourism, the main project idea was to explore the layered context and respond to the current challenges facing heritage tourism, offering effective responses through the development of innovative sustainable solutions.

The Project aimed to identify and promote railway heritage for sustainable tourism development through:

- Establishing the cooperation network among heritage and tourism-related stakeholders in our regions;
- Empowering creativity and digital skills as vital players in the innovation of cultural heritage tourism;
- Linking the selected railway sites into the joint route, both real and virtual, and promoting among the local and foreign target markets.

The Project was launched with networking and cooperation activities, which are essential to bring together owners and managers of railway heritage sites and

involve related stakeholder who deals with heritage preservation and tourism development.

The Project brought the following novelties:

- The introduction of novel perspectives in the research and presentation of mutual values and identity, through the synthesis of historical, engineering, tourism, sociological and managerial studies;
- The development of new digital interactive solutions using advanced technologies, created on quality content and balance based on tourists' needs and desires;
- The way of developing participatory policy and networking the different target groups' needs.

This book represents the final project output, designed as educational and promotional material. It consists of two units. The first scientific part contains five complex research papers.

The first paper, titled *Protection of industrial heritage*, elaborates on the importance of industrial facilities and the challenges in their protection. Its author, Piotr Gerber, a full professor at the Wrocław University of Technology, further establishes criteria for evaluating the historical significance of industrial sites, which is crucial for choosing an adequate protection concept. Several solutions in the protection and (re)use of technical monuments are illustrated by the projects implemented by the Foundation for the Protection of Industrial Heritage in Silesia.

Railway Heritage and tourism – a systematic approach to exploiting its potential is a review paper written by Károly Teleki, a specialist in industrial heritage tourism. The Author's classification of the tourism, industrial and railway heritage is followed by best practice examples of railway heritage tourism in Hungary and a discussion on tourism demand and supply.

Paper *Railway heritage tourism – a presentation and interpretation of development potential* deals with issues of presentation and interpretation of railway heritage values and increasing awareness of it amongst the general public and business entities whilst also supporting education and research. Vladimír Hain and Eva Kráľová, professors at the Faculty of Architecture and Design, the Slovak University of Technology in Bratislava, conclude that the interpretation of railway heritage the significance requires professional training, an interdisciplinary approach, and the cooperation of several actors, in the studying and preparing phase, as well as in the implementation.

Paper *Towards a sustainable approach to Railway Heritage – the role of the community* offers research results on community involvement in decision-making, human rights development, social transformations, cultural expression, and railway heritage management. Analysing local strategies and community involvement models in railway site revitalisation in Novi Sad, this paper, signed by Anica Draganić and Szilágyi

Mária, both professors of architectural history and heritage preservation, discusses a methodological framework for a sustainable approach to railway heritage.

Jan Červinka, a Research Centre for Industrial Heritage FA CTU Prague member, is the author of the paper *Of bottom-up activities and professional interest in railway heritage*. He presents a specific case study of Nymbruk, a town whose appearance and importance were fundamentally transformed by the railway. The paper focuses on arguments for the preservation of the station building, issues surrounding its possible new use, the role of the professional public in promoting the protection of listed heritage and the possibilities for using research findings in design.

The second part of the publication has a promotional and educational character, considering that it presents a catalogue of 25 railway heritage sites from five partner countries, which create the RAIL4V4+V virtual route.

The scientific part of the publication integrates recommendations and conclusions from seminars held on the multi-layered development of railway heritage in the specific contextual framework of the Visegrad and Vojvodina regions, with its political and social implications that determined the regional cultural identity. As a concrete contribution to the project goals, the book reflects a joint learning process and relevant approaches that target the subject in general and its regional character but also sophistically focus on the international community.

Piotr Gerber
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PROTECTION OF INDUSTRIAL HERITAGE

Abstract. The industrial heritage is one of the most important testimonies to the development of civilization in the last two hundred years.

The deindustrialization process in Poland was launched with social and economic reforms at the end of the 20th century. It resulted in the liquidation of many historic industries in a short time. The uncontrolled liquidation influenced projects aimed at preserving traces of this identity. In most cases, however, projects for the preservation of industrial complexes consist in adapting historic buildings to the needs of investors without preserving the value of the adapted complex. Usually, the primary function of an industrial facility is not legible after the adaptation, and it is rarely possible to speak of the conscious protection of technical monuments and the desire to convey knowledge about their primary function and meaning.

The paper will offer a methodological framework for industrial heritage valorization and preservation, followed by examples of good practices implemented by the Foundation for the Protection of Industrial Heritage in Silesia.

Keywords: industrial heritage, protection, valorization, industrial museum

1. THE IMPORTANCE OF INDUSTRIAL HERITAGE AND THE PROBLEMS OF ITS PROTECTION

In the nineteenth century, industry became one of the most important factors in the development of civilization. Industrial plants grouped into economic centers created new social and economic spaces on a scale so far unprecedented. The development of production with the use of machines required the design of buildings that would meet the requirements of the technologies being developed. Until now unknown structures appeared in the landscape, dedicated to individual developing methods of production. Industrial buildings, with smoking chimneys between them, were symbols of progress and development in the mid-twentieth century. Industry changed the faces of cities. The dynamic development of civilization supported by industrial development led to the uncontrolled exploitation of the Earth's resources.

Over the years, steel mills, mines, textile factories and a number of other industrial facilities have been a source of pride for their employees and local residents. With the advent of the economic transformation process at the end of the 20th century, these facilities began to be evidence of technological backwardness and low quality of life. Today, it is more and more difficult to find in the landscape of European cities views of blast furnaces, mine shafts, cooling towers or brick chimneys of former boiler houses.

The so-called deindustrialization process started in developed countries in the 1970s, consisting in replacing historical technologies with new solutions, as well as transferring many technologies to countries with lower labor costs, was more dynamic in Poland. Launched with social and economic reforms at the end of the 20th century, it resulted in the liquidation of many historic industries in a short time. The areas of production important for Poland, such as: textiles, black coal mining, metallurgy and the machine industry, have lost their importance. This process was not accompanied by a plan to preserve even the most important evidence of the country's former economic development. To this day, the industrial heritage has survived only where few plants still carry out, often archaic, production processes.

The destruction of material evidence of industrial development took different courses. The closing of ineffective plants was most often not associated with the recognition of their historic value. The plants, located in areas where the liquidated industry was not replaced by other forms of development, were used by successive owners. Often many historically valuable objects were devastated due to the lack of new users, and finally demolished, which was a way to avoid high costs resulting from the existing tax system in Poland. Local governments imposed the same tax on the owners of historic, unused buildings as for the buildings still active.

The situation was different in the case of industrial facilities located within the borders of developing cities. Those that lost their economic importance, such as steel mills, mines, textile factories, sugar factories, machine factories - became the subject of investors' interest. Factories originally located on the outskirts of cities, as a result of subsequent decades of development, found themselves in their centers, and

the area they occupy has become the subject of speculation by entrepreneurs looking for attractive sites for new functions. Often, the objects purchased by investors, despite conservation recommendations, were dismantled under various appearances.

The uncontrolled liquidation of industrial heritage in Poland influenced the undertaking of projects aimed at preserving traces of this identity. The funds from the European Union budget came with help. The largest projects in recent years include the adaptation in 2014 of the Julia mine complex in Wałbrzych for the "Stara Kopalnia" Science and Art Center, and the adaptation of the Łódź Electric Power Station Plant in 2016 for cultural functions "EC1 Łódź - City of Culture". Adit "Królowa Luiza" was taken over for tourist purposes as part of the Coal Mining Museum in Zabrze in 2018, and 3 years later the Metallurgy Museum in Chorzów was opened. There have also been several large-scale adaptation projects for industrial facilities for commercial purposes. The most famous are the adaptation of the textile complex of Izrael K. Poznański in 2006 into the "Manufaktura" shopping center and the adaptation of the brewery in Poznań into the "Stary Browar" shopping center in 2003.

Fig. 1: The interior of the Zinc Rolling Mill hall from 1904. in Katowice with visible zinc sheet rolling mills, 2018. Source: P. Chodak

Large-scale industrial site protection projects, which include historical equipment in addition to buildings, are rare. Three implementations are an example of such an approach. The first is the historic water supply station "Zawada" in Karchowice, which is part of Górnośląskie Przedsiębiorstwo Wodociągów SA, where

the complex of equipment for water treatment and pumping has been fully preserved in historic buildings. The second is the "Świątniki" water supply station, part of Miejskie Przedsiębiorstwo Wodociągów i Kanalizacji SA in Wrocław, where almost complete equipment with steam engines and pumps for pumping water from the beginning of the 20th century has been preserved. The largest monument of this type is the "Walcownia" of the Zinc Metallurgy Museum in Katowice, where the preserved equipment has been restored, creating a museum presentation of the history of zinc production in Upper Silesia, including the complete line for the production of zinc sheets. Some of the demonstrated machines were restored to working order.

In most cases, however, projects for the preservation of industrial complexes implemented in Poland consist in adapting historic buildings to the needs of investors without preserving the value of the adapted complex, and the essence of the protection of industrial monuments as carriers of knowledge about industrial development is not respected. Usually, the primary function of an industrial facility is not legible after the adaptation, and it is rarely possible to speak of conscious protection of technical monuments and the desire to convey knowledge about their primary function and meaning.

Lack of knowledge about liquidated objects worth preserving is the cause of the loss of material certificates of industrial development of various economic centers in Poland. A number of industries important for the country's economic development are not represented as historical monuments. This applies, inter alia, to textiles, sugar, shipbuilding, paper and the pulp industry. For example, the world achievements of Poles in the development of the oil industry are documented only by one museum.[1]

The situation would be different if the decisions on protection were taken at the stage when the industrial plant, building or device is still complete and the production process is still ongoing. Then the effect of conservation and adaptation works would be easier to achieve. The conservation policy implemented in advance, aimed at recognizing the historic values at the stage of use of the technical facility, not only allows for the preservation of this facility, but also significantly reduces the costs of conservation, adaptation, renovation and activities aimed at making the monument more visible.

2. ASSESSMENT OF THE HISTORICAL VALUE OF INDUSTRIAL FACILITIES AND APPLIED CRITERIA

Technical monuments have a number of specific features resulting from their original function, applied technical and construction solutions, and resulting from their economic, historical, cultural and social importance. These features are the basis for separating this category of monuments.

[1] The Museum of Oil and Gas Industry named after Ignacy Łukaszewicz, located in one of the oldest oil mines still operating in Bóbrka near Krosno.

The classification of a monument to the category of technical objects or products of technology should be determined by its original function for which the monument was created.

Complexes of immovable monuments consist of many parts, such as: facilities for production functions, facilities accompanying production (warehouse, office, social facilities), as well as facilities forming the infrastructure of a historic plant (internal communication routes, tracks, turnouts, heating networks and technological power lines, transformers, cooling towers, water supply devices, etc.). In the assessment of the monument, all the listed parts should be taken into account.

The project of preserving and reusing a technical monument requires an analysis of its historical value. The analysis should give an answer what values it represents and what elements of the historic complex are the carriers of these values and should be preserved, taking into account the entire assumption, including the assessment of its intangible assets.

The analysis should begin with examining the original model of the spatial arrangement of a given monument and the legibility of the original function.

After the recognition of the original historical model of the plant, the following should be analysed: (a) the existing spatial layout of industrial buildings in connection with technical structures, ground and underground infrastructure; (b) preserved historical buildings accompanying the industrial complex (administrative, residential, social buildings, etc.); (c) functional solutions for industrial and administrative facilities; (d) applied construction solutions for industrial buildings; (e) architectural form and detail; (g) historic ground surfaces; (h) retained technological and technical solutions in the field of production techniques, transport, delivery and storage solutions; (i) preserved technical equipment of machines and devices; (j) equipment supporting production - energy installations, water sewage systems, transmission networks; (k) technical achievements and achievements made during the operation of the facility; (l) resources of historical technical documentation and literature related to the operation of the facility.

The value of industrial heritage should be assessed taking into account the knowledge of the history of technology, engineering, industrial development, agriculture and other fields, taking into account the authenticity and degree of preservation of the monument and the legibility of the originally performed function. The study should be preceded by the preparation of professional documentation, showing the current condition of the object, containing historical information about its creation and development, functions, changes in structure and form, changes in functions, and its economic and social importance. The historical value analysis should be performed regardless of whether the assembly is legally protected or not, and should demonstrate that an historic industrial complex is an asset whose preservation is in the public interest. Such an assessment may become the basis for adopting the protection model and the method of future use of the team.

In projects for the adaptation of technical monuments to new functions, the most frequently used criterion for undertaking the project is the assessment of the costs of the planned modernization in comparison with the costs of building a new space that meets the conditions required for the planned function. In the case of a technical monument, the historical value of the monument itself should also be included in the cost assessment (Pawlikowska-Piechotka, 2000: 294-298).

In practice, however, the calculation of this value is rarely undertaken, because it is a difficult operation and there is no commonly recognized valuation methods so far. However, using only a comparison of the costs of conservation and adaptation of the historic substance to the planned functions with the costs of building a new space, we can often obtain a result suggesting that the cost of building a new facility will be lower than the modernization of the existing one. However, this will be a misleading result, as it does not take into account the carbon footprint generated during the construction of the new facility.

Thus, a properly conducted cost calculation may have a significant impact on the result of the analysis whether to build a new facility or adapt this historic one.

3. CONCEPTS OF PRESERVATION AND USE OF HISTORIC INDUSTRIAL COMPLEXES

Technical monuments have a number of specific features resulting from their original function, applied technical and construction solutions, and resulting from their economic, historical, cultural and social importance. These features are the basis for separating this category of monuments.

The classification of a monument to the category of technical objects or products of technology should be determined by its original function for which the monument was created.

When analyzing the modernization projects of historic industrial complexes carried out in the last dozen or so years, several main models aimed at the protection and preservation of technical monuments can be distinguished.

Most of the projects undertaken in Poland are aimed at adapting historic complexes to new functions. There are also security solutions by maintaining the original production function with making the necessary adjustments to new requirements. There are several main solutions used in the protection and use of technical monuments:

1. Preservation of the monument without significant changes in the spatial layout of buildings and technical equipment, by maintaining the original production function and adapting it to modern requirements. With such a solution, protection and adaptation aims at preserving and restoring the damaged technical and building substance in order to continue the original production function. The functional arrangement inside the production buildings undergoes minor changes, and the main

transformations concern adaptation to modern hygienic, technical and fire protection requirements. These types of solutions are rare, but in the most optimal way they protect the monument, and they can be used in the event of maintaining the production equipment.

2. Functional modernization without changes in the layout of historic industrial buildings, with the reorganization of their interiors in order to adapt them to new functions. In this model, you can find several applied solutions, such as, for example, increasing the usable space by extending or adding to the individual facilities. However, these activities often lead to the destruction or distortion of the original form of the monument.

3. Modernization by building a new space in a historic complex. Two solutions are most often used here: construction of new facilities, compositional and functionally related to the historic space by creating communication links, and construction of new facilities not related in terms of composition to the historical industrial assumption. The latter model is found mainly in significant extensions, where the historic building remains a small part of the new layout, it is a "memento" of the previously existing assumption.

4. Modernization using all the above solutions simultaneously. Such a model often happens especially in large-scale projects.

Fig. 2: The Railway Depot from 1908 in Jaworzyna Śląska, currently the seat of the Railway Museum in Silesia, 2021. Source: P. Durr

Examples of the above-mentioned solutions can be found among industrial heritage protection projects implemented by the Foundation for the Protection of Industrial Heritage in Silesia. The oldest of these projects - the Railway Museum in

Silesia in Jaworzyna Śląska - has undergone various changes since its inception in 2005 (Gerber, 2008: 134-137). A dozen or so years of experience influenced the currently implemented model of protection and sharing of monuments located in the Jaworzyna Śląska locomotive depot, built in the first years of the 20th century. The model of protection was adopted by preserving the original function. Currently, after thorough restoration and adaptation works, the depot performs the same functions as when it was built. The depot building is still used for storing rolling stock. The restored mechanical workshop, built and equipped at the beginning of the 20th century, is used to renovate and repair the used rolling stock. Today, on the premises of the Railway Museum in Jaworzyna, a historic railway workshop prepares museum trains for the road, as several decades ago, steam locomotives were prepared here before going on the routes. Historic trains have been brought to a state that allows them to move along railway routes by carrying tourists, and not, as in the past, with coal. The original function of the locomotive shed was retained, although a number of improvements had to be made to enable rail vehicles to move around the Museum grounds, as well as along the railway routes.

Fig. 3: The interior of the Zinc Rolling Mill Hall. in Katowice, view of flywheels from steam engines, currently the Museum of Zinc Metallurgy in Katowice, 2019. Source: P.Chodac

The Museum of Zinc Metallurgy in Szopienice - Katowice, opened in 2016, was established on the premises of a historic rolling mill from 1904, which is part of a large industrial complex related to the extraction and production of zinc "Georg von

Giesche Erben (Rygus, 2015: 76). This unique, large-scale industrial facility has survived along with most of the devices that make up the zinc sheet production line. Operating today as a museum, it tells the story of the extraction and processing of zinc. An attraction for tourists is the opportunity to get to know the entire production line and participate in the demonstrations of the production of zinc sheet with the use of preserved machines from the beginning of the 20th century. The model used here consists in keeping the entire production team together with historic devices and adapting the space in such a way that it is also suitable for cultural, exhibition and educational purposes.

As part of the activities of the Foundation for the Preservation of Industrial Heritage of Silesia, two projects for the protection and use of large-scale industrial facilities are currently underway. In Dzierżoniów in Lower Silesia, a project is being carried out to preserve a large historic grain mill from the second half of the 19th century. The value of this complex is its authenticity and originality. The plant was thoroughly modernized in the 1930s and has full and functional equipment from that period. The aim of the project is to make the monument available to visitors in such a way as to be able to fully understand the technical solutions used there, as well as the course of the production process. The planned function for this facility is a milling museum with a section dedicated to cultural events.

Fig. 4: The millers' hall from the 1930s at the Hilbert Mill in Dzierżoniów, 2020. Source: A. Witek

In Tułowice near Opole, in the closed part of the historic porcelain factory from 1904, a project is being carried out to open the Silesian Porcelain Museum. In the building covered by the project, in addition to the exhibition of porcelain from Tułowice and other plants from Lower Silesia, the historic administrative part with a showroom will be made available. Work was undertaken to recreate the furnishings of these spaces, presenting the production methods and working conditions in the factory at the turn of the 19th and 20th centuries.

Fig. 5: View of the administration and production building from 1904 on the premises of the former Schlegelmilch family porcelain factory in Tułowice, 2020. Source: P. Gerber

4. SUMMARY

The industrial heritage is one of the most important testimonies to the development of civilization in the last two hundred years. The development of industry and technology significantly accelerated the process of population growth and the phenomenon of globalization, and the current challenges related to climate change and environmental threats date back to the "industrial revolution" that began at the turn of the 18th and 19th centuries.

Activities aimed at the preservation of industrial heritage require not only experience related to the protection of monuments, but also knowledge of various fields of technology. The decision on the protection and method of further use of the monument requires a series of analyzes of its value and cost analyzes related to this protection. The value obtained from the preservation of a historical object is difficult to estimate and requires an individual approach each time.

Fig. 6: View of the buildings of the Szombierki Electric Power Plant in Zabrze, 2019. Source: P. Gerber

In order for the protection of testimonies to the industrial past to be as effective as possible, technical monuments should be explored at the stage of their operation, before they lose their value. Various fields of technology await such a

comprehensive approach. In connection with the large-scale works on the modernization of the railway infrastructure in Poland, it is necessary to conduct research on railway structures in terms of their historic value before they become the subject of modernization or are destroyed. Similar activities are needed in coal mining in order to be able to preserve mining monuments before the last black coal mines are closed. The energy sector is facing similar challenges. Moving away from coal in electricity production means that many traditional power plants and combined heat and power plants will be closed and replaced by new, less emission ones. Postponing the decision to preserve historic energy facilities leads to irreversible processes of destruction of valuable technical monuments. This is what happened with the "Szombierki" heat and power plant, a symbol of the Upper Silesian industry. The lack of involvement of the owner and local authorities led to the destruction of the monument with European values.[2]

Fig. 7: Storage buildings of the Port of Wrocław undergoing "modernization", 2021. Sources: M. Madry

[2] Electric Power Station "Szombierki", on the basis of an application from the Foundation for the Protection of Industrial Heritage of Silesia, was entered on the list of endangered sites of European heritage Europa Nostra in 2020

A similar fate befell the "Wieczorek" mine in Szopienice, closed in 2019, which was a unique achievement of industrial technology and architecture at the beginning of the 20th century. Comprehensive identification and selection of objects for protection would also prevent the destruction of many other monuments, such as the city port in Wrocław[3], subject to adaptation, without respecting the historical objects preserved there. Such diagnosis is urgent, among others, in such areas as: shipbuilding industry, textile industry, machine industry, building materials industry, energy industry, mining industry, steel industry. Postponing decisions on the rational protection of the technical heritage means that, for example, there is nothing left of the production of agricultural machinery, including tractors, in our country. Likewise, no traces of the Polish automotive industry have been preserved, and only the memories of their former employees remain after the truck production plants.

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Fig. 7: Storage buildings of the Port of Wrocław undergoing "modernization", 2021, M. Madry

[3] The City Port in Wrocław, built at the turn of the 19th and 20th centuries, was the largest municipal investment in the history of Wrocław. Together with the system of canals and water devices, it played an important role in freight traffic on the Odra River.


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RAILWAY HERITAGE AND TOURISM – A SYSTEMATIC APPROACH TO EXPLOITING ITS POTENTIAL

Abstract. The Author describes the segments of tourism (based on the movement of tourists, duration, purpose, and size) and the classification of industrial heritage. Railway heritage is an industry-specific subset of industrial heritage. It is followed by best practice examples of each industrial heritage categories (e.g. tangible heritage/immovable heritage/industrial building can be presented during Factory Open Days, Heritage Days, or Special Events such as Night of the Museums or 3rd party guided tours). Some good practices in railway heritage tourism in Hungary are presented as case studies. The Author also discusses the demand and supply side of tourism and makes recommendations and suggests actions on how to increase the so far unexploited railway and industrial heritage tourism, a still niche subset of cultural tourism.

Keywords: Railway Heritage, Railway Heritage Tourism, Best Practices in Railway Heritage Tourism, Industrial Heritage Tourism, Heritage Tourism in Hungary

1. INTRODUCTION

The railways have fascinated people since their very beginning. Its power, speed, impressive dimensions, and technical uniqueness have created a worldwide fan base, from the youngest to the oldest. Particularly popular are locomotives of all shapes and sizes, especially steam locomotives. These, as well as some passenger cars with specific designs (e.g. luxury interiors) or carriages with historical significance (e.g. the Hungarian Golden Train), are among the most valuable exhibits in railway and transport museums.

But not only the rolling stock fascinates visitors interested in railways, history, or architecture, but also the buildings of the railway stations. Most of these buildings, which are often between 100 and 140 years old, are of great architectural value, representing the architectural style and industrial architecture of the period. But there are valuable buildings not only from the Austro-Hungarian Empire but also, for example, from the socialist era. The same applies to railway bridges, viaducts, and tunnels.

An exceptional role in railway heritage tourism, play former railway lines that have been reopened for tourism (in Hungary, these are mainly narrow-gauge forest railways) and nostalgia trains with vintage locomotives, passenger and dining cars.

Although transport museums, railway parks and forest railways attract many visitors, railway heritage tourism has untapped potential. Railway heritage tourism often is not formulated and marketed as a tourism segment in its own right, nor included in the tourism offer of municipalities (e.g. in many cities, beautiful restored historic railway stations are not included in the city's attractions).

This study has been prepared in the framework of the project "Rail4V4+V - Railway heritage for sustainable tourism development", a strategic project of the Visegrad Fund. The project aims to highlight the tourism potential of railways, primarily through their heritage and history, recalling the role that railways have played in creating a collective identity in Central Europe. The initiative is particularly relevant since 2021 has been chosen by the European Union as the European Year of Rail, while 2021 marks the 175th anniversary of the opening of Hungary's first railway line (Pest-Vác). In this study, we give examples of how to present railway and industrial heritage and make suggestions and recommendations to increase railway and industrial heritage tourism.

2. THE CONCEPT OF TOURISM, INDUSTRIAL AND RAILWAY HERITAGE TOURISM

Tourism has been defined in many different ways over the past decades. Nowadays, the broader definition of tourism (Cooper et al., 1998) has become the most widely accepted and is used by most industry players and statisticians: „Tourism is defined as the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other

purposes not related to the exercise of an activity remunerated from within the place visited" (OECD, 2001)

In the past, some definitions linked the definition of tourism to time or distance. For example, one must travel at least 50 km from their place of residence and spend at least four hours on the spot to qualify for tourism. But this has become obsolete as technological progress has reduced space and time limits.

Industrial heritage tourism refers to tourism activities on man-made sites, buildings and landscapes resulting from industrial activities in earlier times. (Edwards & Llurdes, 1996, p. 342). The subjects of industrial heritage encompass the material remains of industry, such as sites, buildings and architecture, plants, machinery and equipment. Industrial heritage also refers to housing, industrial settlements, industrial landscapes, products and processes and documentation of the industrial society. (Xie, P.L. 2006, p 1321)

Railway heritage tourism is an area of industrial heritage tourism that focuses on railways and other means of transport that use rails (e.g. tramways, cogwheel railways, funiculars) and their facilities and infrastructure.

3. TYPES OF TOURISM

Tourism can be classified and categorised in many different ways because of its diversity. One possible way of categorisation is shown in Figure 1 (Teleki K., 2022), where tourism is divided according to the following criteria:

a) *Movement of tourists* (origin and destination of visitors),

b) *Duration* of tourism activity,

c) *Purpose* of tourism, and

d) *Group size*.

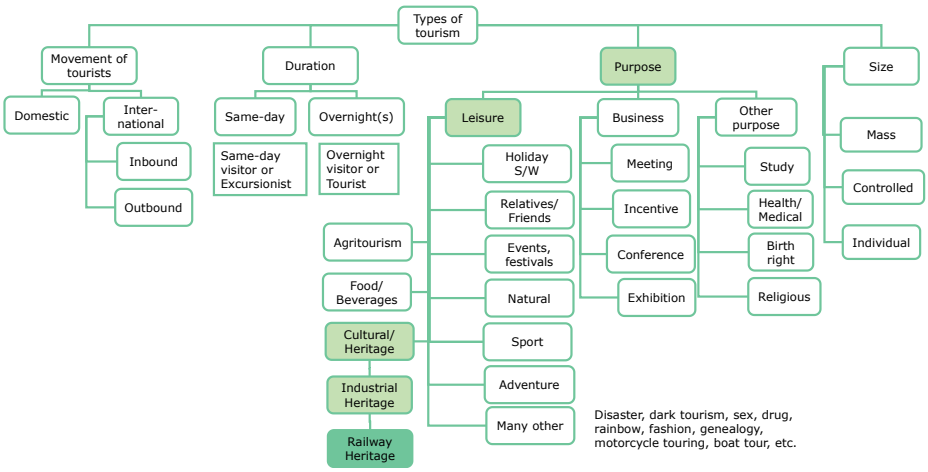

Fig. 1: Types of tourism. (Source: Author)

These dimensions or perspectives of a given tourist trip may differ from the perspective of the tourist, the tour operator, and the tourism service provider. Below we briefly review these categories from the industrial and railway heritage tourism perspective.

3.1. Classification by movements of tourists

Based on the origin of visitors and the destination of the trip, we can distinguish between *domestic* and *international tourism*. The latter can be divided into *inbound* and *outbound tourism*.

a) *Domestic tourism* refers to visits within a country by its residents.

b) Inbound tourism refers to visits to a country by visitors who are not its residents.

c) Outbound tourism refers to visits outside a country by residents of that country.

Industrial and railway heritage tourism is a niche segment of cultural tourism. Although salt mines, railway parks, and transport museums can attract a significant number of visitors, including many international tourists, industrial/railway tourism is essentially based on domestic tourists. The author is dealing with inbound tourism in Hungary, organising birding tours since 2004 and industrial heritage tours since 2015. While there has been a higher demand for birdwatching tourism since the beginning, the number of enquiries for industrial heritage tours remains low.

3.2. Classification by duration of tourism activity

A distinction can be made according to the duration of the tourism activity:

a) *Same-day visitors* spend less than 24 hours at the place visited and do not use accommodation services. It is also common to call them excursionists or visitors.

b) *Multi-day tourists* spend more than 24 hours and/or use accommodation services in the place visited. They are called overnight visitors or tourists.

Railway or industrial heritage programmes in Hungary usually last a few hours and can be visited on a day trip. It is relatively rare for rail and industrial heritage tour operators to be asked to organise a multi-day programme.

3.3. Classification by group size

Three categories of tourism can be distinguished based on the number of tourists:

a) *Mass tourism*: large groups, e.g. bus trips, sightseeing tours by bus.

b) *Controlled*: small groups of a few people, e.g. families, couples, groups of friends.

c) *Individual*: one person, the tourist/visitor travels alone.

Visits to railway or industrial heritage programmes and sites are not usually organised in the context of mass tourism (although there may be examples of this). Typical visitors are individuals, couples, families, and small groups of professionals.

3.4. Classification by purpose of tourism

According to the purpose of the trip, we can distinguish between

a) *Leisure*,

b) *Business*, and

c) *Other* tourism.

An example of the latter - *other tourism* - is religious tourism, such as pilgrimages. Or medical and dental tourism. Interestingly, Hungary is the European leader in dental tourism, with a market share of 42%. Poland is second with a 33% share (Nagyné Varga J., 2018). Maternity tourism is the practice of women travelling to another country for the purpose of giving birth there, in order, to obtain citizenship in the country (where the birthright citizenship is granted, e.g. USA and Canada).

Another tourism category is *business tourism,* also called MICE tourism, based on its sub-sets (Meeting, Incentive, Conference, Exhibition).

However, the largest category of tourism is undoubtedly *leisure tourism*. It has many segments, such as holidays, ski tourism, visiting relatives, attending concerts and festivals, sports tourism, adventure tours, culinary tourism, and many others. A significant segment of leisure tourism is *cultural tourism* (e.g., sightseeing, visits to built heritage sites, museums and galleries, folklore, local events, and festivals). A niche segment of this is *industrial heritage tourism* and, as part of this, *railway heritage tourism*.

4. CLASSIFICATION OF INDUSTRIAL AND RAILWAY HERITAGE

When classifying industrial and railway heritage, heritage can be divided into tangible and intangible assets. The former may be tangible assets (machinery, products) and industrial buildings (e.g. factories, plants, mills, warehouses) and industrial landscapes (e.g. mines, railway infrastructure, workers' quarters, industrial complexes). Intangible heritage includes corporate culture, data (e.g. commercial, financial and operational data, costs, wages, number of accidents, overtime), and manufacturing and operational technology (e.g. processes, recipes, know-how). These categories are illustrated in Figure 2 (Teleki K., 2022) based on Bazazzadeh's article. (Bazazzadeh et al. 2020.)

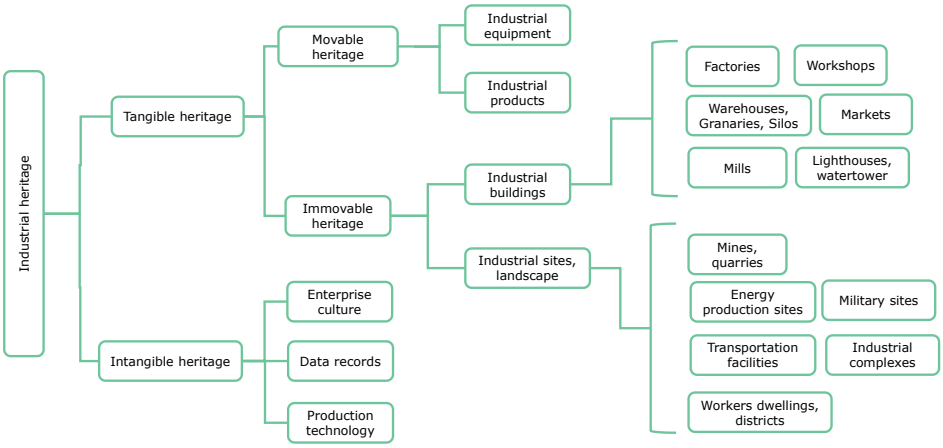

Fig. 2: Classification of industrial heritages. (Source: Author)

Below we present the ways and means of exploiting industrial and railway heritage for tourism, by category.

4.1. Immovable heritage - industrial and railway buildings, sites, landscapes

Industrial and railway buildings, sites and landscapes are the most visible representatives of the industrial and railway heritage. Railway stations are usually located in city centres, and in many cases, the railway station is a significant building in the architectural heritage of smaller towns. Depending on their use, industrial/railway properties may be differently represented in the tourism offer. The properties can be:

a) *Abandoned*, or

b) *In use* (in original or modified function, e.g. used as a museum).

4.1.1. Abandoned properties in tourism

Visiting *abandoned industrial or railway buildings* is not part of traditional tourism. Although these are abandoned sites, access to these buildings requires a permit or approval from the owner. Finding out who owns the abandoned property and obtaining permission is virtually impossible. However, there is a niche segment of the tourism industry - the Urban Explorers or Urbexes, who take up the challenge of the illegal visit and specifically target abandoned railway stations, depots, factories, villas, barracks, and institutional buildings. It is an exciting, adrenaline-boosting affair, as the "intruder" may encounter security guards, homeless people, graffiti artists, and drug addicts. But it is also dangerous because in those buildings you may encounter falling plaster, life-threatening structures, hidden shafts or pits.

Fig. 3: Istvántelek main maintenance depot. (Source: Wikimedia Commons/Christo)

Istvántelek Main Maintenance Depot is one of the favourite Hungarian urbex sites for railway enthusiasts. The workshop was built between 1902-1905 and was used for the repair and maintenance of steam locomotives, freight and passenger cars, and from 1912 onwards for electric locomotives. In 1984 steam locomotives ceased to operate in Hungary, and the role of Istvántelek as a main maintenance depot was finally ended. Although some of the halls are still used for multiple units maintenance and vehicle restoration, one of the halls is completely abandoned, where many locomotives and passenger carriages are being deteriorating. The hall is popularly known as the locomotive graveyard. It is not legal to visit and is dangerous in windy, rainy weather due to falling glass.

4.1.2. Properties in use in tourism

If an industrial building or site is in use and production is ongoing, there are usually few opportunities to visit. However, in certain cases, it is possible to visit them. Such occasions include, for example:

a) Company open days,

b) European Heritage Days,

c) Industry Open Days (e.g. Night of the Power Plants),

d) Guided factory visits, and tours.

4.1.2.1. Case study 1 - Visiting MÁV facilities on the Night of Museums

The interesting thing about the railways is that some of the railway facilities, the passenger facilities, are open to the public (in some cases only to ticket holders).

However, the operational areas (e.g. marshalling yards, depots, traffic controllers) are not. MÁV Hungarian Railways offers the possibility to visit them, among others, during the Night of Museums.

During the 2022 Night of Museums, for example, visitors could visit more than 20 different sites of the various MÁV facilities (e.g. depot, maintenance workshop, smithy, shelter, traffic control room), including the Miskolc train depot (see picture). At the depot, visitors could see the secrets of the shelter and the equipment of the roundhouse. They could take a ride on the turntable, see the inside and outside of diesel and electric locomotives, older and newer IC+ passenger coaches, as well as the two-axle steam-powered heritage train. At another venue, the participants could discover the ID55 signalling system, commissioned in 1966, and its operation and functions.

On the Night of the Museums, it was possible to visit the train depot between 14-22 hours, with no prior registration and no limit on the number of visitors. (Séta a miskolci..., 2022)

Fig. 4: Miskolc train depot. (Source: MÁV Hungarian Railways)

4.2. Movable heritage – production equipment, products

For industrial heritage, this category includes *production equipment* (e.g. machinery, production lines), service infrastructure elements (e.g. compressors, generators, boilers) and *products* made during the manufacturing process. As the railways are not a manufacturing company but a service provider, we cannot talk about products. The tangible assets of the railway heritage are the rolling stock (locomotives, passenger, and freight wagons), as well as the operating, servicing and maintenance infrastructure.

Three main categories of industrial and railway equipment can be distinguished:

a) Assets in use,

b) Assets not in use but at their original location,

c) Dismantled assets.

4.2.1. Presentation of movable assets in use

As in the case of the immovable heritage, the *assets in use* can be viewed on open days during organised visits. It is the best way to showcase railway heritage, as you can see the tools and equipment in operation.

An interesting example of exploring railway heritage is travelling on vintage locomotives and passenger coaches that are in regular service.

4.2.1.1. Case study 2 - Nostalgia journeys with vintage trains

MÁV Rail Tours (formerly MÁV Nosztalgia) has been operating nostalgia and adventure trains for almost 30 years. The company has an operating fleet of more than 60 vehicles, including steam, diesel and electric locomotives, as well as a variety of sleepers, dining cars and passenger carriages ranging from wooden benches to luxury.

Fig. 5: Nostalgia trip with a steam locomotive. (Source: MÁV Rail Tours)

The fleet (MÁV Rail Tours Flotta, 2022) includes such specialities as the 204 (220.194) steam locomotive built in 1900, the two 424 steam locomotives (from 1924 and 1955), the 4 M61 Nohab diesel locomotives (1963) and the V42 electric locomotive built in 1966. No less special are the passenger and dining cars, such as the teak-clad

WR2347 (1912) and WR 4252 (1916) dining cars, or the ABak and Caü passenger cars (from 1915 and 1925, respectively).

As the pandemic eases, MÁV Rail Tours has already announced dozens of nostalgia trips in 2022 (MÁV Rail Tours Utazások, 2022) to various locations, with a varying selection of vintage trains. The company also organises visits to stations and workshops, where you can learn about the history and operation of the Ferencváros and the Szeged Stations or the main maintenance depot in Istvántelek, for example.

4.2.2. Presentation of movable assets out of use but in their original location

If an asset, machine or piece of equipment is *out of use but in its original location*, it is generally possible to see the building and its supporting infrastructure (e.g. electricity, water supply) as well, and potentially other elements of the technology. In many cases, it is easier to keep assets in working order when they are still in place than when they have been dismantled and removed, as the latter requires infrastructure to be rebuilt, which can be very costly.

Although some companies and service providers have a corporate social responsibility to conserve and maintain the industrial/railway heritage (they own or operate) in its original function, this is often difficult (lack of space, limited financial resources, technological constraints). A positive example is the Tiszaörvény Pump Station, where, in addition to the new, modern pump, the two heritage Ganz pumps from 1939 are still operational and can be used as auxiliary or backup pumps.

A positive example of railway heritage is the Ferenc Converter Station.

4.2.2.1. Case study 3 - Visit to the Ferenc converter station during the Cultural Heritage Days

The picture below shows the Ferenc Converter Station in Ferencváros. The converter station converts the 10kV alternating current from the electric grid into the 600V direct current needed to run the trams.

During most of the European Heritage Days, the Ferenc Converter Station, built in 1908, is open to the public. A detailed tour of the building is given by a senior BKV engineer, who explains the technology in detail and starts up the working heritage equipment.

In the picture, the grey cabinets in the background represent today's technology for converting 10KV AC current to 600 Volts DC. In the foreground of the image, you can see the old converters. They are still in working condition today. The large black structure on the right is a Motor-Dynamo manufactured in 1911. The 3-phase synchronous motor with a supply voltage of 10,000 V is in the larger housing near the wall on the right. It is on a common shaft with the dynamo in the smaller casing near the corridor. The motor rotates the axle at 300rpm, and the dynamo feeds 550V DC and 1820 amps into the trams' network. On visits these old machines are started up, which is an unforgettable experience.

Fig. 6: Ferenc converter station. (Source: Author's photo)

4.2.3. Dismantled assets taken out of service

Most of the equipment taken out of production or out of service ends up as scrap metal. It is fortunate if a museum or an exhibition hall buys or adopts it and brings it up to a condition suitable for exhibition and displays it.

Fig. 7: Eiffel Art Studio's installation (Source: Author's photo)

Fortunately, there are also many corporate and civil initiatives to save railway heritage, when volunteers restore an old locomotive or carriage and display it as a

locomotive statue. In Hungary, there are more than 70 places, mostly railway stations, with locomotives exhibited as sculptures.

An interesting example is the 327 steam locomotive and the WR2354 dining car exhibited in the Eiffel Art Studios of the Hungarian State Opera. The dining car was refurbished by the Opera's set carpenters during the pandemic, and now it serves as a café. The train installation evokes the spirit of the place, as the building was once the hall of the Northern Train Maintenance Depot.

4.3. Intangible assets - technology, data, culture

Industrial and railway heritage also includes intangible assets. These include:

a) *Technology* (e.g. production, operation and maintenance processes, know-how),

b) *Data* (e.g. production and trade data, costs, wages, working time data, blueprints, recipes, patents),

c) *Culture* (e.g. working life, sports and cultural programmes, leisure).

In the past, traditional museums and exhibition spaces only focused on the presentation of material relics. Today, however, there is an increasing emphasis on the presentation of intangible heritage. More and more museums are showing film clips of the technology of the time, and you can watch/listen to recollections or interviews with factory or railway workers. Or you can see pictures and documents showing the working conditions, the life outside the factory, the joys and sorrows of the workers.

4.3.1. Presentation of the technology

Production technology or railway operation can be presented:

a) at the site of the operation, or

b) elsewhere.

Examples of on-site demonstrations could be company or industry open days, Night of Museums, European Heritage Days or guided tours of factories or railways. The so-called city walks are very popular in Hungary, which usually take visitors to places less known or less accessible to the public. These are usually themed tours and are aimed at domestic tourists. During the covid pandemic, travel restrictions led to a significant increase in demand for city walks and tour operators seeking out new sites, often sites that were part of the industrial heritage. The Túrajó association, for example, runs tours to the closed Inota Power Station.

Another option is interactive exhibitions and museums, where the technology - or part of it - is operational and can be switched on and demonstrated. For example, in mills that are functioning as museums, in many cases the technology is operational and grinding demonstrations are held regularly.

4.3.1.1. Case study 4 - Guided tour at Ferencváros railway station

The Ferencváros railway station (1877) is the busiest and largest (about 120 ha) marshalling yard in Hungary. The operation and technology of marshalling yards are an area less known even to railway enthusiasts. For a behind-the-scenes insight, you can take a guided tour with MÁV Rail Tours' "Secrets behind the scenes - Ferencváros station" (MÁV Rail Tours Kulisszatitkok, 2022).

Fig. 8: Guided tour at Ferencváros railway station (Source: MÁV Rail Tours)

During the paid tour, the former station master takes visitors on a 3-hour guided tour showing the operations, processes, and infrastructure of the marshalling yard: the turntable, the hump, the switches, the crossing barriers and the control centre. As the station is vast, the guided tour is a hike, covering up to 5-6 km.

4.3.1.2. Case study 5 - Interactive railway park

An excellent way to learn about railway technology is the Railway History Park, Europe's first interactive railway park, which opened on 14 July 2000 on the premises of the North Depot.

The North Depot was built between 1909 and 1911 on a 70,000 m2 estate. From 1911, a 22-bay (semi-circular) and a 34-bay (three-quarter-shaped) roundhouse were operating on the site. Adjacent to both roundhouses, two 20-20 m diameter turntables were operating, and the premise encompassed all necessary service infrastructures (Railway Museum…, 2022). The two facilities together served 200 steam locomotives. The smaller roundhouse was damaged so badly in World War II that it needed to be demolished, while the larger shed could continue to function in its original form. With the decline of steam locomotives, the depot increasingly played a repair and maintenance role until its closure in 1997.

Fig. 9: Railway History Park (Source: Author's photo)

The Railway History Park, which opened in 2000, features more than 100 railway vehicles: locomotives, passenger and freight cars, rail cars, motor and hand carts, inspection cars, steam cranes, snow ploughs, snow blowers and other specialities. The Railway History Park is one of the largest open-air museums and the first interactive railway museum in Europe. Visitors can not only admire the old vehicles but can also try them out. They can travel on a locomotive or in the Csajka rail car, drive a hand cart, turn on a turntable, or sit on a horse-drawn railway. The Railway History Park also offers the opportunity to see technological processes, such as the heating and operation of a steam locomotive, to see the chassis of a steam locomotive in the inspection pit, and to learn about the construction of a steam locomotive.

One of the favourite attractions of the park, which is expanding year by year, is the garden railway, where passengers can ride through an 870 m long track towed by miniature locomotives. A specific feature of the park is that not only can you see the rolling stock but also the railway infrastructure (e.g. turntables, inspection pits, service facilities).

4.3.1.3. Film documentation

Possibilities for presenting production and operational technologies in museums and other off-site locations include flowcharts, photographs, videos and archives such as the Fortepan photo archive, National Film Archive, and MTI news agency archive.

Today, many manufacturing technologies have been reduced or discontinued. One example is tamping you see in the picture, the maintenance of railway tracks, where workers used to tamp ballast with blunt-ended pickaxes under the sleepers to

keep the sleepers firmly in place. This operation is now done by machines.

Fig. 10: Tamping the ballast (Source: MMA Youtube channel)

Manual tamping was done by brigades. The picture shows the workers tamping the rocks under the sleepers, standing very close to each other. To work efficiently and avoid injuries, they had to work in a coordinated manner dictated by the rhythm of the picking, similar to the way several blacksmiths hit the iron on the anvil.

Fortunately, a talented filmmaker (István Gaál) captured this tedious technology in 1957 and composed it into a great short film, thus preserving this important technology for later generations (Gaál I., 1957).

Audiovisual projection rooms are now an indispensable feature of museums, as are the displays that can be set up to show photographic and video documents.

4.3.2. Presentation of data

Industrial and railway heritage data (e.g. production and trade data, passenger and freight traffic data, costs, wages, working time data, blueprints, recipes, patents) are an important part of industrial heritage but is more difficult for tourists and visitors to absorb and present - and much less interesting - than tangible heritage or technologies.

The data is usually presented in some kind of processed form (e.g. graphs) and related to the relics and technology (e.g. for an exhibited vehicle we show its technical data, how many were produced and exported, to which countries, how economical was the production, what kind of blueprints, patents were associated with it, etc.)

4.3.3. Presentation of culture, workers' life

The cultural and social dimension of industrial and railway heritage is increasingly highlighted through museums, exhibitions, events and guided tours. While in the past, museums and collections were almost exclusively concerned with the presentation of material heritage, today they are increasingly providing opportunities to present the life, housing, social, cultural and sporting life of workers, employees and railwaymen. The same is true of guided tours and city walks. Nowadays, guides do not just present the history and architectural values of a building or factory but also the lives and stories of the people and workers associated with it.

4.3.3.1. Case study 6 - Museum exhibition and associated city walk

The Museum of Transport is one of the most popular and most visited museums in Hungary. As part of the museum renewal, the exhibition space in the City Park closed in April 2015. In 2017 it was decided to move the Museum of Transport into the Diesel Hall of the Northern Train Maintenance Depot. The museum is expected to open in 2026 at its new location in a building designed by Diller Scofidio + Renfro.

In 2021 (and again in 2022), the Museum of Transport opened a temporary exhibition at the new site entitled "Once there was the Északi... the story continues". It presents the history of the Northern Train Maintenance Depot between 1867 and 2009, the workshops of the Diesel Hall, and many of the railway's legendary locomotives (e.g. 424, 242, M44), carriages and artefacts.

But an important element of the exhibition - deliberately - was to show the everyday life of the Northern Train Maintenance Depot workers, their working conditions, sports and leisure activities, and their social conditions.

An important element of the latter is the presentation of the living conditions of workers. The best way to do this is to take a guided walk through the MÁV housing estate, located 300-400 metres northwest of the Northern Train Maintenance Depot. Many workers at the Northern Maintenance Depot used to live here in friendly suburban surroundings.

Hosszúlépés, the organiser of urban walks, has organised a special tour of this workers' housing estate entitled "My sweetheart is a railway woman..." in cooperation with the Museum of Transport (Az én Rózsám..., 2022). During the walk, visitors will tour the housing estate and see the single-storey and multi-storey residential and public buildings built according to MÁV's type design. During the tour, the guides tell interesting stories and anecdotes about railway workers' life, trains and the Northern Train Maintenance Depot. The walk ends at the Diesel Hall of the Northern Train Maintenance Depot, where the museum's new exhibition " Once there was the Északi... the story continues" can be visited at no extra charge.

Fig. 11: Railway workers' housing estate (Source: Author's photo)

This is a great initiative, where the possibilities of a museum are opened up in space and time, and participants can practically enjoy a good half-day (4-5 hours) railway heritage programme (the walk is about 2 hours long and the exhibition takes 2-3 hours).

5. SUPPORTING THE DEVELOPMENT OF INDUSTRIAL AND RAILWAY HERITAGE TOURISM

The examples presented above show that rail heritage tourism is a well-defined, visible segment of industrial and, more broadly, cultural heritage tourism. However, both rail and industrial heritage tourism have untapped potential.

How to increase industrial and railway heritage tourism?

To do so, it is necessary to increase both the *demand* and the *supply* side. The *demand side* means that potential visitors have the *motivation*, *leisure time* and *disposable income* to visit industrial/railway heritage sites, travel there and pay for their stay (accommodation, meals). In addition, there is no *pandemic* to drastically limits demand.

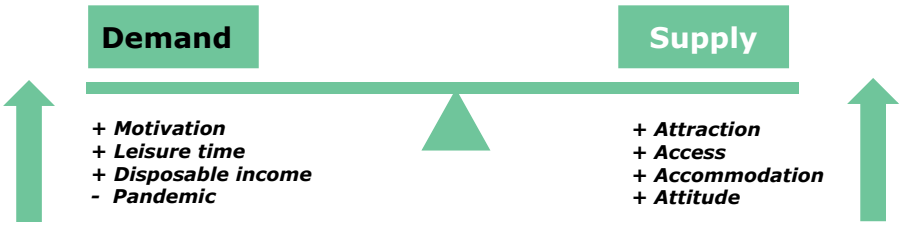

Fig. 12: Demand and supply side of tourism (Source: Author)

5.1. Increase demand

There is an *existing* and a *latent demand* for industrial heritage. The latter means that we are not actively looking for industrial monuments or technical exhibitions, but if there is an ad-hoc opportunity, we take it. Together, existing and latent demand is shown by the data of visitors to heritage days, open days, the Railway Historical Park and the technical and transport museums.

To *increase demand* people need to be *motivated* to visit industrial and railway heritage sites and exhibitions. This requires *raising awareness of the concept and importance* of industrial heritage. It is also necessary to *promote* such sites and events.

This can be done using *documentaries or other films* (such as action, drama, and comedy). An excellent example of the significant marketing impact that the latter can have is the Glenfinnan Viaduct, which has seen an increase in visitors by orders of magnitude since the Harry Potter films, but it is often a problem today.

Other ways to promote industrial and railway heritage are *books, thematic photo exhibitions,* or *well-established brands such as Night of Museums,* Night of Powerplants, Night of the "Whatever", or Cultural Heritage Days.

When a heritage site is inscribed on the *UNESCO World Heritage Li*st, it has a great promotional value. Industrial heritage sites are unfortunately under-represented on the UNESCO World Heritage list (Falser, M., 2001).

5.2. Increase supply

The *supply side* is the 4 A's. *Attraction* is the industrial heritage that draws visitors. *Accessibility* is often not easy for industrial heritage sites since factories, plants, mines, and rail heritage sites are usually located in remote areas. Public transport is often limited, and access to large areas (tens of hectares) is difficult or even impossible for people with reduced mobility. In the case of multi-day tourism, the availability of *accommodation* is also a requirement. And, of course, we expect to experience a positive *attitude* and professionalism during the visit.

We can increase the supply side by *saving* as many industrial and railway buildings, infrastructure and industrial landscapes as possible, *revitalising brown belts*, creating parks and *creatively reusing buildings, s*uch as the Eiffel Art Studios, Millenáris

Park, Ózd Blowing Engine House and Digital Power Plant, Pécs Zsolnay Quarter, Railway History Park, and lofts.

We *involve the private sector to showcase and maintain our industrial and railway heritage*. For example, several bunkers at Csepel Works are rented by a young tour guide who organises regular bunker tours. There are many command centres in Hungary owned by municipalities, which are not being utilised and presented because the municipalities do not have the capacity to do so and do not want to bother with maintenance. The involvement of the private sector could be a solution.

We are *reopening closed technical museums*. In Budapest alone, several industrial museums have been closed in the last 5-8 years: the Gas Museum on Fiumei Road, the Mill Museum at Concordia, the Telefónia Museum at Buda Castle, and the Museum of Meat Technology at the former pig slaughterhouse.

We *organise travelling exhibitions* (this significantly increases the number of visitors, as we bring the attraction to the place, improving accessibility.)

We *encourage exchanges between museums* or find ways to loan exhibits. A good example is the travelling exhibition of the Museum of Transport at the Rijeka City Museum (Modern Rijeka..., 2022)

We *organise Cultural Heritage Days twice a year*, for example, *in March, in addition to the current September* date. There would be a demand for it, as the end of September is already busy for many families with school starting.

Another possibility is to *organise several thematic open days a year*, similar to the Night of Museums or the Night of Power Plants. For example, *Industrial Heritage Night or Night of the Railways*.

And finally, as an industrial heritage tour operator, I see great potential and I am pleased to see that more and more companies are *organising visits and city walks to industrial and railway heritage sites* and workers' housing estates.

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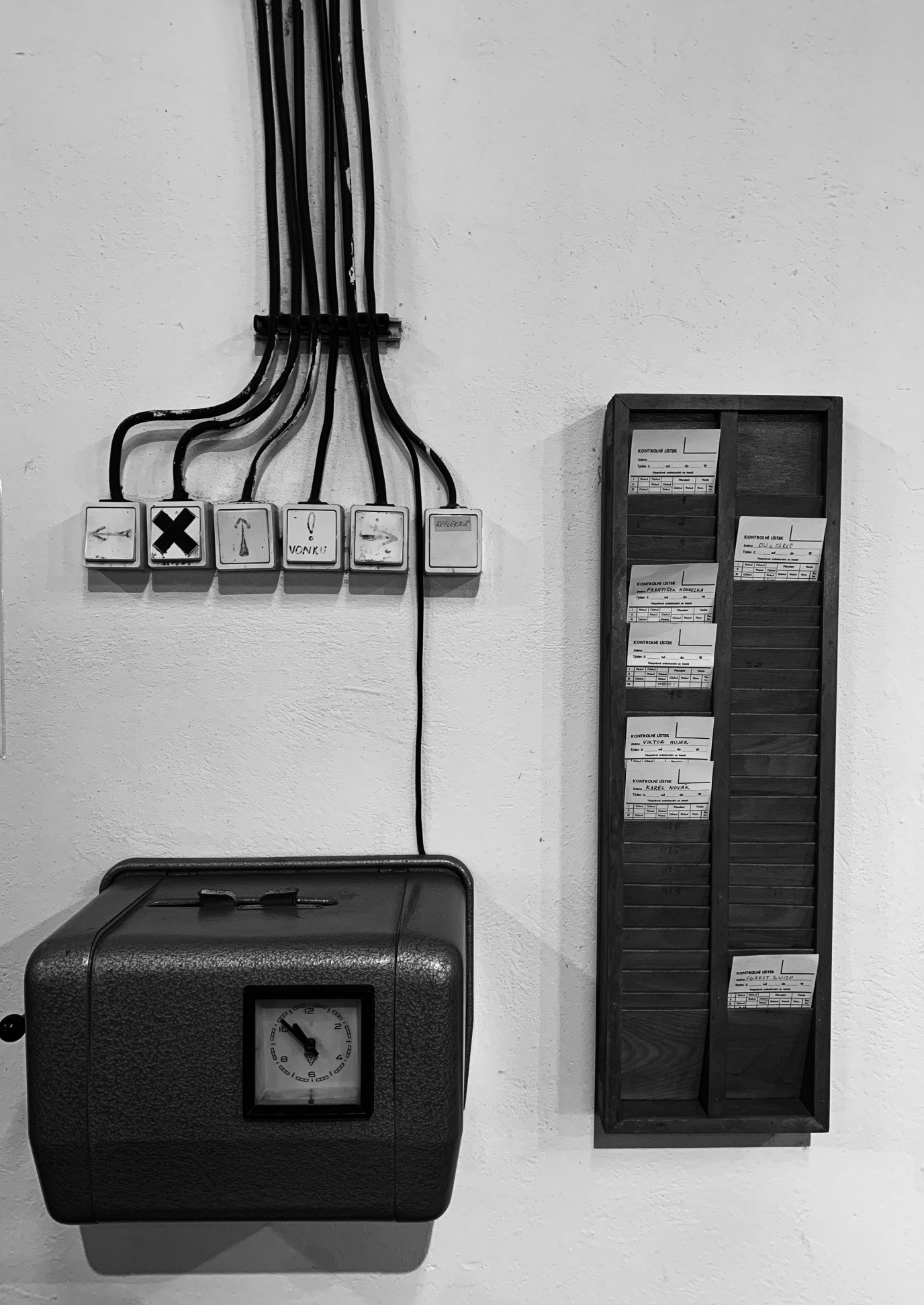
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RAILWAY HERITAGE TOURISM – A PRESENTATION AND INTERPRETATION OF DEVELOPMENT POTENTIAL

Abstract. Railway heritage represents a large set of various constructions and technical and technological elements that attest to the human activities of railway transport. It is related to engineering, architecture, spatial planning, design, and sometimes also visual arts. It also entails a number of immaterial levels that are embedded in the experiences, memories, and social life of the population and its communities. In many places, railway heritage is merely archaeological evidence of past activities and technologies, while in other places it is still functional – forming a part of active processes that develop historical continuity.

The railway heritage of both phases – the active and muted ones–forms a part of the environment and lifestyles of today's generations and contributes to the fulfilment of the current generations' life needs – e.g. it offers a meaningful way to spend one's free time; it supports and motivates an interest in expanding one's knowledge; and it provides spatial capacities for various current activities. Despite its scope and qualitative characteristics, railway heritage is very vulnerable and often under threat: the cause is usually changing economic trends, but mainly it is an ignorance of railway heritage as a whole, a lack of awareness of its importance, a lack of protection, and a negative perception of its impacts from the active period, environmental burdens, or its sheer size and complexity.

Railway heritage tourism is a popular activity that uses railway heritage and carries out its activities within its infrastructure. At the same time, it contributes to regional development using local conditions. For this, it is necessary for railway heritage to be respected by society (trust, administrators, and development entrepreneurs), so that the potential of its available capacities is constructively perceived in all its complexity, including intangible aspects and contexts.

This chapter deals with issues of presentation and interpretation of the values of buildings, objects, ensembles, areas of railway heritage and their action in the territory with the aim of increasing a positive awareness of it amongst the general public and business entities whilst also supporting education and research.

Keywords: Railway heritage tourism, tourism development potential, presentation of railway heritage, interpretation of railway heritage values, virtual presentation, local development potential

1. INTRODUCTION

Since ancient times, the development of human civilisation has depended, among other things, on mastering the processes of the transport / transportation of people and goods in the country. Until the beginning of the 19th century, the speed of transport remained virtually the same: it depended on road and waterway conditions and on draft animal performance. Poor road conditions often depended on local terrain conditions, which prolonged transport times and were detrimental to transport safety and efficiency.

The invention of the steam engine and its adaptation into a steam locomotive by Englishman George Stephenson (1813) (Mrva, 2013: 21), which moved on rails, meant a revolution in the development of traction transport technology. However, its deployment and operation required special additional equipment: the transport route had to have a special structure equipped with rails, as well as have purpose-built equipment for supplying fuel and water, parking, and repair areas for locomotives and wagons, and also locomotive turning points (Szojka, 2013: 29). The new transport system, which was capable of quickly covering long distances and transporting several times the amount of goods and passengers, stimulated the construction of new types of buildings for servicing railway sets (trains) and serving the travelling public (stations), along with the construction of large-capacity warehouses for goods. Thus, a new, specific, operational infrastructure of railway transport was created. Its transport capacities exceeded the previous possibilities by an order of magnitude. At the same time, the comfort for the travelling public and the safety of transported items and persons have increased. The railway infrastructure, thus, meant a revolution in transport and, consequently, a revolution in the development of the adjacent territories. Railways and rail transport have become one of the pillars of the economic infrastructure of states with strategic importance. The railway has become a symbol of progress and maturity.

The birth of railways and rail transport almost coincides with the beginning of the industrial revolution. At the same time, railways significantly accelerated the spread and application of the industrial revolution, i.e. such changes in the production and distribution of products that made it possible to increase the speed and quantity of production by an order of magnitude while maintaining uniform quality and to distribute them in large quantities over previously unused distances. The development of industry, in turn, supported the development of railways. The preserved railway heritage is a product of industrial technologies and processes, but it alone participated in the development of the industrial era of human civilisation. As such, it is a subsystem of industrial heritage.

In the meantime – during the last 200 years – the railway has become a common everyday part of people's lives and economic processes. There were continuous innovations in individual parts of the railway infrastructure – e.g. increasing transport speed, increasing the capacity of transport units (wagons), changes in the energy base of traction machines... All these and other associated

connections became the impetus for the emergence of specialised industrial production for railway needs, specialised railway construction, and specialised education – i.e. professional training of specialised personnel to operate railway transport. Although the individual elements in this system have changed over the years, the results achieved together represent a unique railway heritage.

In the same period, parallel to the development of the industrial era, the development of technical and scientific innovations and their deployment in production and in the railway segment accelerated significantly. As a result of this development, many material creations, functionally closely linked with the development of railways, lost their production justification – they became morally obsolete and were abandoned. As a result of innovative development, they lost their place in the production chain and, thus, also lost their "life" mission.

By extending the life cycle of existing railway structures and using the energy built into them for new functions, the conservation of railway heritage can contribute to the achievement of sustainable development goals at local, national, and international levels.

2. STATE OF KNOWLEDGE

2.1. Publicity about railway heritage in the context of regional development through tourism

With regard to the content profile of the Rail4V4+V project, as well as the profile of this chapter, it should be noted that no title thus far has been published in Slovakia that targets the issues of the use of railway heritage in connection with tourist visitation of the affected locations and their development that would otherwise bring fusion and a comprehensive view from several fields.

We do not encounter such a view in the program documents and annual reports of the concerned state institutions in Slovakia, nor in their strategies, which have a direct impact on tourism entities and objects and their development, e.g. "New Strategy for the Development of Tourism in the Slovak Republic until 2020,""Strategy for the Development of Sustainable Tourism until 2030,""Analyses and Proposals for Natural and Sustainable Tourism Based on the Examples of Five Regions of Slovakia" (2022), "Annual Report of SACR" (Slovak Tourism Agency) from 2011 until 2017, and others.

In foreign literature, we encounter the issue of the management of sites with landmarks and monuments; the most often mentioned are sites entered into the UNESCO World Heritage List. There is no special focus on railway heritage management issues in the context of tourism development. The TICCIH News

magazine occasionally publishes information about the establishment of new railway museums, or about exceptional railway lines in different countries of the world.1

The materials of the World Tourism Organisation (UNWTO), which is a United Nations organisation that focuses on supporting responsible, sustainable, and universally accessible tourism, are a useful tool for the implementers and followers of the Rail4V4+V project. UNWTO defined the criteria of global sustainable tourism GSTC (Global Sustainable Tourism Criteria), to help the balanced implementation of tourism as a driving force of economic development, as well as social and environmental responsibility and regulation of the economic and cultural impacts of tourism.

There are currently two sets of GSTC criteria – for hotels and tour operators and for destinations. The Destination Set guides specialists, managers, communities, and businesses to take coordinated action together to use and maintain natural and cultural attractions, to regulate tourist flows, and to provide economic benefits to local communities and businesses. In this context, suitable conditions for the active involvement of railway heritage and its stakeholders appear.

In 2011, the UNWTO published a guide for the tourism sector, "Communicating Heritage" (World Tourism Organisation, 2011). It aims to improve the functioning of the tourism industry in the development and presentation of destinations and monuments in a comprehensive manner. It presents current trends and suggests a range of heritage presentation and interpretation tools, including an outline of the structure of educational workshops to effectively communicate heritage values to visitors and potential visitors. This should contribute to building strong tourist experiences and gain greater appreciation and support from visitors to preserve the identity of the places they visit.

Fig. 1: Cinque Terre National Park, Italy. The offer of goods for tourists at the info-point.
Source: Eva Kráľová, 2021

[1]TICCIH - The International Committee for Conservation of Industrial Heritage. TICCIH News is an information bulletin in which news about events and interesting things about industrial heritage from around the world are published regularly 4 times a year.

Inspirational stimuli from the point of view of this contribution are provided by the Smart History project implemented as part of the EU Culture 2000 program between 2004 and 2005 at Cinque Terre National Park in Italy (De Nayer, 2005; also Kráľová, 2006). The aim of this project was to propose a specific model of active protection and the use of the cultural and natural heritage of Cinque Terre National Park, which would be analogously applicable in other locations in the world. The territory of this national park is best accessed either by boat or by train. There are regional train stops with small station buildings in all five locations of the national park. As a result of the innovation of railway services, the service of passengers by railway staff in railway station buildings has already ended and the buildings' function has been changed: they now house contact info-points for visitors to the national park. These info-points form a part of the hiking trails, which serve for a systemically balanced distribution of visitors throughout the entire territory of the national park. The former railway stations fall under the National Park Service and, in addition to providing tourist information (about activities, visitor density, accommodation, meals, etc.); they also offer the sale of small tourist supplies and souvenirs – primarily those produced by manufacturers in the territory of the National Park.

2.2. Publicity around railway heritage knowledge and awareness

The situation concerning knowledge and awareness of Slovakia's railway heritage is significantly better – especially with regard to professional writings and literature for technical universities. The book *In the Footsteps of our Railways* (Krejčiřík, 1991) captures the development of railway construction throughout the former Czechoslovakia, emphasising their national economic importance for the state and its individual parts. *History of Railways in Slovakia* (Kubáček, 1999) has since been published in several updated editions. It contains a clear chronological treatment of the history of railways in Slovakia, characteristics of railway communications, postal services via railways, and related engineering networks. The next edition (Kubáček, 2013) presents the construction of local railways in Slovakia from 1873 to 1918, including the development and characteristics of railway technology (locomotives, wagons) and the organisation of railway transport, railway operations, personnel, and social matters on railways.

The situation is also widely covered in specialist literature on the construction, maintenance, and modernisation of railway lines: *Railway Construction 1* (Ižvolt-Hodas-Šestáková, 2015) contains "The Design, Construction, and Reconstruction of Railway Lines and Stations."*Railway Construction 2* (Ižvolt-Šestáková-Šmalo, 2015) supplements the issue with the processes "Diagnostics and Mechanisation of Works and Technological Procedures of Railway Track Maintenance." Both titles are intended as university textbooks and for use in professional practice.

Several designers and builders of railway station buildings (both historical and newer) are known from the history of architecture, but there is no comprehensive publication on railway stations.

In addition to professional monographs, the mosaic of the history of railways and everything related to them is complemented by thematic specialist magazines, e.g. *Monuments and Museums*, *Museum*, *Earthworks*, *Industrial Constructions*, *Industry Review*, and internal employee magazines such as *Railway Semaphore, Cargo*, and *Ozveny* (the magazine of Railways of the Slovak Republic): in them, in addition to internal company information, monothematic articles about railway heritage are sometimes/occasionally published. The magazine about railways *Železničné info* popularises various events, personalities and other aspects about railways in an understandable, layman's format. It is also available to the general public on the internet (https://www.zeleznicne.info) and is also popular amongst tourists.

Overall, it can be concluded that knowledge about the history, quality and significance of Slovakia's railway heritage is relatively rich. However, it operates mainly in the circles of experts and enterprising railway enthusiasts. So far, it has only rarely, and to a limited extent, penetrated the ranks of regional development planners. In the latter period, this knowledge begins to be applied in the framework of the creation of new products to make domestic tourism more attractive.

3. CHARACTERISTICS OF RAILWAY HERITAGE

3.1. The tangible railway heritage

Railway heritage, as an active part and product of the industrial era, belongs to the extensive group of industrial heritage. According to the International Charter of Industrial Heritage (TICCIH, 2003), industrial heritage is considered to be "the *remains of industrial culture that have historical, technological, social, architectural, or scientific value. These are various buildings and machinery, workshops, factories, mills, warehouses, shops, mines, places where raw materials are processed and cleaned, as well as buildings where energy is produced, transmitted, and used. This also includes transport structures and all related infrastructure and places related to industry, including buildings used for housing, worship, and education*"[2]

Analogously – railway heritage is all that remains connected in any way with the operation and activities of railways, i.e. *various buildings, technological equipment of railways, and engineering plants and factories for the needs of railways. This also includes all linear railway constructions (tracks including bridges, tunnels, and additional equipment) and all associated infrastructure. There are also buildings and facilities for railway technology – e.g. depots for locomotives and wagons, locomotive turnstiles, draw houses, washrooms and other maintenance workshops, and*

[2]The Nizhny Tagil Charter for the Industrial Heritage (Jun 2003).[online] 2014.[cit. 2014-06-12]. The exact English text of the charter is available at: <http://www.ticcih.org/industrial_heritage.htm>

warehouses serving the operation of railways; And places where energy is produced, transmitted, and used for the needs of the railways – e.g. reservoir towers and control stations. Substations are usually unmissable and individualise the environment. Shops and various service areas at stations increase comfort and safety for both passengers and railway employees. And this also includes other places related to railways, including buildings used for housing and education.

All buildings and facilities mentioned here represent tangible heritage that has a material essence: it is easily visible; it can be touched. And if necessary, it is possible to intervene in it – to modify it in part or alter a select element.

Buildings and facilities for railways, similar to those for industrial production, were designed and built to allow long-term, high-capacity operation –e.g. the transport of large quantities of heavy goods and raw materials, and also the transport of large quantities of passengers. Thus, they are large-scale – they have large spans, they occupy and create spaces on large areas, and their volumes are an order of magnitude larger than is customary for residential and most civil buildings. Their construction and material solutions correspond to this: they had to and still have to withstand extraordinary loads (often of a dynamic nature) and they must withstand external influences and be easy to maintain (Kráľová, 2010: 47). Therefore, superior contemporary technologies and extremely high-quality, durable materials with a high resistance to wear and tear were used in their production along with possibly other extraordinary construction solutions. This in itself indicates the reasons for such works to be declared monuments, or at least landmarks.

During the boom of the industrial era and the development of technical and scientific innovations, their deployment in production and also in railway transport accelerated significantly. As a result of this development, many material creations lost their functional justification conditioned by the previous technical solution: they became morally obsolete and were abandoned. As a result of innovations in transport technology, the operation of smaller lines with a narrow gauge of rails, which until then were used to transport wood or agricultural crops from the place of their collection to a larger storage area, ended within the scope of railway transport. By changing the energy drive of traction railway equipment and switching from steam to motor and electric traction, a number of functional locomotives and part of the construction and technical objects connected with their operation were decommissioned. As a result of changes in the management processes of railway transport, operations in many smaller stations ended and their buildings remained unused: they became a relaxed railway heritage.

3.2. Intangible railway heritage

Railway heritage also contains another invisible, i.e. intangible component: the so-called intangible heritage. This consists of experiences, traditions, and stories that are connected with the construction or operation of railways, the memories of important figures who contributed to the development of railways or who, by visiting

/ using railway services, increased their reputation or made visible the locations / regions through which the railway passed. The intangible heritage of railways also includes the ways of life, work habits and ethics, and group traditions of railway employees. The railway past and the outdated technologies of its operation where it has been suppressed are generally still alive – they are here; they identify the environment; and people use them either in their original meaning or in a new way that they understand.

Intangible heritage is also all the knowledge on railways, the history of the construction of individual lines and their equipment, and the history and experience of the production of railway technology.

3.3. Values of railway heritage

The Charter of Industrial Heritage (Nizhniy Tagilj, 2003) recalls the existence of socially recognised values of industrial heritage when it states: *"Industrial heritage has social value because it is part of the documentation of the lives of ordinary people and as such provides a significant sense of identity. It has scientific and technical value within the history of production, engineering, and construction. It can also have significant aesthetic values thanks to the quality of the overall design of the architecture and its form."* The presence of these values (even if not all together, but only in part) represents the promise of enrichment and reinforcement, sometimes even multiplying the potential (i.e. ability, positive assumption) for further use of this liberated heritage for new purposes.

All these attributes also apply to railway heritage. Railway heritage is, thus, clearly included in the set of cultural heritage of humankind. It becomes the subject of protection and preservation of its values for future generations. At the same time, it moves from the position of a means of production (a tool for ensuring the material production of railway transport) to a position of cultural facility –i.e. a tool for cultivating social awareness and spreading civilisation, while its intangible heritage acquires the quality of cultural values.

As a rule, the cultural values of the abandoned industrial heritage are not obvious. Therefore, it is necessary to identify and clearly explain (interpret) the content of individual types of cultural values (qualities) contained in a specific railway heritage.

The most important quality of any material heritage, which moves it into the selection category of monuments, is its *documentary value*. Although the meaning of documentary value is intangible, the bearer of documentary value is a material tangible work: it is any preserved element, its detail, or even just a torso. Its existence represents a material document with the power of irrefutable proof that the given phenomenon (building, technical work, machine, etc.) existed. Its execution attests to the level of skill possessed by its builders (our ancestors), as well as their knowledge of the environment. Its functionality testifies to professional knowledge and skills and

also to the organisation of work, as well as occasionally to ways of life. Therefore, it is important to protect the preserved elements of this heritage from destruction, including from possible replacement with something “new and more beautiful”. By removing them, evidence of cultural stimuli, continuity, and civilisation maturity is destroyed. Traditions are broken. The relationship of identity is weakened. And self-confidence in one's own abilities is lost. Therefore, it is necessary to preserve railway heritage, actively use it, and protect its material essence so that its material documentary values are not destroyed.

Historical values are an intangible quantity: they commemorate various facts, events or personalities from the history of railways. Their value is based on comparison with other similar phenomena and is usually justified by their influence/importance on the development of human civilisation or the given territory. For example: the time of creation and the individual construction phases of railways are important as milestones in the activation and development of the given area. Visits or work shares of important personalities (technicians, politicians, etc.) – as an event of historical value – confirm the contemporary significance of the event, increase the reputation of the locality, and strengthen feelings of self-confidence and recognised identity. Knowledge is also historically valuable – e.g. with whom the railway cooperated; what important events took place in it; what innovations improved its quality, etc.

Historical values in their intangible essence are invisible. Therefore, they must be communicated to visitors: written, spoken, published and made visible by other technical means (e.g. photos, document scans or virtual and augmented reality technologies (Hain, Hajtmanek, 2020)).

The architectural values of the railway heritage are visually evident. Their carriers are material, tangible construction works. The architectural values themselves are contained in the individual architectural rendering of the building as a result of specific local conditions with the demands of operating technology or the services it provides. They manifest as:

- the visual impact of the railway work in the country,
- the organisation and composition of the construction of the railway zone and its facilities (including the living area of the employees and their service equipment),
- preserved layout, composition, material, or decorative solution of individual buildings (both exterior and interior).

After the suppression and halt of a railway operation, the preserved original objects with their surroundings can be a sample – a material document – of the typical original construction of its time in this segment of the economy. But it can also be a unique, unrepeatable, or innovative technical work. By preserving them – in addition to the aesthetic effect in the environment – they become a document about the unique creation of personalities of the architectural or technical culture of their time. Preservation of architectural values means preservation of their bearers, i.e. original

objects, but at the same time it is useful to give visitors an explanation – i.e. what the architectural values of a particular work consist of.

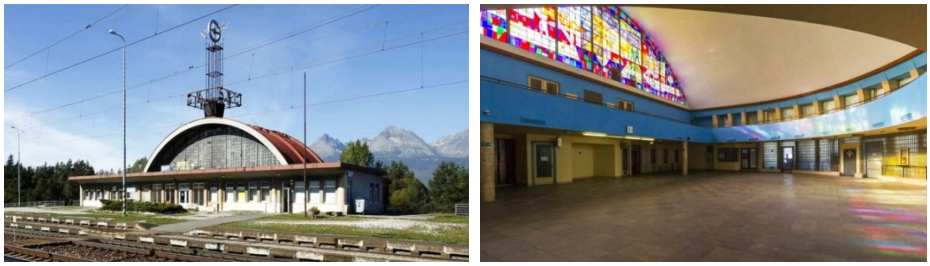

Fig. 2: An example of the architectural values of the functionalist railway station in the city of Svit built between 1948 – 1968 according to the project of the architectural studio Baťa, a.s., Zlín. The stained glass is by Slovak academic artists Bendík and Stašík. Source: svit.sk

The technological values of railway heritage lie in the contribution of contemporary technology using scientific knowledge to optimise the operational process, to improve the qualitative utility properties of products, or to improve working conditions or the environment – and all this for the progress of human civilisation. Technological values also include technological know-how preserved in a materialised form, such as technical documentation, normative regulations, safety regulations, original patent authorisations, etc. Although the technological values of the railway heritage have their material bearers in the preserved elements of railway constructions and their equipment or documentation, the very perception of these values and the understanding of their meaning are already an immaterial mental activity of the observer.

Even if objects containing technological values are easily accessible, visible, and tangible, only an expert can "see" the contained technological values. Therefore, technological values must be made known to the lay public through interpretation – i.e. by explaining and justifying the context. Examples could be "What was the modern innovation like in comparison with the solutions used up until that point?", or "How early was the innovative solution applied compared to "ordinary" production?", etc.

Railway routes and their areas have always been built using the most progressive technologies available at the time, or to a progressive level of operation. Therefore, as a rule, they contain pioneering technical, technological, or individual architectural solutions. The preserved original technological equipment of railway facilities/areas in original materials and in period design represents a specific component of technological values. If the technological values are to contribute to the development of tourism and increase the number of visitors to the railway heritage, it is essential that they are clearly interpreted and promoted.

Scientific values are linked with all other values. Their essence lies in the fact that material documents (preserved material remains) are an authentic source of information for scientific research either on the relevant historical stage, or for documenting and preserving knowledge about the development of science and

technology. Scientific knowledge of surviving technologies can, in certain situations, bring new knowledge and be a stimulus for new discoveries, or at least new innovations. Therefore, it is important to preserve all the material remains of the industrial heritage that have been preserved thus far in their most authentic condition. In the processes of revitalisation of abandoned railway operations / tracks, it is necessary to ensure – in addition to the preservation of authentic elements in the original place – their accessibility and space for scientific research, as well as space for the presentation of research results.

Social values are another, very important quality of railway heritage. It is generally known that the railway has a strong shaping influence on the culture (in the sense of refinement, sophistication, and improvement) of lifestyles and interpersonal relations both amongst its employees and in relation to passengers and business partners. It influences and shapes the work habits, social contacts, and ethics (morality) of people in the wider contact range of the territory affected by the railway. Equally important is the "genius loci" factor: people know the railway environment; its visual signs are close to them; they know how to navigate themselves in it; and they feel safe in it.

Fig. 3: Technological scientific and social values are represented by the 22m-high and 86m-long Telgártsky viaduct, which was the first articulated arch structure made of reinforced concrete on the ČSD lines. Source: Ing. Jozef Pilko

Social values are latently present in the environment and surroundings of the railway – people live by them. Therefore, it is appropriate to identify preserved social values during revitalisation, to support their duration and application in development programs, and to build on them.

4. POTENTIAL FOR FURTHER UTILISATION OF RAILWAY HERITAGE FOR TOURISM

After the end of the active operation of the railway operation or part of its equipment, it often happens that the original technical infrastructure is left in place and not dismantled – it would be an ineffective investment. All constructions of

railway buildings and equipment – even those whose function has already ended – generally exceed the technical and utility parameters required for residential buildings or civil amenities. At the same time, other qualities and values of an intangible nature remained latently present in unused objects, which are capable of revival and further functioning for other functions as well. Therefore, the released buildings of the railway heritage, despite their moral obsolescence, represent an extensive building fund of usable areas and covered volumes that can be further used. It is a potential– an opportunity – to further use a set of released buildings and equipment of the railway heritage for other, new functions according to the needs of the society.

If the material remains (tangible documents) of the railway heritage are preserved, adequately presented and interpreted, they become signs of genius loci, which have the power to support (and sometimes even start) revitalisation processes of unused territory.

The potential for reusability of railway heritage depends on its adaptability, capacity, and attractiveness to perform a function other than the original one. The use of railway heritage for the needs of tourism or for the development of a locality/region through tourism has several advantages:

- vacated building objects – their areas and volumes are primarily usable. In the case of railways, these are usually the buildings of former stations, some former depots, repair shops, or even former hostels and social facilities for railway staff, etc.,
- these sites are generally well accessible even for a large number of visitors – there are access routes to them, and there are sufficient areas for parking near them,
- the available areas and buildings of the railway heritage sites are usually far enough from residential areas, so that even if the new function is noisier, there is no risk of conflict with residents.

In addition to this material capacity, the fund of preserved and released railway heritage objects also contains a number of intangible values that are embedded and permanently present in the given environment and continue to affect the residents and visitors of the site:

- it is mainly an image of a technical work in the country – when the forms of railway constructions enrich the shape and aesthetic expression of the settlement, they are often an identifying sign of the environment,
- the railway heritage usually contains some exceptionality or local particularity, which increases the attractiveness of the object or the entire location,
- traditions associated with the operation of and life on the railway; memories of events that took place there, or of important figures who stayed there; experiences and ordeals from the operation of the railway… all this continues to affect the consciousness of local residents.

The intangible heritage of the railways maintains the good name of the locality and the vacated buildings and strengthens the assumption of the success of their new development. The potential of the new function's usefulness in the case of further use of the railway heritage, thus, increases in real terms.

Fig. 4: The potential of the use of fragments of railway heritage in Slovakia is represented by the Švermovo (Telgárt) tourist stop, currently used as a café with a view of the Chramoš railway viaduct. Source: Vladimír Hain, 2022

For successful revitalisation, which uses not only the material essence of railway heritage, but which also respects the intangible cultural values of the railways, it is useful if the most comprehensive set of documentary elements on the defunct production or operational processes of the railway is preserved. However, only preserved parts, fragments, or isolated pieces from the original functional systems and parts of buildings and their equipment, which provide an idea of how the operation works, have documentary, technological, and social value. As part of revitalisation processes, they need to create a space for perceptible presentation and comprehensible interpretation.

5. PRESENTATION AND INTERPRETATION OF THE RAILWAY HERITAGE POTENTIAL FOR THE DEVELOPMENT OF TOURISM

5.1. What is “presentation” and what is “interpretation”?

The potential of railway heritage is the sum of material capacities (areas and volumes) and the tangible and intangible values contained. It is evident from chapter 3 that not all components of usable potential are equally clearly understandable to visitors. Therefore, depending on the nature of the contained values, it is necessary to adequately present and clarify (interpret) the potential of heritage to visitors.

Presentation generally means: “introduction,”“showing / pointing out something,”“explanation,” or “clarification.” To present the potential of railway heritage in situ for tourists, it is sufficient if the newly used objects of the railway heritage concerned are sufficiently visible, accessible, or iconically marked. Accessibility can be made easier if the access roads are equipped with orientation

direction tables (Fig. 5). The presentation of the potential of the original railway heritage in the case of promotional and marketing processes can also be carried out through:

- thematic digital presentation (if the marketing process is carried out remotely or online),
- an organised thematic visit for groups of visitors.

To enhance the personal experience of visiting a railway heritage site, it is advisable to prepare and mark the route of the visit so that visitors can experience all partial components of the visited heritage site. This can be done through orientation boards conveniently located throughout the area, or their miniatures on leaflets accessible to visitors, or through digital technologies such as a special mobile application. A welcome and popular way to enrich a presentation is if the participants of the visit have the opportunity to enter areas that are not accessible to the public during normal operations, or if they can touch and manipulate the preserved objects, or if the presentation can be interactive and visitors can perform certain actions from when the original railway was operational – e.g. move signals, switch tracks, play dispatcher, or blow on the locomotive's whistle. Of course, there can be several activities like these, their selection and application always depends on the specific conditions of operation of the new function in the premises of the railway heritage site.

Fig. 5: An example of the placement of information boards with a presentation of the potential of original railway heritage sites and viaducts in Slovakia. Source: Vladimír Hain, 2022

Interpretation generally means: “clarification of the meaning,”“revealing the essence of the phenomenon,” or “evaluation of the situation and explanation of the context.” In science, it means “a summary of the meanings attributed to a certain theory or statement”; in historical contexts, it is “one of the methods whose purpose is to arrive at a new reconstruction of historical facts based on the comparison of the content of historical sources and previous opinions on them”(Wikipedia, 2022). All these meanings of the word interpretation are relevant when interpreting railway heritage.

In order to understand the potential of railway heritage for new use, it is necessary to complement and combine its visual presentation with the interpretation of the values contained in it. Only understood heritage values become an attraction with the power to attract new visitors.

A good interpretation of the values of the cultural heritage is conditioned by a good knowledge of the history and various contexts of the creation and functioning of this heritage. In the case of railway heritage, knowledge of the technical, technological, and operational conditions of the functioning of railways, as well as the economic, ecological, technical, and material conditions of construction at the time of the creation of the heritage and in any period when there were any changes to it, also approach this. Knowing the analogous conditions and contexts of the emergence of railway heritage on an international scale contributes to a more convincing argumentation when explaining the meaning of the phenomenon/fact of the heritage site visited.

The form of mediating an interpretation can be different. A combination of different forms of interpretation is not only possible, but also welcome: it is more interesting for visitors. The most common forms of interpretation of railway heritage include:

- written + graphic information on information boards, on information leaflets, or through digital technologies;
- presentation of defunct or invisible/inaccessible parts of the railway heritage through technical visual tools –e.g. photos, films, video projection, or virtual and augmented reality – and their interpretation either with a live commented word or with an explanatory accompanying word incorporated into the presentation program supplemented with other sound effects imitating an authentic operation.

Therefore, the interpretation of the significance of the railway heritage requires thorough professional training of the interpreting staff. The experience of using railway heritage in new functions shows the advantage when either former railway employees or railway enthusiasts from among the lay public are involved in the interpretation process. This applies both to the phase of study and preparation of the interpretation, as well as to the phase of the implementation of the interpretation – i.e. for guided interpretation by visitors.

5.2. Railway heritage and tourism

Tourism is the active area of the current world economy, which popularly and often uses objects and entire areas of cultural heritage as attractions motivating participation in naturist events. It uses objects and spaces of cultural heritage to provide various services of its commercial “products” using the attractiveness of historical spaces. The railway heritage has a wide range of objects and specific facilities that can be used in addition to providing standard services to visitors (e.g.

catering, accommodation, providing information, ...) also for the realisation of attractive experiential tourist events.

Railway heritage can participate in tourism activities in several locations:

- as a target object / area, with the function of a museum of railway transport, or a documentation centre of the history of railways;
- as a target object – a select element of the historic railway transport system (e.g. a historic station building, a historic bridge, the route of a historic railway line that is no longer in use, etc.);
- as a historical means of transport for an exhibition of the actively functioning historical railway zone, including the relevant service railway equipment;
- as a current means of transport making available cultural, natural, or technical attractions / exceptionalities on the selected railway route.

Railway heritage is a subject of priority interest in all these situations: by making available, presenting, and interpreting knowledge about the history and functioning of railways, it fulfils a new social function – informal education (Benkovičová, 2022) with a railway theme. In the case of using a historical means of transport, the educational function is enriched by the aspect of an unusual experience. This strengthens and confirms the aspect of knowledge among the participants of the activity while at the same time significantly increases the attractiveness of the event composed in this way. The use of the current train on historical, but still operational, railway transport routes allows to convey knowledge about the construction conditions and characteristics of a particular line and about the events connected with its construction or operation.

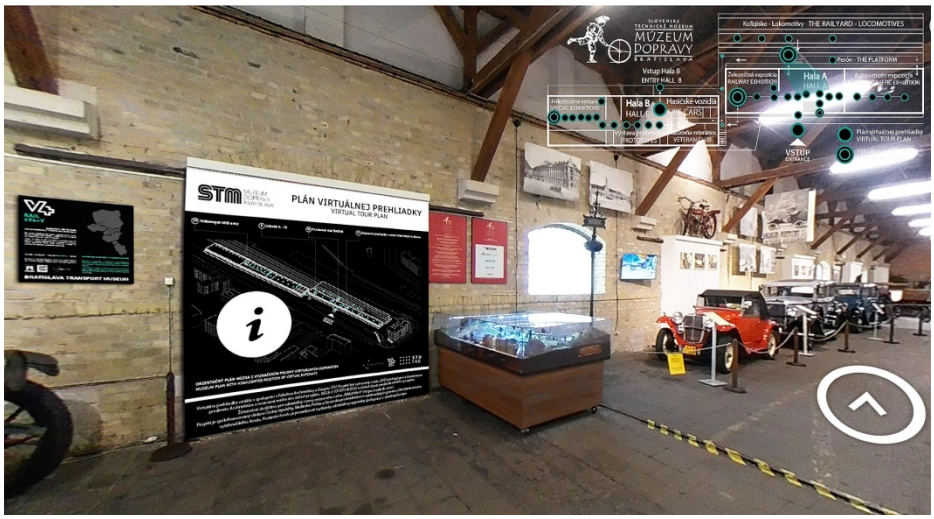

Fig. 6: An example of informal education about railway heritage and the building of the Museum of Transport in Bratislava in the form of a 3D diagram and a virtual tour for the public. Source: Vladimír Hain, Roman Hajtmanek, 2022

At the same time, it is an opportunity to experience the perception of the image of the landscape through which the railway line passes, from an unusual position compared to the position of a pedestrian or a passenger car, as well as an opportunity to perceive and strengthen the ecological aspect of railway transport.

Visitors can experience a visit to the railway or the Museum of Transport[3] remotely online or through virtual and augmented reality to see exhibits that are not normally available in the museum or are oversized. This option makes all exhibits available for physically or mobility-impaired visitors and adds additional information or facts in a foreign language in an experiential way (Hain, Hajtmanek, Kočlík, 2022).

In addition to the realisation of the railway heritage educational activities described above, the vacant premises of the railway heritage are also suitable for the realisation of other social (including large-scale) events (e.g. the organisation of artistic events – exhibitions, concerts, theatre, film, and other presentations, etc.) or for the realisation of meetings, celebrations, or gatherings for larger groups of thematically profiled communities, etc. In all these cases, the services and "products" (i.e. "packages" of complex services including animation and experiential activities) of tourism that are provided on the premises of the railway heritage site benefit from the attractiveness of its unusual location and unconventional amenities.

5.3. Case studies of the use of railway heritage for tourism

Two successful examples of the use of railway heritage for the development of tourism and the use of tourism as a means for regional development provide some inspiration on how to put the presentation and interpretation of the potential of railway heritage into practice.

5.3.1. Čierny Hron Railway: Chvatimech - Čierny Balog

The Čierny Hron Railway (or Čiernohronská železnica) is an authentic narrow-gauge railway line that runs between the villages of Čierny Balog and Chvatimech out of the Slovak Railways network. It is located near the Horehronský Express long-distance line, near the town of Brezno in central Slovakia. It is an example of the conversion of a function: it was originally built exclusively for production and economic purposes to bring and transport wood from the forests within reach of the line to processing companies located in Pohronie Pand also for bridging the transport of products from foundries in Hronec to the main transport corridor of Pohronie Today, this railway serves exclusively for tourist purposes as an attractive attraction luring tourists to Čierny Balog and the adjacent valleys. It is managed by a local non-profit organisation.

[3]Link to a virtual tour of the Museum of Transport in Bratislava:
https://dopravnemuzeum.mixedrealityarchitecture.eu/

The entire infrastructure of the line, including its construction and technical equipment, are authentic. The locomotives and rolling stock are also historic, including locomotives, freight wagons, and passenger wagons. The rolling stock was obtained from several locations where a similar line was dismantled. The station buildings and other technical equipment and auxiliary spaces are historic and capable of operation. Operation on the track is regular and its schedule is included in the timetable. In case of interest, it is possible to order special trips supplemented by an agreed specific itinerary.

The destination station is Čierny Balog, where visitors can see the entire equipment of the track and its maintenance processes. At the Čierny Balog station, there is a small museum of forest railways open all year round that features exhibits from the construction and operation of forest railways in Slovakia and the entire Carpathian arc. There are refreshments and rest options near the station and further in the village. Hiking trails lead from the village to the surrounding forests. An open-air forestry museum was built in the nearby Vydrovská dolina, which documents the characteristic processes of forest and forest-life maintenance and management.

At the same time, it inspires and supports environmentally friendly behaviour towards the natural environment. Also interesting is the small Museum in the miner, where there is an exhibition of the miner's period-furnished dwelling. Folkloric and thematic work events for tourists are organised in the village so that visitors can get an idea of the work and ways of life of the local population in the past. All the activities offered together connect the presentation of authentic heritage –the railway and civil life of the inhabitants – with well-formulated accompanying activities of their interpretation.

Fig. 7: Čierny Hron narrow-gauge railway: Chvatimech – Čierny Balog. Source: TASR, 2018

The operation of the track ensures the regular visitation of the village by tourists and the services for them are a welcome enrichment of economic activities in the village. The operation of this line is an example of successful evaluation of the potential of local heritage.

5.3.2. The Telgárt Loop and its tunnels and bridges

The Horehronský Express is a train connection full of experiences for tourists. It runs along the Brezno – Červená Skala – Dedinky line and back. Its track leads through the picturesque and dramatic landscape of the Horehronie region and partly through the Slovak Paradise National Park, where it overcomes impassable mountain ridges with a system of unique technical works of railway construction: a spiral tunnel and two otherworldly bridges belonging to it, which people know by the names Telgártska slučka (Telgárt Loop) and the Chmarošský and Telgártsky viaducts respectively. Built almost 80 years ago, they belong to the railway heritage. They are still functional and allow express and passenger trains to run on a daily basis.

The presentation of these extraordinary technical works is not easy. Passengers on the train can only perceive the alternation of tunnels and deep valleys, they do not see the bridges over which the train passes. Both bridges and tunnel portals are visible in the landscape and access to them is possible. The ascent of the track along the spiral partially embedded in the tunnel causes observers of the track from the outside not to see the continuity of the track loop. To them it seems that there are several tracks running there. To understand the situation, it is necessary to supplement the visible elements of the track with an explanation with the help of a graphic diagram.

The construction of the track in the area around the village of Telgárt was difficult because a large height difference had to be overcome in a short section. Therefore, it was necessary to develop the railway line in order to comply with the slope conditions. Several alternatives were considered. In the end, the alternative with the most remarkable building involved was implemented. It is a spiral loop about 2.3 km long that overcomes a height difference of 31 m. It is clear from the diagram that the variant with the least interventions in the country was chosen, even if it was the most technically demanding.[4]

The set of technical data on the size and material solution of the individual parts of the work contributes to the interpretation of its unusual solution: the tunnel (known as the Kornel Stodola Tunnel and more commonly referred to as the Telgártsky Tunnel), which rises in a spiral, is 1239 m long. It is routed from a section in an arc with a radius of 400 m with a 12.5 ‰ gradient. The tunnel is completely walled, and during its construction the tunnel diggers had to fight not only with the considerable pressure of the mountain, but also with flowing sand and powerful streams of water, which flowed out of the tunnel during construction in the amount

4More detailed information about the Telgárt Loop at: https://www.rail.sk/skhist/tunely/173.htm

of up to 35 litres per second. The Telgárt Loop was an extremely innovative technical solution in its own right at the time. Until now, only 34 countries in the world (Railway Tunnels, 2022) have implemented transport structures of a similar type of spiral, and only a part of them is in the form of a tunnel. There is no other solution of this type in the other partner countries of the Rail4V4+V project.

Fig. 8. A view of the Telgárt Loop from the top of the hill Tresník and from the entrance to the Telgártsky Tunnel by marking a suitable position for installing an information board with a description and graphic diagram of proposed variants of the track. Source: SKI Telgárt 2019, Vladimir Hain, 2022

Behind the tunnel, the track crosses the valley via a viaduct 22 m high and 86 m long with a slope of 17 ‰. Two stone arches with a span of 9 m form the extreme parts of the viaduct on both sides. The central part is spanned by an elegant arch with a span of 32 m. It was the first articulated arch structure made out of reinforced concrete on the ČSD lines (i.e. on the territory of the entire interwar Czechoslovakia).

The track continues with a 113.6m-long and up-to-18m-high viaduct through the Chmaroška Valley featuring nine stone arches with a clearance of 10 m each. This viaduct is also a remarkable piece of construction on this line.

Additional data on the construction of the railway on this line between Červená Skala and Margecany enriches the interpretation of its significance with other aspects than just technical ones (Železničné Info, 2019). This 94km-long line has nine tunnels with a length of 3,800 m that were excavated using a modified Austrian method, 281 bridge structures, 60 road overpasses, and 70 pipeline culverts. The amount of earth and rock that had to be moved during construction was a respectable figure of 3 million cubic meters. For the construction of all bridges, walls and other artificial structures, 110,000 m^3 of masonry were consumed in the open track, and another 68,000 m^3 in the tunnels. Due to the unfavourable economic situation of the 1930s, construction was carried out gradually from the spring of 1931 to July 1936, when the entire line was put into operation. Trains started running on the shortened section to the Dobšinská Ice Cave in the fall of 1934.

There was no shortage of labour on the construction site. At the time of the deep economic crisis, the construction of this long-promised railway financed by the state was eagerly awaited in the poor region because it represented practically the only possibility of more permanent employment. Unemployed railway workers of the Košice-Bohumín Railway even worked here, and there was also a camp for unemployed youth. About 7,000 workers worked on the construction site, up to 9,700 men and women during the period of greatest intensity of work. About 59% of them were local, 35% from other parts of Slovakia, and the rest from other regions of the country. The workers lived in barrack camps where the Ministry of Social Welfare supervised the younger ones.

The construction of the railway also claimed lives, although the number of fatalities was relatively low compared to other constructions. A total of six workers lost their lives. One was suffocated by exhaust gases from the engines in the Telgárt Tunnel, two died while breaking stone in the quarries, two others in the Gelnický Tunnel, and one was run over by a construction railway truck.[5]

Under these immense difficulties and sacrifices, the constructions of the magnificent “Central Slovakian Transversal” project were completed, which are among the highlights of railway construction in our territory so far.

[5]More detailed information: Tunnels on the Červená Skala - Margecany line, Source:https://www.rail.sk/skhist/tunely/173.htm

6. CONCLUSION

Experience shows that railway heritage can cooperate with tourism very successfully and mutually beneficially. Sustainable tourism focuses on the careful use of local resources, which is why cooperation with railway heritage facilities is close to it.

It is in the interest of both partner parties and their participants to promote the knowledge of a respectful and gentle relationship with the environment, to present themselves to each other, and to further investigate and preserve all the examples of its historical implementation that have been preserved so far. They represent tangible information about civilisational progress. Making this preserved information available is one of the basic human rights in the sense of the UN Charter – it can become an inspiration for other desirable innovations.

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Fig. 3: Technological scientific and social values are represented by the 22m-high and 86m-long Telgártsky viaduct, which was the first articulated arch structure made of reinforced concrete on the ČSD lines. (Photo Source: Ing. Jozef Pilko)[cit.: 24.8.2022].
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TOWARDS A SUSTAINABLE APPROACH TO RAILWAY HERITAGE – THE ROLE OF THE COMMUNITY

Abstract. Railway heritage revitalisation is a complex process which necessarily involves numerous stakeholders. Community interest and awareness are principal for heritage preservation, as their attitudes are crucial factors for a successful project. The community often has ideas and positions on heritage identification, preservation and presentation, which are sometimes unachievable because the interests of other actors in the revitalisation process differ.

In addition to heritage preservation, participative revitalisation of railway sites should also revive the local economy. According to many authors, cultural tourism is the generator of railway heritage revitalisation and local community development.

The paper will discuss several community involvement models to valorise the role of the community in decision-making, human rights development, social transformations, cultural expression, and heritage management.

Analysing local strategies and community involvement models in the revitalisation of railway heritage during the preparation of Novi Sad for the European Capital of Culture, this paper will discuss a methodological framework for a sustainable approach to railway heritage, in line with the theme of the European Heritage Days 2022.

Keywords: railway heritage, community involvement, sustainability, revitalisation, Vojvodina

1. INTRODUCTION

1.1. Research framework

Given the inadequate status of the railway heritage in Vojvodina, where only six railway stations from the rich corpus of historic railways have been valued and protected, raising awareness of its values and importance has become urgent. Previous analyses of the railway heritage in Vojvodina were followed by identifying research problems and defining the initial hypothesis as criteria, goals and indicators established in the valorisation process will determine a methodological framework for a sustainable approach to railway heritage.

The role of the community in railway heritage regeneration, management and promotion is becoming increasingly important, and it is necessary to consider it critically to form an adequate methodology (Landorf 2011; Oevermann et al. 2016).

The railway heritage assets can be a resource for the local development of the community. Since state-led heritage redevelopment projects often emphasize economic growth at the expense of social well-being, it is necessary to integrate local community attitudes and needs from the beginning. The support of the local community is crucial for broad public acceptance of the heritage project (Landorf 2009; Waterton & Smith, 2010).

The development of motor traffic at the end of the 20th century intensively suppressed the railway, leaving many railway facilities without their original purpose. Most of them are unused and abandoned, but there are a few examples of reused sites for different purposes. However, community participation in the redevelopment process was limited.

This study will focus on the role of the community in railway heritage revitalisation in Novi Sad, the European Capital of Culture 2022, aiming to develop a sustainable approach to railways. Following the aim of the European Heritage Days to focus on the active role of communities in building a more sustainable and resilient future for European heritage in the context of environmental changes and related risks, this study aims to re-examine railway heritage within the concept of sustainability.

1.2. Terminological determinants

1.2.1. Railway heritage

Railway heritage includes sites, structures, complexes, areas and landscapes, related machinery, facilities, documents and knowledge, which provide evidence of previous or current rail traffic. The richness of the corpus of railway heritage is a consequence of its diversity. It consists of the remains of railway culture that are of historical, technological, social, architectural or scientific value. These remains include rails, tracks and the entire infrastructure, such as signalisation, bridges, tunnels, viaducts and aqueducts; railway stations and ancillary buildings, depots, workshops,

warehouses; places used for cultural and social activities related to the railway, such as housing, leisure or education.

Rail heritage reflects the interaction between the cultural and natural environment, as rail transport, whether ancient or modern, depends on natural sources of raw materials, energy and transportation networks. In addition to immovable and movable tangible assets, it also includes intangible dimensions, such as knowledge, skills and social and cultural legacy, that shaped the life of rail workers' communities.

Rails represent the first layer of railway heritage. Iron or steel tracks have constantly changed landscapes and cities from the 18th century to the present day, stretching across vast plains, following rivers, penetrating mountain foothills, and connecting inaccessible and sparsely populated areas with developed urban areas. There were no obstacles for railway builders. The development of engineering skills, new technologies and materials during the 19th century enabled them to overcome nature by imposing engineering structures, such as bridges, tunnels, viaducts and aqueducts.

A marshalling yard is a network of rail tracks, divided into several grids for receiving, sorting, forming and dispatching trains. Although the transformation of freight railway traffic has significantly reduced the need and importance of marshalling yards, they are still vital in transporting goods. We use them for setting up and removing wagons and sorting wagons separated at an intermediate station.

Fig.1: Marshalling yard, Novi Sad, 2021. Source: Antal Szilárd

The railway architectural heritage includes different building types and structures designed to meet more than travelling necessities, such as freight stations, locomotive and tram depots, maintenance workshops, watchtowers at level crossings and signal boxes. The railway station was a kind of gate of the city, where the population came into contact with the outside world, a welcoming place, gathering, farewell. Depending on the policy of railway companies and the importance of a particular station in the railway network, station facilities are built either as representative monumental buildings according to individual architectural projects or as standardized buildings according to typical projects. The complex of the central railway station often included business and administrative buildings, hotels, restaurants and post offices. With its position in the urban fabric, its primary function and all the accompanying facilities, the railway station has generated major urban transformations and defined a new urban order between the central and peripheral parts of the city. A unique type of railway heritage represents entire housing colonies for rail workers' family accommodation.

Besides locomotives, carriages, freight wagons, tramways, draisines and prototypes, movable railway heritage includes small objects, such as following: station clocks, the whistle of the train guard and the uniforms of the staff, the devices to print the tickets and the pliers to cut them, the typical station benches, the concrete closures and the evolution of traffic signals and gates at the level crossing.

Traditional skills and knowledge of special old techniques are railway heritage's most valuable intangible aspects. The successful functioning of the railway system required many skills and specific occupations, such as train driver, boilermaker, signalman, wagon connector, chef de service, chef de manoeuvre, station chief, ticket seller, train guard, conductor, receiver, day-to-day maintenance worker, porter.

1.2.2. Community

A community is a group of people sharing common characteristics or interests and perceiving itself as distinct in some respect from the larger society within which it exists. Such communities could distinguish in (Scheffler, 2017: 15):

- geographical community - people that live in the same area;

- cultural community - people that have similar cultural, religious, and ethnic backgrounds and characteristics;

- social community - people with similar interests, beliefs, attitudes and objectives.

Community involvement means participation in participative, engaging, collaborative or cooperative actions. It is possible to define three levels of public engagement: (Scheffler, 2017: 15)

- people *interested in* the railway heritage

Members of the geographical and cultural communities (residents, users, owners, tourists) who feel optimistic about the railway heritage and can/want to support it

- people *affected by* the railway heritage

Residents whose daily life is connected to the railway heritage, such as users or owners of the railway heritage

- people who *live within or close by* the railway heritage

Residents whose relationship to the railway heritage is unspecified and needs to be discovered.

As public participation in the urban planning and development processes becomes more and more relevant, it is essential to develop a mutual understanding of what community involvement in the redevelopment of the railway heritage is about and what it aims for.

2. COMMUNITY INVOLVEMENT

2.1. Objectives for community involvement in the railway site redevelopment

Community involvement in railway site redevelopment should ensure community benefit through social, cultural or economic connection with heritage.

The connected community shows a strong commitment and responsibility for reuse, maintenance and promotion actions.

As the needs and interests of different actors in railway site redevelopment, such as users, administrators, managers, owners and occupiers, are partly in conflict with each other, the process needs to be coordinated and balanced for a sustainable transformation in line with conservation requirements.

It leads to the following objectives and tasks that can be the framework for community involvement (Scheffler, 2017: 17).

2.1.1. Recognizing local needs and interests

A community should recognize and understand local needs and interests, which directly or indirectly affect the railway heritage and the area it is situated.

The role of the community is to coordinate these needs among different stakeholders, reduce conflicts and pressures, raise citizens' awareness and increase their willingness to become engaged.

Such participation leads to dialogue, negotiation and the creation of quality proposals for the regeneration and protection of railway heritage.

2.1.2. Linking recognized needs and interests

A community should link recognized local needs and interests with the railway heritage values and potential by providing a kind of benefit for itself. Community involvement should build up and strengthen the connection between railway heritage and contemporary life, linking them.

Communicating about the benefits, opportunities and railway heritage values would empower the community to develop activities that bring long-lasting benefits and adequate heritage preservation.

2.1.3. Strengthening abilities and capacities

Community abilities and capacities must strengthen to enable its contribution to the preservation, management and promotion of railway heritage. Community involvement should bottom up on sharing information, defining joint objectives and actions, and providing training about activities planning and implementation.

The creation of a *lobby group* composed of active participants in the community social life and experts from different fields, such as finance, law, management, conservation, architectural design and urban planning, should provide opportunities for community engagement and participation in decision-making processes.

2.2. Community involvement in heritage

Community involvement in heritage concentrates on a people-centred approach to heritage management.

A community can focus on building long-term local capacities, improving management abilities, developing local heritage sites, and distributing heritage benefits to itself. The involvement models differ in the manner of community engagement the in the heritage management process.

2.2.1. The Co-management model

The Co-management model (Reggers, 2013), as a people-centred approach, is highly applied in specific and rare communities, to work in partnership with native groups, combining traditional knowledge with contemporary heritage management. The local community is involved as a co-management board or advisory committee. The Co-management model is based on joint power, institutions, social capital, learning, problem-solving, and governance (Armitage, 2009: 97).

2.2.2. The Living heritage model

The Living heritage model is based on the concept of continuity: continuity of a heritage site's original function; continuity of community connections; continuity of

cultural expressions (both tangible and intangible); continuity of care (through traditional or established means).

The model can be summarized as follows (Wijesuriya & Court, 2015):

- It highlights continuity which invariably brings change as the primary driver for the definition, conservation and management of heritage.

- It facilitates a community-led (bottom-up), interactive approach to conservation and management by: emphasizing a core community and their values (recognizing the hierarchy of values and stakeholders); recognizing change as inevitable; using traditional or established management systems (in terms of knowledge, practices & materials) for the long-term care of heritage and bring reciprocal benefits.

- Long-term sustainability in safeguarding heritage with an empowered community engaged in decisions made for them and their heritage.

2.2.3. The *COBA* model

The Communication Model of Built Heritage Assets (COBA) aims to support a more professional heritage communication and more efficient use of existing resources to stimulate the identification of the community with the heritage (Hauer & Ripp, 2017: 22). On several levels, it should provide social identification and more active citizens' involvement, improve visitors' experiences, and finally, at the expert level, enable communication about heritage values and potentials, as well as making appropriate decisions. The COBA model focus on adapting heritage interpretation to the contemporary understanding of 'communication' and identification.

3. SUSTAINABLE APPROACH TO RAILWAY HERITAGE

3.1. Railway areas redevelopment process

Since the second half of the 20th century, when the traditional mode of transport gradually replaced the motor one, numerous urban railway areas were partly used or abandoned. Developed societies with a rich industrial past saw abandoned sites not as obstacles to be removed but as opportunities for development.

Crucial issues of railway areas redevelopment are defined: models of governance, the relationship between the plan and the project, sources of financing, and the revitalisation goals.

3.1.1. Model of governance - Recognizing the potential and initiating

Even examples of railway area revitalisation show different governance models, as the most successful in European practice could be featured a model of interactive planning, in which the public authority is a coordinator in a pluralist decision-

making process. (Preite, 2012: 103) Although it is not the lead player, the local authority has a fundamental importance in the regeneration process because of the capability to recognize the potential of a disused location, initiate the transformation and benefit from it. (Taggart, 2000: 75)

However, ordinary public administrations often could be replaced by different agencies whose role is the coordination of developers to achieve the best solution for site revitalisation. Leading several projects in the UK since 1996, "Regeneration through heritage" supported public and private partnerships to develop sustainable proposals for the regeneration of industrial heritage. The same model exists in Germany, except that in this case agency was not private but public.

3.1.2. Plan vs project - Analysis of current situation and development of ideas

In urban revitalisation schemes relationship between the plan and the project is more flexible than in traditional planning schemes because the project often comes before. In an initial revitalisation phase, abandoned or partly used railway areas often seem unattractive and discouraging to the governing and administration bodies, potential financiers and other stakeholders. The practice has shown that the role of flagship projects is crucial in overcoming such doubt. (Preite, 2012: 105)

Furthermore, according to the British experience, establishing a steering group, which should include representatives of all the principal local interests and experts with financial, legal, business and conservation skills, is the most effective model. After analysis of the current situation, developed ideas should demonstrate that railway heritage revitalisation is not only feasible but also will be profitable (Taggart, 2000: 76).

Flagship projects, implemented before the general plan, encourage its formulation after the revitalisation and give multiplier or leverage effects as consequences.

3.1.3. Sources of financing - Different models

From the 1990s, urban regeneration programs in Europe got funding from different EU sources, both structural and regional development funds. However, many projects were funded individually or jointly by the public or private sector.

British steering groups find that such project implementation needs more than one formal mechanism. Their experience shows that a not-for-profit umbrella trust establishment consisting of private and public members can be an ideal funding model.

3.1.4. Conservation vs transformation - Challenges and risks

Sustainable revitalisation means achieving economic development, creating new jobs, reusing abandoned areas, generating a prosperous community, and producing an innovative and creative society. In this context, the former railway areas must be revitalized, while abandoned buildings are reused. From the conservationists'

perspective, preserving the authenticity of built heritage which has lost its original function is the greatest challenge. Therefore, its future is challenged by the alignment of conservation principles and modern social requirements.

In the international context, the issue of reuse has been discussed from the ethical point of view concerning minimum intervention, respect of the existing purpose and the compatibility of functions. From the aesthetic point of view, in terms of integrity, character and harmony. (Worthing & Bond, 2008) Thus, an old industrial building will be changed to a minimum degree in formal qualitative terms if the design of its conversion is driven by the concept of aesthetic integrity in a rhetorical, strategic and stylistic sense. (Roter-Blagojević & Draganić, 2016: 150)

3.2. Railway heritage and tourism

In recent years heritage tourism has become one of the key partners in the management of railway areas (Xie, 2015: 2). As a part of the broader field of heritage tourism, railway heritage tourism refers to the development of touristic activities on man-made sites, buildings and landscapes that originated with industrial processes of periods (Edwards & Llurdes i Coit, 1996: 342). Former or still operating industrial facilities (e.g. factories, mills, power stations) and related buildings are becoming attractions.

As railway tourism is related to deindustrialization, it is not only a new form of tourism but also a tool for enhancing the quality of life and economic development (Tufegdžić, Silađi, 2010: 152). The dual role of tourism should reflect in the representation of wealth sources and community development, on the one hand, and supporting collective memory and social identification, on the other hand.

Railway heritage should evaluate by the matrix of commemorative and contemporary values, considering its specific tangible and intangible values (Draganić, 2019). Tangible assets comprise the built environment while intangible present the cultural value of heritage sites (Firth, 2011: 48). By allowing us to read history, heritage is not history by itself! It should translate values and historical facts into memory, which is not easy in the case of railway heritage. Challenges in planning heritage tourism lie in the proper reading and interpretation of history, preservation of cultural expression, physical characteristics of the monument and its environment, as well as in the protection of visual and symbolic links between buildings and landscape (Драганић et al., 2017: 27)

It is essential to harmonize conservation principles with contemporary social needs to prevent history, culture and physical structure commodification. The success of the former railway area's development lies in regeneration based on board principles of conservation, building incrementally on surviving resources in terms of building, landscape, and people (Stratton, 2000: 8).

Rail tourism aims to provide visitors with "a heritage that they can interact with, one that blends with the present" (Lowenthal, 1999: 410). Furthermore, tourist

sites that do not focus on railway heritage per se, but reuse former railway buildings to make a kind of attraction, are rising to prominence. One of the biggest challenges in including abandoned buildings in tourism is selecting appropriate new use.

Inadequate construction and planning actions in the vicinity of historical monuments, and the commercialization of the intangible heritage, lead to the decontextualization of culture or the loss of authenticity of cultural expressions. The perception of the cultural context of a particular place differs from touristic and citizens' points of view. While foreigners are searching for a tourist attraction, the local community finds symbols of identity in its heritage.

According to TICCIH (2003), public interest and affection for the railway heritage and appreciation of its values are the surest ways to conserve it. Public authorities should actively explain the meaning and values of railway locations by providing sustainable access to main sites and promoting tourism in such areas. Tourism has a crucial role in railway heritage redevelopment in that it necessitates efficient preservation (Xie, 2015) and creates new economic activities resulting in regeneration.

3.3. Railway heritage routes

Diverse railway heritage is present in the daily life of European citizens, although sometimes we are not even aware of the extent to which. With the development of mobility, until recently, modern transport infrastructure has become a historical heritage, simultaneously creating a quality environment for our lives and inspiring innovations and discoveries. Old rails and narrow gauge railways are a thing of the past, unlike operating railway stations, bridges and tunnels serving us, if not for their original purpose, then as industrial, architectural, historical or artistic monuments.

Old railways, locomotives and wagons are part of the rich tourist offer in many European cities. Railway heritage across Europe is mainly presented within the Railway Museum, as evidenced by the ERIH thematic route Transport, a subcategory Railway, which includes nine anchor points (museums), 13 Member Associations and over 170 different railway heritage sites.

Since 1999, ERIH has become the major information network for tourists interested in European industrial heritage. The railway route is an opportunity to make railway traffic and heritage accessible and open to the general public by promoting its values, sharing and learning about its diversity. The most attractive points of the cultural route are open-air museums, such as the Beamish Open-Air Museum in Northern England. This interactive railway site presents the social, economic, urban and industrial stories through the reconstruction of everyday life from the 19th century and the promotion of recognizable practices of the railway past and tradition.

Participation in the ERIH network opens up great opportunities for acquiring and disseminating knowledge about the European railway heritage by merging joint initiatives, attracting new stakeholders to the site, making sites internationally

recognizable, informing the public about site activities, and strengthening understanding of the railway heritage and its importance. The topic of railway heritage is already well represented in the Western European market. However, the problem is that individual sites, especially in less developed environments, are often poorly or not perceived at all. The networking strategy in thematic railway sites connecting to cultural routes is efficient in public awareness-raising and cultural tourism development.

Fig. 2: Beamish Open-Air Museum. Source: Mike Peel

4. RAILWAY HERITAGE OF NOVI SAD

4.1. Historical background

The realization of the idea of integrating Novi Sad into the railway network of the Habsburg Monarchy dates back to 1836, when the first Hungarian law on railways passed. In 1848 some decisions of this law changed, and Count Széchenyi István presented his visions on the development of the railway in Hungary. After the revolution, during absolutism, the Count's proposal was reinterpreted. In addition to the official ones, the citizens of Novi Sad also had their operations for the railway network. During the 1870s, they agreed with several construction companies and wanted to realize the connection to the network at their own expense, but they failed to raise the necessary funds. (Keller, 1992)

In 1880 Serbia concluded a railway agreement with Hungary, which was accepted by the assembly and published on May 31 1881. (*Magyar Vasúti Évkönyv*, 1882) In the same year, the construction of the Budapest-Subotica-Novi Sad-Zemun railway began. The new railway connecting Novi Sad to Budapest via Subotica was solemnly inaugurated on March 5, 1883. The citizens of Novi Sad managed to enter the bloodstream of the Monarchy five decades after their first attempt.

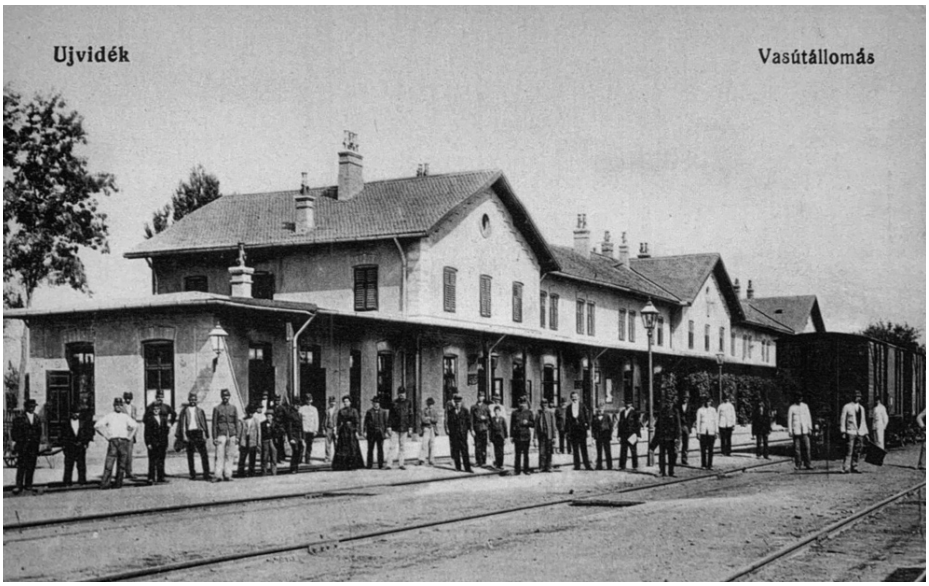

Fig. 3: The first railway station in Novi Sad, 1900. Source: Zempléni Múzeum, Szerencs

By the beginning of the 20th century, Novi Sad became a vital railway junction in southern Hungary. The first railway station in Novi Sad became overloaded due to a constant increase in passenger and freight rail traffic. It was decided to move the freight train station and warehouses to the western part of the city because it was no longer possible to efficiently organize mixed passenger and freight traffic and host many locomotives and freight wagons. Novi Sad had five railway stations, two loading/unloading terminals, and wagon and locomotive maintenance workshops. The stations were strategically located and connected by railway.

However, following a more intense development during the interwar period, the railroads became an obstacle to urban development, especially concerning the expansion toward the Danube River shore.

The Second World War represented a turning point in the development of the Novi Sad rail network since the destruction of both bridges across the Danube temporarily cut off the city from the southern parts of the country.

The 1950 Urban General Plan of Novi Sad envisaged radical interventions in the urban matrix of the city, including the transformation of railway traffic. The transport network reorganization and railway traffic transformation were the most significant undertakings. In 1954, the new Novi Sad railway junction plan was approved, followed by the new urban plan adopted in 1957. It envisaged the construction of a bridge across the Danube. This innovative engineering project was completed on October 23, 1961, according to the plan by the architect Branko Žeželj. (Попов, 1964) It created the conditions for a new passenger railway station construction, positioned at the endpoint of the newly built boulevard, the first major city road, on the undeveloped northern outskirts of the city. Starting from the sandy coastal terrain, the new traffic artery in its central part cut through the existing urban centre going further north, between the yards of family houses to the grazing fields. A new station was built in 1962-63. The positioning at the start of the boulevard significantly influenced the station's architecture and symbolic meaning. Generating the gradual formation of a new architectural framework of the boulevard, the station lonely defied the traditional buildings in its surroundings for several years, announcing a new modern era.

4.2. Novi Sad Railway Station

An invitational competition for the conceptual urban-architectural solution of the railway passenger and bus station in Novi Sad got announced in 1960. Since none of the competition solutions met the criteria, the task was entrusted to the project bureau “Arhitekt” from Novi Sad, and Imre Farkas was appointed chief designer. (Project company “Arhitekt”, 1962) In addition to Imre Farkaš, his associate Milan Matović also deserves the credits for the project's development. (Mitrović, 2010) The realization of the project never took place because, in the meantime, investors' requirements have changed considerably, primarily in terms of functionality. Competition criteria merged with expert suggestions regarding railway modernization helped design a modern railway station in a lively creative atmosphere. On June 4th 1961, the newspaper Dnevnik reported on the completion of the project (М. Г., 1961).

The building was finished in record time with a modest construction technique and at significantly lower costs than expected. Construction began in mid-1962 by preparing the terrain, which got raised four meters, while the realization of the station itself started in the spring of 1963 (Konstantinović, 2021). In addition to architects, the following people contributed most to designing and executing the project: civil engineers Draško Berisavljević and Lajoš Lajko, construction site supervisors Julka Majtan and Stevan Hadžić, construction site manager Teodor Ačanski and others. There were constantly about 160 workers on the construction site, mainly employees of the construction company “Neimar”. (Stojanović i Suria, 2014)

The construction took less than 18 months (Živan, 2016), and the railway station was ready for use seven days before the deadline defined by the new international timetable. The station was ceremoniously opened on May 31st 1964, while the first train left a few days before, on May 24th 1964. The station's opening

solved the decades-long problem - station and track capacities in Novi Sad. (Ђурановић, 2019)

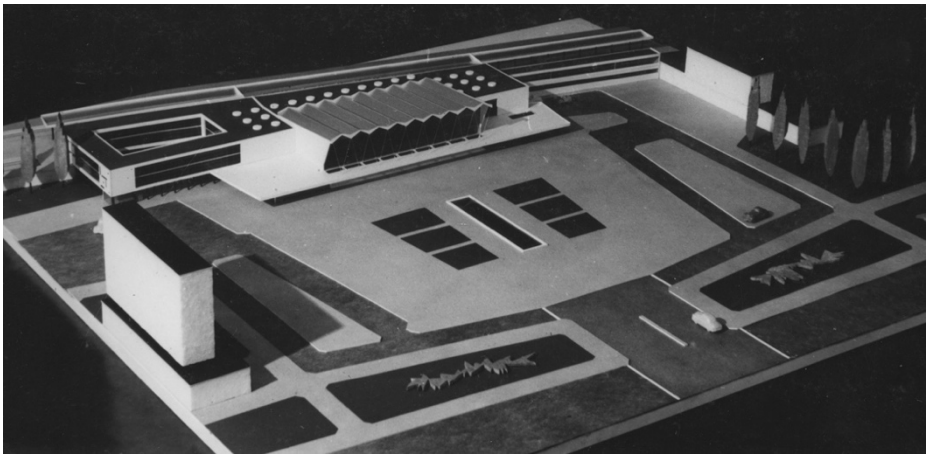

Fig. 4: Model of Novi Sad Railway Station, Imre Farkaš and Milan Matović, 1962. Source: MCAV

Fig. 5: Opening ceremony, May 31st 1964. Source: Railway Association of Vojvodina

In the 1960s, while designing the building, architects were mainly focused on solving functional, spatial and technical problems, putting aesthetics in the background.

(Mitrović, 2010) Nevertheless, the authors achieved harmonic functionality and modern visual expression in the central station building. However, contemporaries criticized the poor artistic quality of the side wings, whose design arose exclusively from functionality requirements. (Крстоношић, 1965)

The station is recognizable by the serrated roof of the central building, which symbolizes the roofs of typical Vojvodina houses and is the most dominant element of the railway station. The reinforced roof construction illustrates progress and modernization, and on the other hand, the shape connects it with traditional houses in this area. Historical elements are reinterpreted with modern construction techniques and materials. According to engineer Lajoš Lajko, the pouring of this roof was the biggest challenge during the construction because of the weather conditions in March (Stojanović and Suria, 2014).

The railway embankment represented the upper elevation of the terrain, which dictated the formation of the interior space as a two-story one. The building stretches linearly along the track for about 250 meters.

Fig. 6: Postcard from Novi Sad. Source: MCAV

The original functional scheme of the railway station is unknown. Nevertheless, we know the emphasis was placed on the simplicity of communication because the station's capacity was quite large - twenty thousand passengers. It is a testament to the ambition to establish railway traffic as the dominant means of transport. The quality of

the functional solution is visible in the carefully planned movements of incoming and outgoing passengers whose paths did not intersect. "Access to the tracks was achieved through underground passages, to achieve maximum passenger safety, but also to enable numerous passengers to access platforms and tracks in a short period, or to leave the station after getting off the train." (Ђурановић, 2019) Passengers' comfort while waiting for the train was also taken into account, evidenced by the opening of the restaurant and various shops only a few months after the first train's departure. (Крстоношић, 1965) In the early 1970s, about five thousand passengers dined at the restaurant every day. (Szabó, 1970) The station's contents were carefully selected to meet the needs of the then-modern man and set new social standards.

The functional scheme of the complex consists of four units intended for passengers and employees, specializing in particular programs: wing A, organized around the yard, consists of a ground floor and two floors with office space and an exit hall; wing B, defined by a sawtooth roof structure, consists of a central hall with two levels, a vestibule with counters on the ground floor, and a gallery with waiting rooms on the first floor at the level of the platform; wing C, functionally separated by floors, consists of a station restaurant at the level of the platform and warehouses for express consignments and office space on the ground floor; wing D, conceived as a separate functional unit, consists of premises for various services - mechanical, technical-car, police, ambulance, etc.

At the junction of wings A and B, a multifunctional hall is positioned, firstly designed for film screenings for waiting passengers. Its architectural values go beyond the concept of a working hall because that was not its original purpose. (Konstantinović, 2021) The hall is connected to the platforms through a spacious foyer and provides an area where passengers spend time waiting for their train in a pleasant, acoustic and comfortable environment.

Station's crucial value is the monumental hall without pillars, created with 17 (according to other sources 11) types of expertly selected stone and marble from different parts of the former Yugoslavia. Contemporaries characterized the various materials from the then Yugoslav construction industry as visually inconsistent. (Крстоношић, 1965) Although the opinions of modern architectural critics on the materialization of the station are different, it is indisputable that the use of marble gave the space a unique character: durability, stability, and strength - qualities that the station, as a carrier of new progressive socialist ideas, exuded.

The hall is decorated with a work from the Novi Sad painter Ljubiša Petrović, who won the first prize in the artistic design competition for the station hall. This endeavour was unique in Yugoslavian art of that time because of its size and connection with the background - marble slabs. The mosaic ceramic composition of giant dimensions consists of two parts associated with Vojvodina - the horizontal one symbolizes the plain, and the circular one the sun above it. (Кујунџић, 1963) Ljubiša Petrović also won the first prize in decorating the express restaurant. The theme of the monolithic composition in the restaurant is the railway, that is, the artistic experience of the railway at night. (Г. Д. и А., 1966)

After the opening of the station building, the expert public expressed satisfaction with various published newspaper articles:

“It is an extraordinary view through the glass surfaces of the hall to the future station square, boulevard and in the distance to Fruška Gora so that the station provides an unusual picture and inadvertently fulfils the mission of the propagandist of the capital of our province.” (Крстоношић, 1965)

“The main passenger staircase position offers the view of the city as soon as you enter the building from the platform.” (Krstonošić, 1965)

The builders who worked on the Novi Sad Railway Station have made a crucial step forward in conceptual, functional, constructive and urban terms. Despite not being valued, the railway station building, almost six decades later, is undoubtedly a representative example of post-war modernism. Thanks to its up-to-the-minute design, distinctly modernist composition and spatial capacities, this unique building became a recognizable urban landmark. The station was and still is the gate of the city! However, once the emblematic “architectural miracle” became a feeble silhouette of a glorious past. Despite representing a unique architectural heritage of the post-war period, the railway station is still waiting for official confirmation of its values to become part of the corpus of Yugoslav modernism.

4.3. Community involvement model

The development of new means of transport by the end of the 20th century made the railway lose its primacy. The Novi Sad railway station has maintained continuity, but in recent decades it has fallen into disrepair due to lack of maintenance. Outdated infrastructure, old, slow trains and uncertain timetables are the factors that have made passengers opt for bus instead of rail traffic. The few passengers who remained faithful to the old trains did not stay at the station or platforms longer than was necessary. They ran through the cold, dirty hall, whose only permanent residents were pigeons.

The Society of Architects of Novi Sad tried to attract the local community to valuable, unknown spaces inside the station, such as the cinema hall, by organizing various forums and exhibitions. In 2016, they organised the 20th Salon and Days of Architecture on the terrace of the former restaurant in the presence of participants, Jury members, guests and visitors. The opening ceremony took place on the terrace, which was not previously used for similar purposes, although it offers a unique view of the city. However, apart from the professional public with a particular affinity for architecture, the local community's response was poor.

In recent years, however, the EU has put the rail back into focus, recognizing its potential in the sustainability, innovation, safety and accessibility domains. Accordingly, in 2017, work began on the modernization and reconstruction of the Belgrade-Budapest railway. At the same time, Novi Sad received the title of European Capital of Culture, which further influenced the necessity of renovating the railway

station, which should receive numerous tourists in the coming years. All of the above contributed to the Novi Sad railway being in the public's focus again.

Fig. 7: 20th Salon and Days of Architecture, Novi Sad Railway Station, 2016. Source: DaNS

Fig. 8: Jean Monnet Module workshop, Novi Sad Railway Station, 2021. Source: Antal Szilárd

The professors from the Department of Architecture and Urbanism at the Faculty of Technical Sciences recognized the potential of the Novi Sad railway station. We carried out scientific research on its historical and contemporary values with the bachelor's and master's students for several years. The primary goal of the research was to revive certain areas of the railway station by introducing new contents, with the previously implemented valorization of the post-war modernist heritage and adequate presentation and affirmation of recognized values within the concept of reactivation. The historical research results were presented in the framework of the exhibitions and publications, while the students' conceptual projects were shown to the citizens and passengers as interactive presentations. All events were organized in situ, which contributed to raising the awareness of the local community about the station's potential.

In the European Year of Rail 2021, the need to develop knowledge of the importance of this form of transport became imperative. Within the association Platform for Cultural Studies CULTstore, we recognized the tourist potential of the railway heritage of Vojvodina, especially of the railway station in Novi Sad, the European Capital of Culture. We have proposed a joint project Railway Heritage for Sustainable Tourism Development – Rail4V4+V, aiming to strengthen the role of the railway in preserving Central European collective identity, especially through its heritage, both tangible and intangible, and to contribute to raising awareness of the role of railways for sustainable tourism, through unique branding and presentation of railway heritage, in situ and on a digital platform.

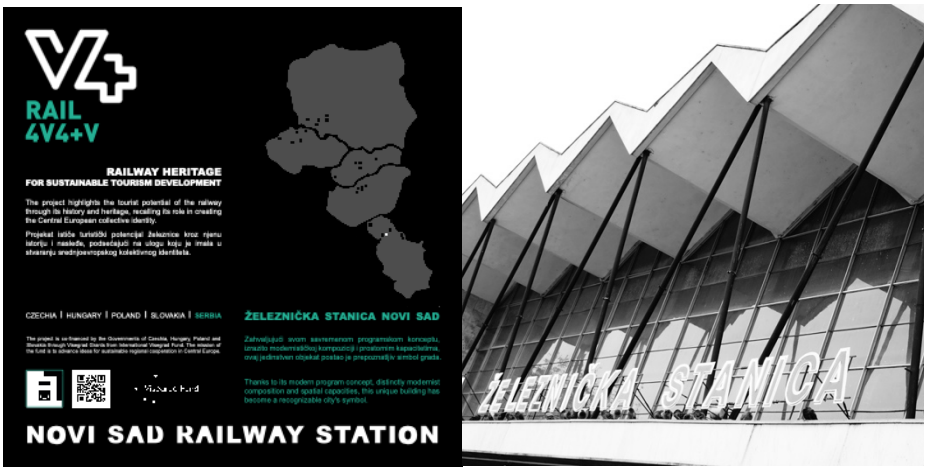

Fig. 9: RAIL4V4+V info board, Novi Sad Railway Station, 2022. Source: Anica Draganić

During the implementation of the project, we managed to: animate the professional public by educating them through online professional seminars; mark the station with an info board that provides insight into the virtual route of railway heritage

in Visegrad region and Vojvodina; organize an exhibition and workshops for preschoolers about the railway heritage

In the meantime, the building was partially renovated. The former restaurant was turned into an exhibition space with a permanent display of the railway development in the city. The sitting area in the lobby has the potential for various contents, as well as a nicely furnished waiting area for parents with children.

4.4. Social effects

The complex ownership-management structure, taught by previous initiatives of experts, organizations and individuals, became an active participant in organizing various cultural and educational events at the railway station.

On the eve of European Heritage Day 2022, together with the Railway Infrastructure of Serbia, we organized a phenomenal educational workshop for children from the city's preschool institutions. In addition to the Visegrad Fund, the workshop was also supported by the City Administration for Culture of the City of Novi Sad. During the one-day workshops, we turned the central station hall into an open educational centre which received dozens of children and their parents. We travelled virtually through the time and space of Europe and enjoyed the stories of the station chief, the train driver, historians, architects and travellers.

Fig. 10: European Heritage Days, Novi Sad Railway Station, 2022. Source: Szilágyi Maria

Fig. 11: European Heritage Days, Novi Sad Railway Station, 2022. Source: Szilágyi Maria

Fig. 12: European Heritage Days, Novi Sad Railway Station, 2022. Source: Szilágyi Maria

The expectations we had before the start of the RAIL4V4+V project were: advanced knowledge of the railway heritage as a driver of new models of sustainable tourism (real and virtual route), improved access to the railway heritage following today's needs and expectations of visitors, increased public interest in the common railway heritage in the Visegrad and Vojvodina regions, strengthened the sense of belonging to the Central European context by popularizing the mutual cultural significance of railway heritage.

Now we can say with certainty that, on the example of the Novi Sad, we have succeeded in achieving the previously set goals. People finally began to stay at the Novi Sad railway station and spend some time there, looking for some activity before or after the ride. The station has once again become a gathering place. It is again what its creator wanted it to be, what the station was in the 20th century - a propagandist of the city.

5. CONCLUSION

The main challenges to the successful revitalization of railway heritage are as follows:

- identification and valorization of the local community as a principal actor in the process of sustainable heritage management;
- enforcement of constructive dialogue methods between all stakeholders;
- encouraging mutual understanding and collaboration.

Therefore, cultural and heritage institutions should be geared toward a more participatory culture, introducing innovative approaches to heritage governance to increase the ownership of heritage-led development processes among citizens.

Community involvement in heritage management is a prerequisite for sustainable development. In addition, the involvement can open up democratic processes, improve the transparency of the government and build trust and open conversation between the city government and the communities. The communities can benefit by achieving economic, social and cultural opportunities (i.e. increased employment and business opportunities, spaces for leisure) and an increased emotional attachment to their heritage through a greater sense of ownership and socio-cultural affiliation, as well as stronger local identity.

Sustainable projects of operating or former railway areas revitalisation for cultural, social and educational purposes within the European Capital of Culture program demonstrate the importance of community involvement, underlining the COBA model as the most efficient.

ACKNOWLEDGEMENTS

Educational workshops organized within the project Railway Heritage for the Sustainable Development of Tourism RAIL4V4+V during European Heritage Day 2022 in Novi Sad, Sombor and Zrenjanin were supported by the Railway Infrastructure of Serbia, the City Administration for Culture of the City of Novi Sad and International Visegrad Fund.

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OF BOTTOM-UP ACTIVITIES AND PROFESSIONAL INTEREST IN RAILWAY HERITAGE

Abstract. Railway buildings and areas are crucial parts of industrial heritage. As technological and industrial landmarks, they have long been systematically mapped. The professional public recognises their urban, architectural and preservation value. Recently, the national media have become more interested in railway heritage, which has become a topical social issue in connection with the gradual renewal and development of railway infrastructure, with the railway construction fund experiencing another dramatic period. In addition to exemplary repairs and conversions, demolitions of historic buildings, including station buildings, receive extensive coverage. The demolition of the original Nymburk Central Station is also under consideration. A town whose appearance and importance was fundamentally transformed by the arrival of the railway at the end of the 19th century, this smaller agricultural town became one of the industrial centres of the Middle Elbe Region. The paper presents the current situation in Nymburk. It focuses on arguments for the preservation of the station building, issues surrounding its possible new use, the role of the professional public in promoting the protection of listed heritage and the possibilities for using research findings in design.

Keywords: Industrial heritage, Railway heritage, Adaptive reuse, Conversions, Environmental sustainability

1. IN THE JUBILEE YEAR, THE 'RAILWAY TOWN' ALLOWED THE DEMOLITION OF ITS RAILWAY STATION

Text In 2020, the railway celebrated 150 years of its existence in Nymburk (Plavec, 2010). The city owes the railway to modern development with significant benefits for the local population, economic prosperity and construction products, and architectural and urban design (Kuča, 2000). Progress and the modern age once travelled to the city on the tracks. In 2019, the Museum of Regional History in Nymburk commemorated the jubilee and prepared an extensive exhibition called From the History of the Railway in Nymburk. For the anniversary, the local publishing house released a popular science publication compiled by a regional writer and amateur historian (Řehounek, 2020).

But the end of the jubilee year brought very worrying news. In a survey, city officials turned to the public voting on one of the two framework variants of a future project for the Nymburk Central Station (Fig. 1) and its surrounding area (Fig. 2) reconstruction. The city announced that the majority opinion of the public would be binding and would be handed over to the state organization Railway Administration (Správa železnic – SŽ in Czech), which manages the station buildings as state property. Surprisingly, the survey offered a variant with the demolition of the historic station building. The public vote was not preceded by any construction research, detailed analysis or professional discussion. Thus, the fundamental steps of defining all the essential values of the station building and naming the deeper meanings it includes were omitted as well as the participation of the general and professional public. The survey rightly provoked criticism.

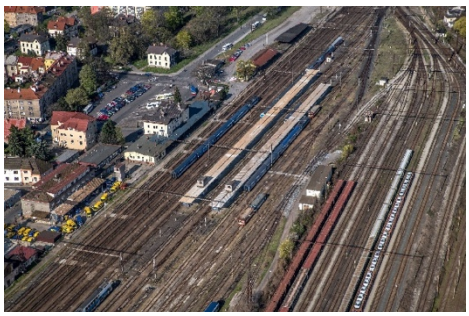

Fig. 1: Nymburk Central Station. Source: David Růžička

Fig. 2: Nymburk Central Station. Source: Jiří Jiroušek

Paradoxically, the survey results were announced at the beginning of 2021, which had been proclaimed the European Year of Rail. It is a symbolic gesture by the European Union to promote the use of trains as a safe and sustainable mode of transport. Rail is also seen as part of the world's cultural heritage. In addition, in the same year, the historical building of the Prague-Vysočany railway station was demolished. The same company built this railway station, and those in Nymburk and

Prague-Těšnov, pulled down in 1985. The demolition of this station is still perceived as a barbaric act of the then-political regime. The question arises as to why we behave similarly today.

2. INDUSTRIAL HERITAGE AND THE LEGACY OF THE RAILWAY

The fields of transport sciences and civil engineering have been interested in the railway heritage, especially in connection with the gradual renewal and development of railway infrastructure and rail transport. Railway line construction has significantly influenced both the landscape and surrounding settlements, and railway stations represent places of junctions of traffic arteries. Today's transport terminals operate connected with older railway constructions, and thus they can be found close to historical centres.

At the same time, railway constructions and areas attract attention as a significant part of the industrial heritage. As monuments of technology and industry, they have been systematically mapped for a long time. The professional public is dedicated to identifying their urban, architectural, monumental and cultural-historical values. At the beginning of the systematic interest in industrial heritage, the railway station buildings played an important role (Dvořáková, 2019). The Section for the Protection of Industrial Heritage, established at the National Technical Museum one year after the demolition of the Prague-Těšnov railway station (1986), headed by prof. Emil Hlaváček (Hlaváček, 1990). In 1998, the professional engineering organizations ČKAIT and ČSSI founded the College for Technical Monuments ČKAIT and ČSSI, chaired by Svatopluk Zídek. Since 2001, the Section and the College have been holding regular international meetings called the Biennial Vestiges of Industry (Fragner, 2005). The Biennial was co-organized by the Research Centre for Industrial Heritage (VCPD) under the leadership of Benjamin Fragner, which was established in 2002 at the Czech Technical University in Prague (CTU) (Vorlík, 2007). This institution has been a member of the International Committee for the Conservation of the Industrial Heritage - TICCIH (Douet, 2012). It has been operating at the Faculty of Architecture of the CTU since 2010 (Fragner, 2013). Besides, industrial heritage has been documented by the National Heritage Institute, where specialist Eva Dvořáková works. In 2014, the National Heritage Institute established the Methodical Centre of Industrial Heritage in Ostrava. From the pedagogical point of view, this topic is approached by the Department of Architecture of the Faculty of Civil Engineering at the CTU, specifically by Tomáš Šenberger. Lastly, industrial heritage is researched at the Faculty of Architecture, mainly at the Department of Theory and History of Architecture led by Matúš Dulla, and at the Department of Architectural Conservation headed by Václav Girsa.

In 1996, professional organizations of civil engineers ČKAIT and ČSSI organized the first international conference of Municipal Engineering, which had been taking place every year in Karlovy Vary and 2018 and 2019 in Cheb. In 2006, the conference topic was Railways and the City, and in 2016 the City and the Conversion of Industrial

Areas. Since 2019, ČKAIT and ČSSI have been organizing an international conference Engineering Problems of Monument Restoration in Teplá. As part of the International Biennial Vestiges of Industry, a workshop on the topic of the Žižkov freight railway station took place in 2011. In 2012, VCPD organized an exhibition and subsequently an international conference Prague Railway Stations Un/Used and launched a publication of the same title (Fragner, 2012). The same year, the non-profit organization Institute for Monuments and Culture organized the conference ProPamátky – Restoration and Use of the Railway Stations. In 2013, the National Heritage Institute established the Commission for the Protection of Monuments in the Field of Railway Transport, a specialized advisory board of the general directory. 7th conference Crossroads of Architecture in 2015 focused on railways, the city and architecture. In 2017, the Department of Architecture of the Faculty of Civil Engineering (CTU) organized the conference Railways – Specifics, Challenges and Limits of Protection and New Use of Railway Heritage, from which a comprehensive publication was subsequently created (Šenberger, 2018). A year later, the Railway Administration, the state organization managing the railway constructions, provided information about a plan for the station buildings' demolition and their replacement with modular building containers. An open letter from the representatives of the professional public addressed to the general director of the National Heritage Institute was written. The authors were the leading experts in the field Tomáš Šenberger, Karel Hájek and Benjamin Fragner. In 2020, the Railway Administration announced the next stages of railway modernization, including a list of stations intended for demolition. A wave of criticism from civil society and the professional public resulted in more media interest. In response to the modernization plan, Štěpán Mládek developed a bachelor thesis on the reuse of the station building, named Modern Trends in Railway Transport. The topic of railway construction heritage also resonates on social networks, where several thousand supporters have come together. Furthermore, various NGOs and museums taking care of specific buildings and railway areas have been active in this field. In 2000 the Railway Museum of the National Technical Museum, an important institution developing and protecting the legacy of the railway heritage, was founded.

The current state of the railway heritage can also be described by statistical data. So far, over 18,000 objects have been registered in the VCPD FA ČVUT database, of which around 1,500 are railway stations (Fragner, 2017). Another database edited by the National Heritage Institute includes 100 railway stations protected as cultural monuments by the state. In 2012, the state, through its railway organizations, owned 6,000 railway buildings, of which 1,000 were railway stations. The railway network of the Czech Republic is 9,000 km long and is the ten densest in Europe. In 2019, 186 million passengers were transported on our railways.

3. THE IMPACT OF THE RAILWAY ON MODERN NYMBURK

The following data present the railway heritage in Nymburk. The VCPD FA ČVUT database currently registers 70 buildings in Nymburk, out of which over 20 are railway-related, for instance: the Nymburk central station, the railway workshop (Fig. 4), former

officials’ and workers' colony (Fig. 6, 7, 8), marshalling yard (Fig. 3), the Nymburk-Město railway station, railway bridges (Fig. 5), warehouses (Fig. 10), guard house, waterworks, former railway school and a unique Vagónka street (Fig. 9) where old railway carriages are transformed in the homes. The railways surround the city from three sides – north, west and east and include eight railway bridges in the city and its immediate surroundings. To this day, the vestige of the railway in Nymburk is significant. Nevertheless, none of the railway buildings is protected by the state as a cultural monument.

Fig. 3: Nymburk, marshalling yard. Source: Jiří Jiroušek

Fig. 4: Nymburk, railway workshop. Source: Jiří Jiroušek

Fig. 5: Nymburk, railway bridge and brewery. Source: Jan Vlasák

Fig. 6: Nymburk, officials’ and workers' colony. Source: David Růžička

Fig. 7: Nymburk, officials’ and workers' colony. Source: David Růžička

Fig. 8: Nymburk, officials’ and workers' colony. Source: David Růžička

Fig. 9: Nymburk, Vagónka street. Source: David Růžička

Fig. 10: Nymburk, warehouse. Source: David Růžička

The beginnings of the railway in Nymburk are connected with the general development and support of transport routes in the Austria-Hungarian monarchy after the Prussian-Austrian war (1866). The preparatory committee for building the railway between Kolín and Mladá Boleslav was founded a year later in 1867. Soon it was merged with the Austrian Northwestern Railway company, which was designed and supported by the outstanding transport engineer Wilhelm Hellwag. Extensive land was purchased for the construction of the railway in the then Bobnice suburb in the north of Nymburk.

At the turn of the 1860s and 1870s, there was already a typology of railway buildings built in large numbers throughout Austria-Hungary. A neo-renaissance one-storey type II.B was chosen for the station building in Nymburk.

Its author was Karl Schlimp, another significant figure in Austrian railway architecture. The station building became operational in 1870 (Krejčiřík, 2005). The rapid development of the railway in the region (construction of lines to Prague and Děčín) and the decision to build the logistics and administrative centre of the Austrian Northwestern Railway in Nymburk radically increased the importance of the city as a railway junction. As early as 1873, the station building was increased by one floor and extended by two ground-floor wings with a transport and telegraph office on one side and a restaurant on the other, and a platform porch was added. At that time, a large area of officials' and workers' colonies was already being established in the immediate vicinity. No more significant interventions in the original form of the station building took place. At the turn of the century, the capacity of the station building was again insufficient. Repeated suggestions from the city caused the creation of a project for an extensive city extension. The project was approved in 1912, with the Viennese architect Emerich Richter as the author. However, the implementation of the extension was prevented by the First World War. The insufficient capacity of the Nymburk station building led to the political proposal to build a new modern station building and use the existing one for employees' accommodation.

In economic, urban and demographic terms, a major railway junction played a crucial role in urban development. The population of Nymburk alone almost tripled from 3,000 in the early 1870s to the outbreak of World War II. At the beginning of the

20th century, the number of people tied to the railway reached several thousand. A specific part of the city was the area of the railway workers' and officials' colony near the station.

In the interwar period, a new station building construction site was under preparation. These plans were interrupted due to administrative reasons, and a new project was subsequently created, envisaging the extension of the existing building towards the city, thus essentially returning to the pre-war design. In 1928, the Nymburk City Council also lobbied for a new station building project at the Ministry of Railways. Comparing the estimated costs of constructing a new building and extending the existing one led the ministry to choose a cheaper option - extension. This project was not implemented due to the economic crisis. From the middle of the 20th century, the surroundings of the station building were most affected by the adjacent park on the bus station and car park abolition at the end of the 1970s. There are two newly built platforms with underpasses and a luggage tunnel from 1972–1980.

4. IN THE NEW MILLENNIUM

At the end of the 19th and throughout the 20th centuries, efforts were repeatedly made to address the inadequate capacity of the station building, its insufficient maintenance and the unsatisfactory condition around Nymburk Central Station.

In 2005, the front and railway station area proposal was created at the city's request. In 2011, České dráhy, the national rail operator, commissioned a study for the Nymburk transport terminal reconstruction. In 2017, four parallel projects were developed. The Railway Administration was preparing for the modernization of the line passing through the city and the station building reconstruction. The city authorities created projects for a front station with a bus terminal and a new large car park west of the station. Based on a tender, the Railway Administration commissioned a study on the station building reconstruction. It was designed in a variant with the existing building and in a variant with a new building. This proposal called for the historic station building's demolition and replacement by a bus station, which would be inappropriately located directly next to the railway line. The city commissioned a project for an architectural and urban design of the front station and car park.

At the end of 2017, the Railway Administration supported a variant of the project for the station building replacement with a new and the demolition of the historical one, which it justified by the fact that it had no use for it. The council subsequently adopted a resolution stating that from the city's point of view, demolition was not desirable, with the building being a significant part of the development, defining the public area of the front station, separating the residential development from the railway tracks and acting as a visual dominant. The resolution states that the possibility of using the existing building has not been exhaustively examined as the possibility of its completion. In 2018, the historic station building owned by the Railway Administration was offered to the city for purchase for more than CZK 11 million. The

city refused the offer because it had no use for it either. However, it declared an effort to contribute to its preservation. The response was criticism from a section of the Nymburk public. At the beginning of 2019, a petition from residents for the historic station building rescue was supported by 800 signatories. The city reassured the public that new negotiations had begun with the Railway Administration, which brought about an agreement on the existing building preservation.

The situation was calmed by announcing the understanding of the city and the Railway Administration to preserve the historic building.

At the end of last year, on 26 November 2020, the city surprisingly published a survey, calling the general public to choose one of the two framework variants for the future reconstruction project of the station compound and its adjacent surroundings. A highly non-transparent method of voting via anonymous text messages was chosen. The whole event was not sufficiently communicated to the public. It was also launched at a time when, due to government measures in connection with the pandemic, it was not possible, for example, to organize a representative public debate. The survey was based on a conceptual study commissioned by the Railway Administration in 2020. The variant presented in the document is more advantageous, provided for the demolition of the historic building. This although the second variant inconspicuously provided probably the most important information that the Railway Administration had a new use for the existing building. The Administration would move the offices of the Communication and Security Technology Unit from another building in the city. It is not significant from an architectural or urban point of view and can be more easily adapted for other purposes and possibly sold.

The survey rightly provoked criticism, a reaction by the civil society, and subsequently, the professional public commented on it. Marek Ďurčanský and Jan Červinka initiated and wrote an open letter in support of the preservation of the historical building of the railway station in Nymburk at the beginning of December 2020 and asked for supporting significant authorities in the fields of conservation, architectural history, technical history and other scientific disciplines. Shortly, the open letter was supported by over 30 personalities, as well as professional organizations and research institutions, including VCPD FA ČVUT, the College for Technical Monuments ČKAIT & ČSSI, the Vestiges of Industry Platform, the Old Prague Club, the Society for History of Sciences and Technology and the Czech Association of Art Historians. An open letter reached to the Director General of the Railway Administration, Chairman of the Czech Chamber of Architects, President of the Czech National Committee ICOMOS – International Council for Monuments and Sites, Chairman of the Commission for the Protection of Monuments in the Field of Railway Transport of the National Heritage Institute, and the official architect of the city of Nymburk. The initiators presented the letter and the list of supporters at the December meeting of the city council. They intervened in the public debate about the historic station building and the survey form. Subsequently, the media also turned their attention to the situation.

Finally, the survey turned out to be favourable and convincing: out of 723 respondents, 544 spoke in favour of preserving the building and 179 in favour of

demolishing it. The city has committed itself to hand over a clear result to the Railway Administration, together with the opinion of the city council, which adopted a resolution favouring the modernization option associated with maintaining the existing station building. According to published information, the Railway Administration is planning an architectural competition. The city announced that it would continue to communicate with the Railway Administration and offer maximum cooperation, including all available documents for an architectural competition for the Nymburk railway station revitalization of the announcement while preserving the historic station building. The city informed that it is also in its interest that the architectural competition is prepared in the best possible way. Therefore, it will continue to negotiate with the Railway Administration and the professional public and will strive to ensure that the city has a representative on the jury that will evaluate the architectural designs. After the survey, the initiators of the open letter informed the city authorities of the professional evaluation absence. They recommended ensuring an erudite architectural history survey.

5. THE VALUES OF NYMBURK RAILWAY STATION AND THE SEARCH FOR RESPONSIBLE AND SUSTAINABLE SOLUTIONS

The open letter in response to the survey contributed to a discussion of the historical, urban, architectural, monumental and cultural-historical values of the Nymburk station building. The construction of the station building initiated the creation of a new urban district and outlined its basic structure. Because of its mass, it closed the residential development and separated it from the track and related railway operations. It naturally acts as a dominant feature of the immediate surroundings. When comparing the oldest images and the current state, it is clear that the mass of the station building itself has not undergone significant changes and major structural modifications in 150 years. It is an example of a standardized building II.B designed by Karl Schlimp. This type, preserved for example in Hlinsko, Nový Bydžov and Všetaty, was supplemented by another floor and a pair of side ground wings shortly after construction in Nymburk. Since then, only completions, demolitions and new buildings have been planned but never completed. The monumental value of the building stands out as the oldest preserved building of the once extensive railway area, which brought prosperity to Nymburk and, due to the urban and architectural significance of the colony, also fame. The building thus represents a crucial symbol of modern urban history. It can also be perceived in connection with the literary legacy of the writer Bohumil Hrabal, his relation to the city and the railway themes in his life and work. The significance of the railway in the town is recalled in the long tradition of the museum exposition on railway history in the Museum of National History in Nymburk, presented in the former Jewish synagogue. Could it not be partially installed in one of the authentic railway buildings and areas?

It should also be noted that not all of the possibilities for new users have been exhausted. A detailed analysis of needs and services in the city and the area near the

station should examine whether the station building could house: the city police, an information centre, the Nymburk beer shop and other regional brands, a supermarket, museum exhibits, a library branch, a coworking space, the primary art school or another educational institution, a model railway, the archive and deposit of the town or another office, etc. Some objects in the former colony, such as the medical facility in the former administrative building or the office of the railway organization in the former school, may serve as an inspiration. In the case of a new use of the station building, this would not be the first idea of its conversion. During the First World War, new building construction was considered, while the existing one was used to accommodate employees. The building of the Nymburk-Město railway station also includes a housing function. Benjamin Fragner's concept for successfully bringing the industrial heritage back to life includes three crucial moments: place, shape and program (Fragner, 2021). The place has its continuity, character and memory, dominants and experienced communication directions. The new feature brings the place to life. The shape enriches the environment with an authentic experience, a story of origin and development, and proof of technical solutions and ambitions of the builder. The shape covers the architectural intervention. The program means finding a new use. It is a prerequisite for sustainable development and is ideally tested in gradual steps. From the general principles of the approach to conversions, the capture of the characteristic atmosphere and the sensitivity of new interventions apply.

Looking back at recent events, it is clear that some steps in preparing for the revitalization of the station complex, including the station building, were erroneously omitted. Above all, it is the phase of research, documentation, detailed knowledge of the form and understanding of the various stages of development. This phase should be characterized by close cooperation with the professional public. Due to the station area and railway building's importance, adequate space should belong to documents such as the City Development Strategy, the Spatial Plan or the Spatial Analytical Data. At the same time, the vision of the Policy of Architecture and Building Culture of the Czech Republic (a document adopted at the governmental level in 2015), which is to improve the quality of the environment created by construction, should be taken into account. The transformation of unused buildings has developing potential for new activities in the area and the creation of new local centres. Related to this are the principles of sustainable adaptation and the pillars of sustainable development – environmental, social, and economic. Among the sustainable development goals, mention may be made in particular of creating inclusive, safe, resilient and sustainable cities (Objective 11), sustainable consumption and production (Objective 12) and building resilient infrastructure, promoting inclusive and sustainable industrialization and innovation (Objective 9).

As the Czech Chamber of Architects points out, demolishing historically and architecturally significant public buildings should always be the last option, based on an exhaustive professional debate and crucial, not only economical, reasons. It is short-sighted to remove valuable buildings only because they do not currently serve their original purpose and are not well maintained. It raises the questions of responsible

management and disposal of state-owned property and a responsible approach to the environment, with the construction industry producing over 60 per cent of all waste in our country.

If Nymburk still manages to go in the right direction in the form of a public architectural competition with a precise assignment, including a new use of the historic station building, it would be a positive example for other cities. Last but not least, it could also contribute to the cultivation of social and political culture in relation to the building of quality public architectural infrastructure from public budgets. The events surrounding the station building also raised the question of whether at least some of the remains of the Nymburk railway heritage should not obtain state-guaranteed monument protection.

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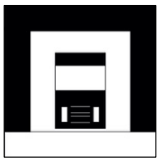
RAILWAY HERITAGE CATALOGUE

CZECH REPUBLIC

CHOMUTOV ROUNDHOUSES



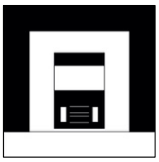
The large railway compound served as a passenger and freight railway station and a marshalling yard at the same time. It contained lines of three railway companies: The Ústí – Teplice line (ATE), used for transporting coal from Duchcov and Most, started operation on 8 October 1870, the Buštěhrad line (BEB) on 4 February 1871 and the Duchcov – Podmokly line (DBE) on 19 December 1872. The ATE and BEB companies built their common railway station and the station building (no. 594) was constructed by a Chomutov constructor Joseph Dausch in 1869–1870 according to the project of the BEB main civil engineer, Josef Chvála (1826–1872). With a length of 132 meters, it was one of the largest buildings in the company's network.

The compound also included technical facilities, with workshops and two roundhouses, which is an ensemble that can be found in just a few places in the Czech Republic: Břeclav, České Budějovice, Česká Třebová or Prague-Vršovice. The exact years of construction of the two roundhouses are unknown. The roundhouse located closer to the station building (lot no. 3946) contains 22 tracks 29 meters long and it was probably built around the First World War, with construction adjustments carried out in the 1960s. The locomotive shed (lot no. 3947/1), situated to the west, contains 24 tracks 23 meters long and it was most probably built between 1929 and 1930. It was damaged by bombing during the Second World War; a timber roof constructed at that time collapsed in the 1980s, with the new roofing to be installed in 1993–1994. In 1931–1933 a new boiler house was constructed among the roundhouses by the Hádl & Hájek construction enterprise from Roudnice nad Labem. However, it was demolished due to poor conditions in the autumn of 2021. The compound originally included three smaller depots; only one of them (no. 591), built in 1870, has been preserved.

Since 2006 the roundhouses have been rented by the National Technical Museum as a railway depositary for its collection of rolling stock. Six years later the museum purchased the whole complex. Visitors can find a hundred unique historical vehicles, from steam, diesel, and electric locomotives to saloon, passenger, and motor cars in an authentic setting. It is the largest railway stock collection to be found in the Czech Republic. In the upcoming years, the National Technical Museum plans a complete reconstruction of both roundhouses in order to meet the current standards for the preservation of museum objects.

Railroad depot of the National technical museum at Chomutov
lots nos. 3946, 3947/1, Chomutov, Czech Republic
50.456744N, 13.391115E
https://muzeum-chomutov.cz/en

KOŘENOV LOCOMOTIVE SHED



The Kořenov (Grünthal) railway station is situated on the railway connecting the towns of Tanvald – Kořenov – Harrachov. The original railway was constructed between 1900 and 1902 and it included rack railway sections, several tunnels, bridges, and the Kořenov railway station premises with a locomotive shed. This served as a terminal station of the Liberec – Jablonec – Tanvald (RGTE) rack railway in the Tanvald – Kořenov section, connecting the Jablonec and Liberec regions with coal basins located in Silesia.

Stretching along less than 7 kilometres, the railway bridges a height difference of 235 meters.

In Kořenov it joined the Prussian State Railway (KPEV) and continued as far as the town of Jelenia Góra (Hirchsberg); today, the Czech Railway line ends in the town of Harrachov. The Kořenov railway station compound consists of the main station building, a waterworks building, a turntable, a depot (no. 806), workshops, and former customs officers' quarters (no. 803).

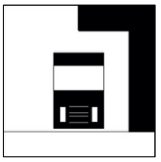
The locomotive depot was constructed in 1903, according to the plans for the Liberec – Jablonec – Tanvald railway and the Imperial Prussian Railways by architect Eduard Krammer. From 1945 the shed served for the purposes of the Czechoslovak State Railways until 1987 when the roof collapsed under the onslaught of snow and the building was left to fall into disrepair. Masonry tops were partially restored and project documentation was designed for the shed renovation and roofing construction. In 2015 a local group of enthusiasts managed to raise finance for the project called "The Rack Railway – Unique And Living Cultural Heritage Of The Jizera Mountains And The Giant Mountains" with the help of a grant provided by Iceland, Lichtenstein, and Norway.

The renovation works included new roofing, stone masonry rehabilitation, and a gate replica. Today the former locomotive shed serves as a depot housing operational historical cog locomotives, a repair workshop, and a museum collection of historical railway vehicles. In 2016 the shed building received the Patrimonium Pro Futuro award from the National Heritage Institute. Three years later, the Kořenov shed ranked second in the Karel Hubáček competition, the Liberec Region Building, in the "Civil and Industrial Building" category. The railway station building, waterworks building with a well, engine shed, turntable, scale, and gauge are listed as cultural heritage.

~ 806. Kořenov
468 49, Liberec Region, Czech Republic
50.7705711N, 15.3636464E


TABÁK
NOVINY
VÝCHOD

PODĚBRADY RAILWAY STATION



The ambition of the Austrian Northwestern Railway (ÖNWB) company was to connect Wienna and Berlin via Znojmo, Havlíčkův Brod, Kolín, Nymburk, Mladá Boleslav and Děčín. Most of this particular line is now off the main railway lines. The former side track, on the other hand, the so-called Polabská track – connecting Numburk, Lysá nad Labem, Mělník, Střekov (Ústí nad Labem) and Děčín – has become an important freight transport artery.

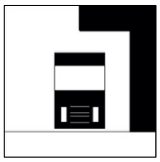
The original Poděbrady station building from 1870 corresponded with the Austrian Northwestern Railway standards (i.e. a IIIB category two-storey building). It was remodelled for residential purposes following the construction of a new dispatch building and has been preserved, including the secondary function, until today. In 1919 extensive construction of the Poděbrady spa was launched and the urban design included a new location for the dispatch building. The central part of the new spa town was a vast park square, reaching from the historical centre as far as the railway route. Because the first designs of the new building dating back to 1924 did not meet the expectations of the town officials, the ministry of railway commissioned the project to an architect Vojtěch Krch (1892–1966), working in the ministry's civil engineering department between 1919 and 1920. His project, as designed in 1928, was implemented in 1929–1931 by the Pardubice company of A. Kratochvíl and Ing. J. Veselý. Vojtěch Krch also designed the railway station buildings in Hněvice u Štětí (1919–1922), Česká Třebová (1920–1924), Štrba, Slovakia (1928) and Roudnice nad Labem (1930–1932) and the Czechoslovak State Railways directorate situated in Olomouc (1926).

The Poděbrady railway station building no. 210/17 consists of a reinforced concrete structure with brickwork. It is characterized by a sophisticated composition and an emphasis on the clarity of operation. The volumes of the individual sections correspond with the inner functional layout. The basis is a monumental two-storey terminal with original benches and signs. Connected to the east is a three-storey residential house no. 1455 with employee flats and offices in the ground floor, and a smaller restaurant building with a glass semi-circular apse to the west, situated on the axe of a longitudinal park square. Prominent architectural features are the horizontal strip windows of the terminal side naves and shelters above the entrances and the platform. The entrance to the hall is decorated with a granite relief of the Czechoslovak state emblem by Karel Štipl (1889–1972). A bronze statue, “Railway Electrification”, by Jan Kodet (1910–1974) is installed in the hall interior, and the windows were decorated by paintings by Rudolf Gajdoš (1908–1975) later. Vojtěch Krch's railway station in Poděbrady is an outstanding example of the Czechoslovak functionalism in architecture and it is one of the first functionalist railway stations in the country. It has also become an important building of the whole modern spa town architectural ensemble. The Poděbrady railway station building has been heritage protected since 2010.

Nám. T.G.Masaryka, 210/17, 290 01, Poděbrady, Czech Republic
50. 1493825N, 15.1234803E


PRAHA. Státní nádraží a Hybernská ulice.

MASARYK RAILWAY STATION



The concept and location of the first railway station in Prague and its connection to the newly constructed Northern State Railway (NStB), stretching from Olomouc to Dresden, were designed by the chief engineer of the state railways, Jan Perner (1815–1845). He divided the railway station into two parts: the inner part, containing five tracks for passenger and freight trains, and the outer, consisting of service buildings, a locomotive shed, car shed and workshops. Both parts were divided by a belt of city walls with six gates which were closed at night for security reasons. Construction works were launched in November 1844, with the first train arriving on 21 August 1845 and regular operations to follow on 1 September.

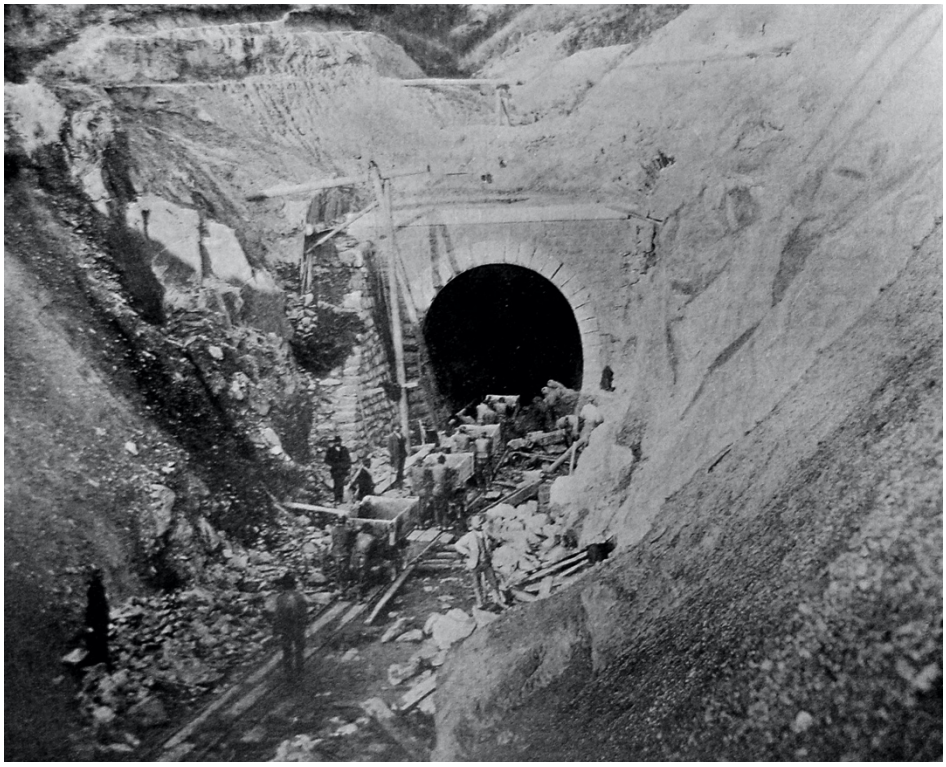
The architectural design of the terminal buildings in the late classical style was made by an Austrian railway architect Anton Jüngling (1798–1888), who also designed the service buildings in a more modest style. The construction itself was carried out by the companies of Adalbert Lanna (1805–1866) and the Klein brothers, which built the viaduct in the nearby Karlín district as well.

The viaduct was part of a NStB section between Prague and Dresden. It was constructed based on the project by Alois Negrelli (1799–1858) in 1846–1849 and, with the length of 1,120 metres, it was the longest bridge to be found in Central Europe until 1910. Because of Austria's rising national debt, the NStB was sold in 1855 to a consortium of French companies, the Austrian State Railway Company (StEG), which reconstructed the railway station, extended the tracks and modernized the facilities after the demolition of city walls. The works were carried out by the StEG construction director August de Serres-Wieczffinski (1841–1900). Subsequent reconstruction works – including the construction of a new glass departure hall and an extension of a corner building of a restaurant according to the original Jüngling's plans – were carried out between 1862 and 1868. In 1893–1894 the departure building was extended with a post office, reconstructed in 1922 by V. Nekvasil's construction company. The last most prominent architectural layers date back to 1938–1945 when the terminal building was redesigned in the late functionalist style based on the project by Antonín Parkman (1898–?). Although the terminal buildings – which were heritage protected yet falling into disrepair – were reconstructed in the 1990s, the whole railway station compound was considered for demolition, together with new construction works planned in the attractive area of the city centre.

The idea was finally averted and so all of the buildings have undergone restoration in several successive phases since 2012. In line with the current transformation of the whole area, the railway platforms will undergo full reconstruction in the upcoming years. In 2002 the workshops and locomotive shed premises, also heritage protected, were handed over to the National Technical Museum, preparing a new exposition project, the Railway Museum.

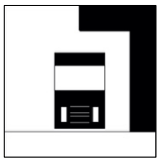
Havlíčkova, Hybernská, 1014, 2086, 1221, 110 00, Praha 1-Nové Město, Czech Republic

50.0877886N, 14.4331344E




Rynoltice

RYNOLTICE RAILWAY STATION



Railway connection between the towns of Česká Lípa and Liberec was constructed by the Ústecko-teplická dráha (ATE) company between 1897 and 1900 as the last – and technically most challenging – stage of the North Bohemian transverse track, transporting brown coal from the Ore Mountain region to Liberec. As short as 7 kilometres, the section between Křižany and Karlov contains five tunnels and four stone bridges, with the largest – 29.5 metres high and 200 metres long – viaduct which has become the landmark of the scenic valley called Kryštofovo údolí.

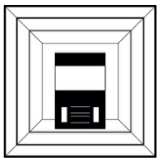
Because the longest ascent of the whole railway follows after Rynoltice, which needed to be climbed by freight trains with the help of an additional locomotive, the local station had to be supplemented with depot premises, including a now defunct turntable, a two-bay stone masonry locomotive shed (no. 206) and a waterworks building (no. 205), which has been converted into a residence. The usual wooden warehouse (no. 207), guard house by the eastern station gridiron (no. 204), a park layout of the surroundings and mechanical crossing gate, dating back to the 1940s, have also been preserved in the compound. The local dispatch building (no. 208) is one of five identical buildings to be found along this railway – the other four have been well preserved in Brniště, Zdislava, Křižany and Karlov pod Ještědem. Whereas their layout followed the standard plan for middle-sized dispatch buildings, used by the ATE company in the previous construction stage between the towns of Litoměřice and Česká Lípa, their facades – similarly to those of the largest dispatch buildings in this section as preserved in Mimoň, Jablonné v Podještědí and Liberec-Horní Růžodol – consist of rough masonry, stone window and door linings and timber gable sidings.

The origin of this solution illustrates perfectly the broader context of railway architecture: the rough masonry of railway buildings (among others) was brought into Austria-Hungary by an architect and journalist Hartwig Fischel (1861–1942), who collaborated with the design office of the Emperor Ferdinand Northern Railway company since 1888. Its engineer, Anton Dachler (1842–1923), designed the individual as well as standard plans of dispatch buildings situated along the railway stretching from Kojetín, Moravia and Bílsko, Silesia. These became so much popular with his supervisor, engineer Hermann Rosche (1852–1911), that he supported their facade layout even after his promotion to the position of the ATE construction director in 1897 when creating his "masterpiece": the railway no. 086 from Liberec to Česká Lípa as we know it today.

~ 204-208, Rynoltice
463 53, Liberec Region, Czech Republic
50.7871217N, 14.8266292E

HUNGARY

BIATORBÁGY VIADUCT



The viaducts in Biatorbágy cross the broad valley of Füzes stream at a height of 20-25 metres. The northern viaduct on the right-hand side (just above the roundabout) was built in 1883-1884 during the construction of the Budapest-Kelenföld-Újszőny (now Komárom) railway line.

The bridge had a 2x40.6 m span, a continuous truss structure resting on three supports made of wrought iron, manufactured by the Resica Iron Works. Bridge spans: 38.29 m + 38.12 m +2x12 m (stone vaults at the abutments). The bridge structure had statics problems from the beginning, and in 1903, the main girders had to be strengthened. In 1934, the entire bridge structure was replaced due to the increased load. For this purpose, the 2x40 m trusses - made of converter steel - of the dismantled viaduct in Barok were utilised.

The left (southern) viaduct was built at the same time as the second track of the Budapest - Hegyeshalom line, in 1898. The left viaduct consisted of 2x41.2 m trusses made of converter steel. The material of the bridge came from Diósgyőr Iron Works, the bridge structure was made and assembled by MÁVAG. The spans of the bridge are 39.70 m + 39.70 m + 2x 10.00 m +2 x 10.00 m (limestone vaults at the abutments).

Hungary's most famous terrorist attack is linked to the viaduct on the left-hand side. On 13 September 1931, at around 0:15 a.m., Szilveszter Matuska blew up a track on the Budapest side bridgehead under an express train travelling from Budapest to Vienna. The explosion caused the steam locomotive, the tender, the baggage car and 5 passenger cars to fall into the abyss. As a result of the accident 22 people were killed and many injured. The bridge structure suffered only minor damage, which was quickly repaired and traffic on the left-hand-side viaduct was able to resume three weeks later.

Following the electrification of the Budapest-Hegyeshalom railway line in 1931-1932, the structures of the Biatorbágy viaducts had to be strengthened. This was done in 1941. The bridges were strengthened by a rarely used method, using a parabolic arch placed under the main trusses. In 1944, towards the end of the Second World War, retreating German troops attempted to blow up the viaducts, but fortunately this did not happen due to the rapid advance of Soviet troops and the sacrifices of the bridge guards.

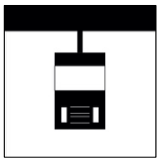
In the 1960s and 70s, the modernisation of the Budapest-Hegyeshalom railway line necessitated the construction of larger-radius railway curves (at least 900m), instead of the existing 300-400m-radius curves. This was economically feasible by marking out a new track, which led to the end of passenger traffic on the viaducts in 1977 followed by the cessation of the reduced freight traffic in 1979.

The right-hand-side viaduct is now used as a footbridge and lookout while the left-hand-side viaduct is closed.

Szabadság út / Ybl M. sétány, 2051, Biatorbágy, Hungary
47.471880N, 18.832907E


MARGIT

BUDA CASTLE FURNICULAR



Following the Lyon funicular, which was built for public transport in 1862, the Buda Castle Funicular, then called the Buda Hill Railway, was handed over in 1870. It was the second similar means of transport in the world. Based on the Lyon example, Ödön Széchenyi initiated its construction in order to facilitate the access to the ministries, offices and the Castle Theatre, which were operating in the Castle district. The construction plan prepared by Ödön Juraszek was submitted in February 1868, and after Ödön Széchenyi received a 40-year concession to operate the funicular, the construction started in July, 1868. At the lower end of the track, a large, imposing station was built, where the machinery was installed. According to the plan, the boarding platform could have been reached here in seven steps. For military reasons, the construction of an upper station building was not authorized by the authorities. Instead, a small pavilion was built with a reversing pulley. The two ascending and descending cars were permanently attached to the opposite ends of the haulage cable, which was looped over the pulley. Unloaded, the two cars were counterbalanced, and a 30-horsepower steam engine was used to move the cars and to overcome the excess passengers' weight.

From January 1869, Henrik Wohlfarth took over the supervision of the construction, and partially modified the construction plans. There was not much opportunity for significant modifications as some of the construction work had already been completed and the machines ordered were almost ready. Wohlfarth decreased the slope of the track from 32.5-degrees to 30 degrees, which resulted in lifting the boarding level from 1.5 metres to 7.5 metres. As a consequence, passengers had to climb approximately 40 stairs instead of 7 stairs. Thus, 15% of the 50m level difference between the stations still had to be done on foot. The steam engine and standard gauge (1435mm) railcars were manufactured in Vienna. The cars consisted of three staggered cabins, each with eight seats.

The traffic on the Buda Hill Railway started on March 2, 1870. At that time, the funicular was satisfying public transport needs and the new mode of transport soon became popular - in 1873, 1.5 million people and in 1943, 2.1 million people used the Buda Castle Funicular. Although its modification and electrification were planned several times, it operated essentially unchanged until 1944. In the Second World War, during the siege of Budapest, the funicular was damaged by a bomb, after which it was decided to dismantle it.

The restoration of the Funicular took place between 1984 and 1986. It was reconstructed at its original location, adapted to the monumental environment, its traditional appearance was retained, but in accordance with the technical requirements of the age. The drive of the funicular was electrified, and the machinery was installed at the upper terminal station. The boarding level of the lower terminal was sunk to the level of Clark Ádám square, so there is no need to climb stairs any longer. Passenger traffic on the funicular resumed on June 4, 1986, primarily for tourism purposes. The Buda Castle Funicular is one of the capital's most popular attractions with its unique panorama over the Danube. The view of the Danube embankments and the Buda Castle District with the Funicular have been a UNESCO World Heritage Site since 1987.

Clarck Ádám tér, 1031, Budapest, Hungary

47.49787467N, 19.0398097E

MILLENNIUM UNDERGROUND RAILWAY

The Budapest Public Works Council, established in 1870, elaborated the city's Master Development Plan, as well as its transport and infrastructure development concept. This led to the construction of the Avenue connecting the City Park with the Downtown area in 1876, which was named after Count Gyula Andrássy in 1885, who was an enthusiastic supporter of its creation. Originally, a horse-drawn railway and later, a tramway were planned for Andrássy út, but the Budapest Public Works Council refused to allow them for aesthetic reasons. This was how the idea of building an underground railway came to the fore, at the initiative of Mór Balázs, General Director of the Budapest Electric City Railway (BVVV). He proposed a similar solution to the London Underground, which was opened in 1863, but the Budapest line was designed to be electric rather than steam powered.

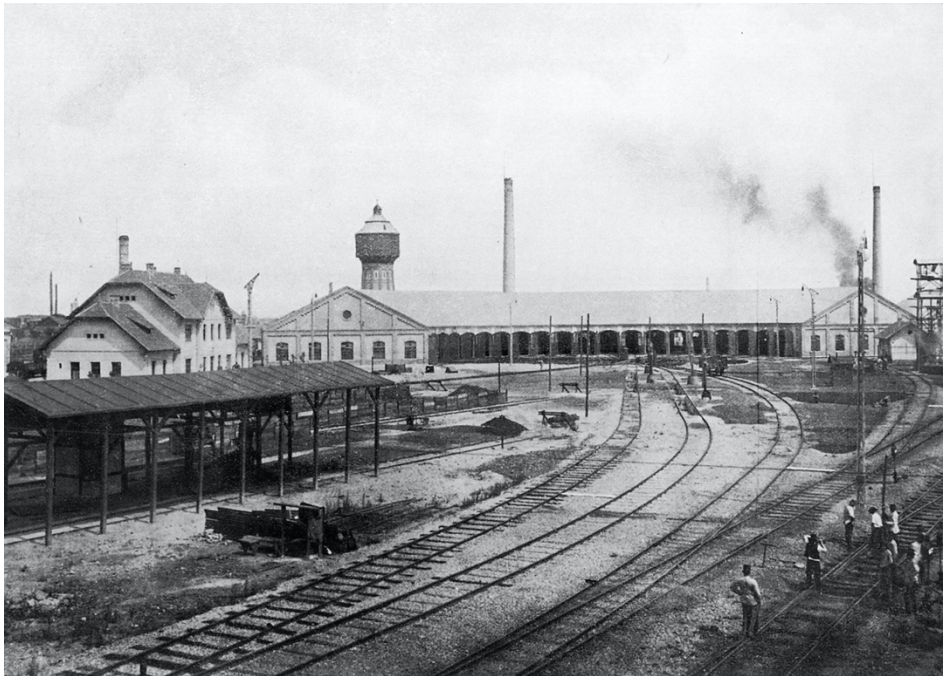
At the beginning of 1894, the BVVV, in collaboration with the rival Budapest Road Railway Company (BKVT), submitted a plan to build an underground railway, involving Siemens and Halske, pioneers in electric railway technology. The consortium was granted fast-track licences, with the proviso that the underground must be completed in time for the millennium celebrations. Construction work started in August 1894 and was completed in April 1896. The underground railway was officially opened on 2 May 1896, making Budapest Underground Railway the second in the world after London underground and the first in continental Europe. On 8 May, Franz Joseph, who was visiting Budapest for the opening of the Millennium Exhibition, travelled to the event in his royal underground carriage. After the visit, the name of the Budapest Underground Electric Railway was changed to Ferenc József Underground Electric Railway after the monarch. The total length of the line was 3.7 km, with nine underground and two surface stops. The stations were covered with Zsolnay tiles, and decorative hatches were built over them. The 6.0 m wide tunnel with a 2.85 m high ceiling housed twenty Schlick motor coaches.

The underground was operated and modernised by the BSzKRT from 1923, by the Budapest Tramway from 1947 and by the BKV from 1968. In 1972-73, a complete reconstruction was carried out. The entire line went underground, and the tracks were extended to Mexikói út. With this development, the line was extended to 4.4 km with 11 stops.

In 1995, in preparation for the Millecentenarium Anniversary, the eight historic stations were reconstructed in the style of 1896. In 2002, the Millennium Underground was added to the UNESCO World Heritage List as part of the Andrássy Avenue and its historic environment.

BKV's Underground Railway Museum in Deák Square commemorates the underground railway opened in 1896. The museum is located in an authentic setting, in the tunnel section of the Millennium Underground, which was decommissioned in the 1950s during the construction of the East-West Metro. It offers visitors a view and atmosphere reminiscent of the stations of yesteryear. The exhibition also includes a number of other artefacts, original documents, blueprints, maps, photographs, models and film footage, which will guide you through a century and a quarter of the history of the Millennium Underground Railway.

Millennium Underground Museum
Deák Ferenc tér aluljáró, 1052, Budapest, Hungary
47.497505N, 19.055010E
https://www.bkv.hu/en/millennium_underground_museum




VIGYÁZZ!
A KORONGMEDENCE
1,5 m MÉLY

RAILWAY HISTORY PARK

The Railway History Park - Europe's first interactive railway park - opened on 14 July 2000 on the site of the North Depot.

The North Depot was built between 1909 and 1911 on a 70,000 m2 estate. From 1911, a 22-bay (semi-circular) and a 34-bay (three-quarter-shaped) roundhouse were operating on the site. Adjacent to both roundhouses, two 20-20 m diameter turntables were operating, and the premise encompassed all necessary service infrastructures (e.g. barracks, warehouses, offices, water tower, coal bunkers and sorters, ash transporters and workshops). The 53-meter-high water tower had a water tank of 1,000 cubic meters. The bottom of the tank mounts 29.55 m above the level of the tracks while the upper edge of the tank stretches 37.7 m above it.

The 34-bay roundhouse was the largest locomotive shed in Hungary; the two facilities together served 200 steam locomotives.

The smaller roundhouse was so badly damaged in World War II that it needed to be demolished, while the larger shed could continue to function in its original form.

From 1950, the Northern Depot was named after Kató Hámán, a communist activist, which name was used until the change of regime. With the modernization of MÁV's locomotive fleet, first the Swedish NOHAB diesel locomotives were stationed at the locomotive shed in the early 1960s, and then the V43 series electric locomotives at the end of the 1960s.

The site had 850 employees in the mid-1980s, and serviced 100-110 electric, diesel and steam locomotives. With the decline of steam locomotives, the depot increasingly played a repair and maintenance role, until its closure in 1997.

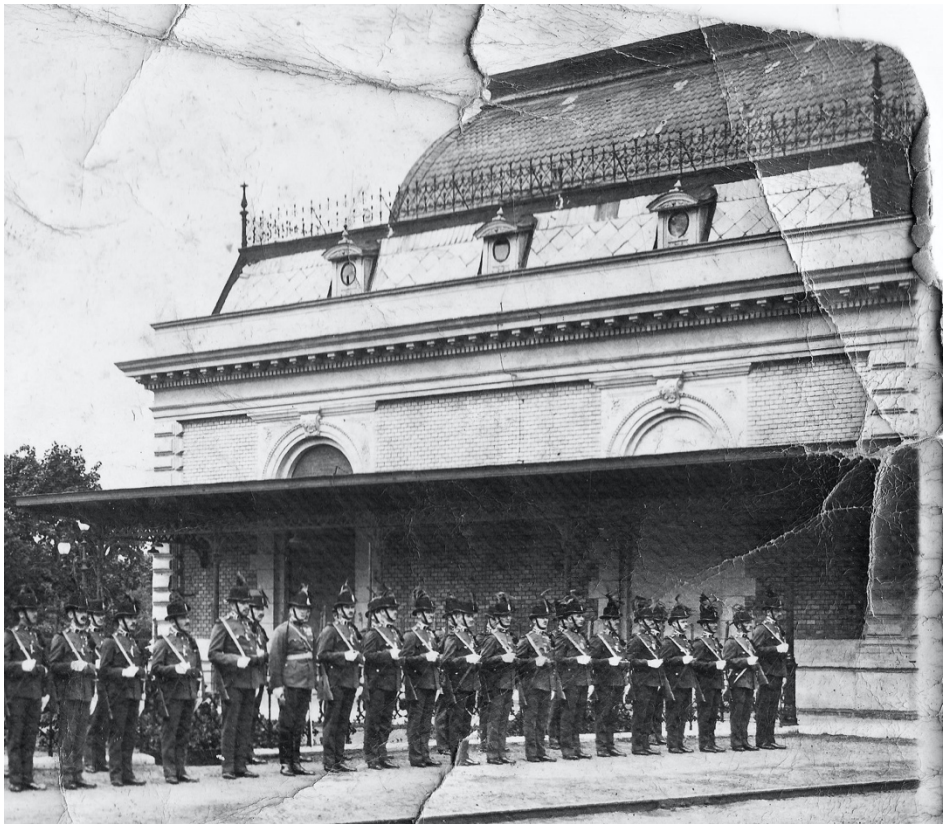
The Railway History Park, which opened in 2000, features more than 100 railway vehicles: locomotives, passenger and freight cars, rail cars, motor and hand carts, inspection cars, steam cranes, snow plows, snow blowers and other specialties. The Railway History Park is one of the largest open-air museums and the first interactive railway museum in Europe. Visitors can not only admire the old vehicles but can also try them out. They can travel on a locomotive, or in the Csajka rail car, drive a hand car, turn on a turntable, or sit on a horse-drawn railway. One of the favourite attractions of the park, which is expanding year by year, is the garden railway where passengers can ride through a 870 m long track towed by small locomotives. A special feature of the park is that not only the rolling stock but also the railway infrastructure (e.g. turntables, inspection pits, service facilities) can be viewed.

Hungarian Railway Museum

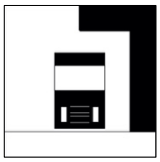
Tatai utca, 95, 1142, Budapest, Hungary

47.5423266N, 19.0955596E

https://vasuttortenetipark.hu/en/home/



ROYAL WAITING ROOM



The 68 km section of the Pest-Hatvan railway line was opened to traffic in April 1867. The Austro-Hungarian Compromise of 1867 was ratified by the restored Parliament of Hungary on 29 May 1867. Subsequently, on 8 June 1867, Emperor Franz Joseph and Empress Elisabeth were crowned King and Queen of Hungary.

As a coronation gift, the royal couple received the Gödöllő Castle (Grassalkovich Castle). Queen Elisabeth visited the castle regularly until her death in 1898, and was often accompanied by her husband, Franz Joseph.

Right from the start, the royal couple had problems waiting at the railway station, as the "little room used as a waiting room was small, stuffy and dirty". Thus, in 1868, a temporary Tyrolean style wooden pavilion was built for the royal couple, followed in 1882 by a new Neo-Renaissance style royal waiting room. Although some sources mention Miklós Ybl as the designer of the Royal Waiting Room, more recent art historical research suggests Gyula Rochlitz, the designer of the Keleti Railway Station, as the more likely designer.

Although the imposing Royal Waiting Room was a single-storey building, it was the same height as the two-storey railway station. On the city side of the Royal Waiting Room, there is a portico, a roof supported on four Ionic columns, where the King's carriage could wait. From the entrance, a short corridor leads to the large waiting room, called the Ducal Waiting Hall, which is dominated by the colour burgundy. The Ducal Waiting Hall opens onto the King and Queen's rooms. Franz Joseph's room was characterised by olive green wallpaper and an olive green upholstered suite, while Queen Elisabeth's (Sisi) room was painted pale yellow.

After the assassination of Queen Elisabeth in 1898 - when she was stabbed to death by an Italian anarchist Luigi Lucheni in Geneva - Franz Joseph rarely visited the Gödöllő Palace, the last time he was there was in 1911. Between the two world wars, the Royal Waiting Room was used by Regent Miklós Horthy.

Close to the end of World War II, the retreating German troops blew up the railway station building and set fire to the coal store in the cellar of the Royal Waiting Room. The Royal Waiting Room burnt down, with only the walls remaining intact. In 1945, a flat roof was added to the walls, and the building was used as a ticket office and waiting room for the public. In 2011, the Royal Waiting Room was reconstructed with funding from the Norway Grants, based on the original plans from 1882. The renovation won an ICOMOS award. The building is now a museum and a venue for weddings, conferences, and chamber concerts.

Gödöllői Királyi Váró

Állomás tér, 1, 2100, Gödöllő, Hungary

47.591807N, 19.358789E

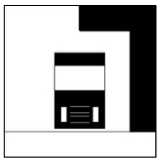
http://www.museum.hu/muzeum/1611/Godolloi_Kiralyi_Varo

POLAND


Königszelt i. Schl.
Bahnhof


JAWORZYNA ŚLĄSKA

JAWORZYNA ŚLĄSKA RAILWAY STATION

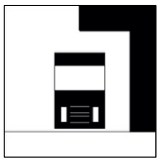


The station was built in the years 1842-1843 in the Rungbodenstill style. The construction of the station and the entire station infrastructure was related to the construction of the Wrocław - Wałbrzych railway line, the second oldest railway line in today's Poland. The station and the train station were built in the middle of nowhere, halfway between the two largest cities in the area - Świdnica and Strzegom. A characteristic element of the station were two octagonal towers located in the southern facade of the building (demolished around 1950). The station served its function until the beginning of the 21st century when it was taken out of service and the check-in function was taken over by the freight station building from 1942. The railway station in Jaworzyna Śląska is one of the three oldest preserved railway stations in Poland - apart from the stations in Oława and Wrocław from 1841/1842. Unprotected, it goes into degradation from the moment it is taken out of service.

1-ego Maja, 7, 58-140, Jaworzyna Śląska, Poland
50.912219N, 16.436804E


BRESLAU
Hauptbahnhof
Gleisanlage

MAIN RAILROAD STATION WROCŁAW



Wrocław Główny is the largest and most important passenger train station in the city of Wrocław, in southwestern Poland. Situated at the junction of several important routes, it is the largest railway station in the Lower Silesia Voivodeship, as well as in Poland in terms of the number of passengers serviced. The station was built in 1855–1857, as the starting point of the Oberschlesische Eisenbahn (Upper Silesian Railway), as well as the line from Breslau to Glogau via Posen. It replaced the earlier complex of the Oberschlesischer Bahnhof (Upper Silesian Railway Station, built 1841–1842). Its designer was the royal Prussian architect Wilhelm Grapow, and in the mid-19th century, it was located near the southern outskirts of the city, as the areas to the south had not yet been urbanized.The original concourse was located where the passenger hall now is and was adjacent to the station yard. When construction finished in the mid-19th century, the station only had one platform, but the platform hall was some 200 meters long, and it was regarded as one of the biggest structures of this kind in Europe. By the entrances were luggage lockers, telephone, and telegraph facilities. In the station complex were a restaurant and three waiting rooms (1st, 2nd, and 3rd class). There was also a special room and a separate hallway for VIPs.

In the late 19th century, when the government of the German Empire heavily invested in railway construction, the station was extended. Prices of real estate around the station grew, as the city began to develop southwards. In 1899, the construction of five new platforms began, four of them covered by a large roof. The number of passenger platforms within the station grew to 13 and all were elevated. The façade of the main hall was remodeled in 1899–1904. In 2010–2012 the station was extensively refurbished for the Euro 2012 championships.

Piłsudskiego, 105, 50-085, Wrocław, Poland
51.098333N, 17.037222E


TKt48
18
Ok1
325

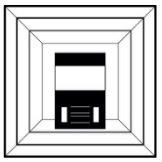
MUSEUM OF RAILWAY ON SILESIA

The locomotive shed was built in connection with the expansion of the railway station in Jaworzyna Śląska at the beginning of the 20th century. The facility was put into use in the summer of 1909. It served its function as a place of steam locomotive operation until the end of the 90s of the twentieth century. Then it was transformed into a state open-air museum of steam locomotives, which was finally closed in 2002. In 2004, it was handed over to the management of the Foundation, which launched the Railway Museum. It is the largest historic locomotive shed in Poland, preserved for museum purposes, with all the necessary and operational elements for servicing locomotives, including steam locomotives. The museum's collection houses over 140 railway vehicles - locomotives, wagons and other special rail vehicles, including a number of operational ones. The intention of the Foundation is to maintain the locomotive shed in the formula of a living museum of technology, i.e. a museum not only collecting technical monuments, but presenting them in motion, in accordance with their original purpose.

Museum of Railway on Silesia
Towarowa, 4, 58-140, Jaworzyna Śląska, Poland
50. 91564N, 16.436804E
https://muzeumkolejnictwa.pl/museum/


Talsperre bei Mauer
Viadukt.
No. 2.

RAILWAY BRIDGE OVER LAKE PILCHOWICKIE



The bridge was erected in the years 1905–1906 as part of the construction of the Jelenia Góra-Żagań line (Bóbr Valley Railway), which was built from 1902. The structure of the bridge is very similar to the bridge in Racławice Śląskie put into operation in 1904: it rests on two concrete and stone pillars, 85 m apart, on which the main part of the bridge rests, riveted, 135 m high parabolic steel truss structure. The total length of the bridge is 151.68 meters and its width is 4 meters.

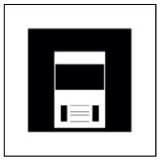
It is located about 40 m above the bottom of the reservoir, which makes it one of the highest bridges in the country. Initially, the bridge rose over a dry valley that was flooded with water after the opening of the dam in Pilchowice in 1912 the largest stone and concrete dam in Europe at that time, according to the design of prof. Otto Intze. Both investments were related because the dam was supposed to have anti-flood, energy, and tourist functions, and the railway was to provide access to it. The official opening of the bridge took place on November 16, 1912, in the presence of Emperor Wilhelm II. In 2020, after information about plans to use the bridge in the film Mission: Impossible 7, the Foundation undertook to prepare an application for entry in the register of monuments in the emergency regime. In August 2020, the bridge was legally protected by the authority's decision and saved from destruction.

58-500, Lower Silesia, Poland

50.965111N, 15.658167E


1909-1911

TUNNEL UNDER MAŁY WOLOWIEC

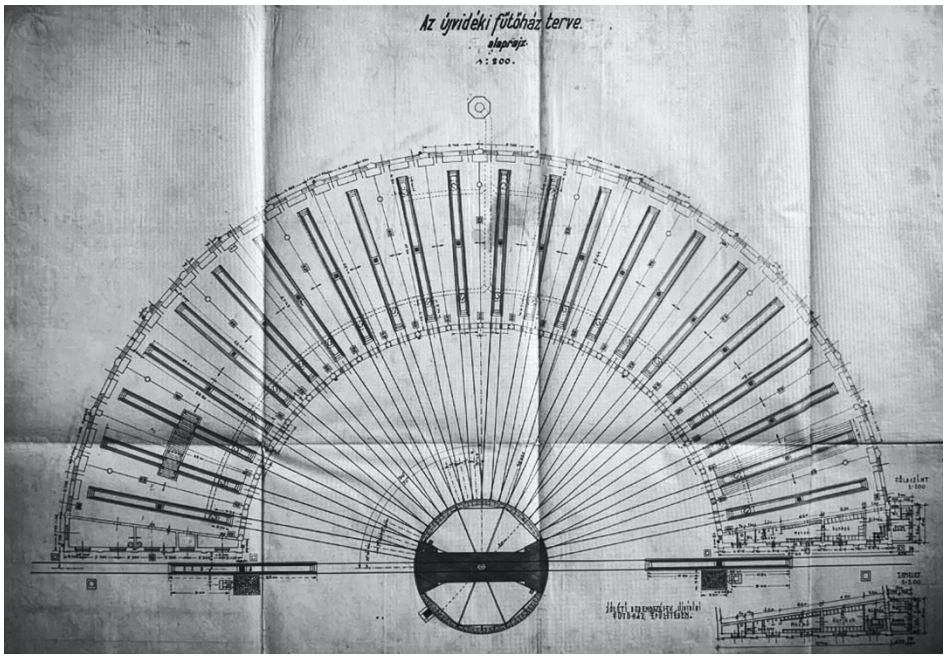


A double railway tunnel near Wałbrzych in the Dolnośląskie Voivodeship. The tunnels are located under the Mały Wołowiec mountain (720 m above sea level), in the south-eastern part of the Wałbrzyskie Mountains in the Black Mountains range between the towns of Wałbrzych and Jedlina-Zdrój on the railway route from Wałbrzych to Kłodzko. They are one of the longest tunnels in Poland. These are two parallel, straight, single-track, single-track railway tunnels drilled under Mały Wołowiec (720 m above sea level). The first 1560 m long tunnel was drilled in the years 1876–1879. The second, parallel one, with a record length of 1601 m, was dug in the years 1907–1912 The tunnel inlets are located at an altitude of 535 and 540 m above sea level, and their decline towards the south-east is 3.12 per mille. The maximum depth of the tunnels from the surface is 181 m. The tunnels are made of stone blocks, partly of clinker bricks, and sometimes with reinforced concrete elements. The portals of the inlets to the tunnel were finished in a stone casing made of wedges. The shape of the tunnels is elliptical, width 4.8 m, height 5.8 m. In the sides of the tunnels, several escape and inspection recesses of the tunnel drainage system were made. In order to remove the exhaust gases, a ventilation shaft (chimney) for ventilation was drilled in the rock in the rock, and between the parallel tunnels, five connecting points were made (of which three remain open to this day), which at the same time constitute emergency recesses. The decisive influence on the construction of the tunnel was the Franco-Prussian war, which showed the importance of the railway at that time. After completion, the original concepts for the construction of the Wałbrzych - Kłodzko railway line, one of the sections of the Silesian Mountain Railway, were returned to. One of the many obstacles on the route was the Mały Wołowiec massif (720 m above sea level) in Rybnik Ridge, separating the Wałbrzych Basin from the Noworudzki Depression. In order to cross it, it was decided to bore a single-track tunnel with a length of 1560 m in a brick lining. The first works began in the summer of 1876 and lasted until 1879. The first train officially passed through the tunnel on October 15, 1880, after all work on the single-track route had been completed. At the end of the 19th century, it was decided to build a second parallel track. In 1909, the construction of a second parallel tunnel, 1601 m long, with parameters similar to the previously made tunnel, began. The tunnel was put into operation in 1912. The tunnel, which was first put into operation, was shut down in the late 1990s.

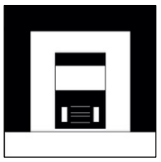
Kłodzka, 61, 58-330, Jedlina Zdrój, Poland

50.732691N, 16.317939E

SERBIA


Az újvidéki fűtőház terve.
alaprajz.
1:200.

MARSHALLING YARD WITH STOKEHOLD



At the beginning of the 20th century, the first railway station in Novi Sad became overburdened due to a constant increase in passenger and freight rail traffic. It was no longer possible to efficiently organize mixed passenger and freight traffic nor host numerous locomotives and freight wagons. Consequently, it was decided to move the freight train station and warehouses in the western part of the city. The project of the marshalling yard was approved in 1915. The Ministry of War in Vienna and the City of Novi Sad concluded the contract for the marshalling yard construction in 1916. Then, in 1918, the expropriation of land began. The project of the stokehold with depots dates back to 1924.

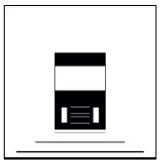
The most interesting building of the complex, architectonically speaking, is the stokehold, a centrally located building with a semi-circular plan. The building was progressively flanked over the years by different facilities necessary to ensure the efficient functioning of the marshalling yard.

The stokehold is characterized by a functional scheme, typical for this kind of railway facility built at the beginning of the 20th century across Europe. Twenty two railway tracks radially extend from the central point of the internal plateau, where the vehicle guidance mechanism is located, towards the stokehold. Each rail track passes through a two-winged metal gate and, crossing the canal, brings a vehicle into the building. A steel grating roof is the dominant structural assembly of the semi-circular hall interior. Shallow pilasters divide the outer wall surface into 22 segments, each of which contains two large windows. An interesting detail of this simple architecture is a jagged roof cornice made of brick.

When the new railway station became operative in 1964, the shunting station, which was quite far from the old railway station, kept its original purpose because it fits into the new railway network. It still performs the function of a shunting station today.

Railway colony, 21000, Novi Sad, Serbia
45.252962N, 19.810990E

BANAT NARROW-GUAGE RAILWAY



The plan for a narrow-gauge railway Veliki Bečkerek-Žombolj construction was devised in 1894, as evidenced by a document that originated in Veliki Beckerek after a tour taken along the route of the planned railway line. Due to the increasing economic importance of this area, the county's elite and aristocrats, Jene Ronai, prefect of Torontal County, one of the founders of the Torontal vicinal railways stock company, and Endre Čekonjić, the most influential landowner of the county, and member of the board of directors of the Torontal vicinal railways stock company supported construction.

Reception buildings of railway stations were uniform, as they were built according to a standardized central plan. Buildings of the vicinal railway were designed by re-processing the standardized buildings of Hungarian State Railways, based on the concept of the "growing house". Standardized buildings are classified into four categories, each containing the same central body and annexe. Accordingly, the ground plan area of the category-4 reception building was the same as that of the main block of the category-1 building. Extensions have been introduced along the side facades, perpendicular to the rails. Only category-4 buildings were ground floor buildings, while the other three categories were one-storey buildings. In some cases, the plans of Torontal vicinal railways have deviated from the predefined standard design. Emblematic details, characteristic of all buildings, were the oculus in the gable and stone imitations around the openings and at the corners.

In addition to the reception building, many other buildings of ancillary purpose have also been raised at railway stations: warehouses, workshops, water towers, wells, ovens, toilets, guardhouses, railwaymen flats, with almost every station containing a garden.

Local materials, like bricks, were used for reception buildings at stations. The decoration, mostly stone imitation, was made in plaster. Opposite to reception buildings, auxiliary buildings were often built of wood, although this material was not prevalent in this area.

Projects were made for every building erected along the railway, even for warehouses, ovens, wells and toilets. Certain recognizable principles have been applied to each building, such as symmetry, harmony and proportions of parts of the building.

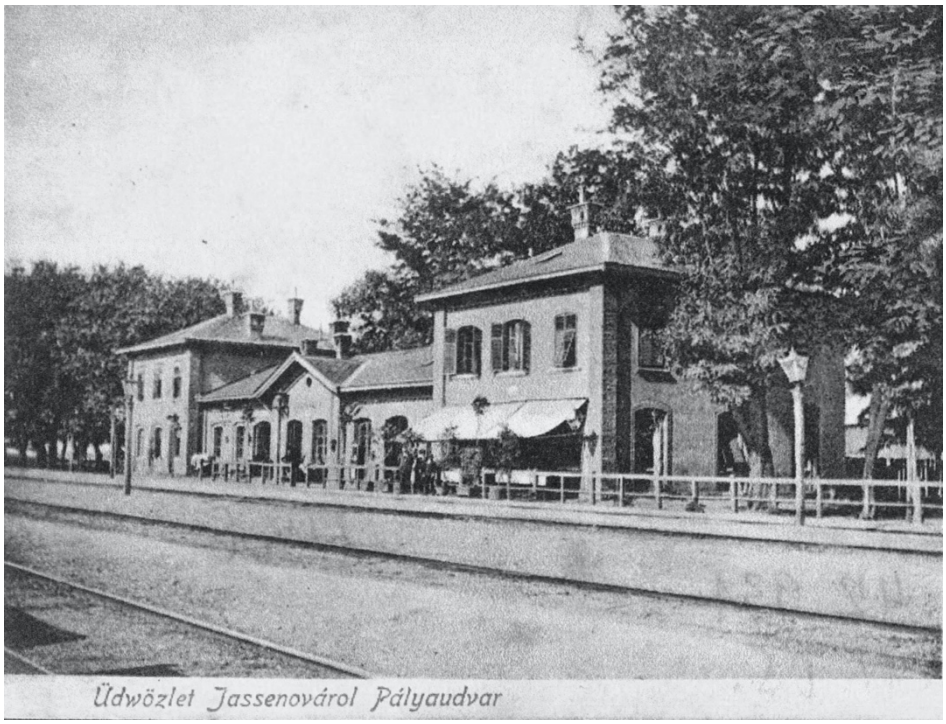
During Second World War, the narrow railway had a military/strategic importance, and then, in the 1950s, it experienced the second golden period. After several years railway traffic was no longer profitable. According to analyses, the income was twice as low as the amount required for the line maintenance. The last passenger train departed on May 25, 1968, while freight trains operated until 1969.

Today, buildings constructed along the former narrow gauge line are unlikely to symbolize the former importance of this railway and its place in the everyday life of the area. While some former stations are empty and devastated, others are reused for a new purpose, such as offices, family houses or warehouses.

Zrenjanin-Jimbolia, Banat, Serbia, https://banatskamalapruga.rs

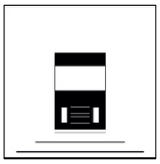
45.37866N, 20.37815E

45.80116N, 20.71870E


Üdvözlet Jassenovárol Pályaudvar


Warenhaus

THE FIRST RAILWAY OF VOJVODINA



The construction of the first line in the south of Banat, Oravica-Jasenovo-Bela Crkva-Bazijaš, began in 1846-1847 years. After several interruptions in construction, it was completed and opened in 1854 for cargo and two years later for passenger traffic. The original goal of this line was economic: to connect the mining centre Oravica with the nearest river port Bazijaš. The length of the railway was 63 km, of which 27 km on the territory of today's Serbia and 36 km on Romanian territory.

The central station on this line in today's Serbia was in the village of Jasenovo. It was expanded in 1858 when the Timisoara-Vrsac-Jasenovo line opened. In addition to the reception building, it had a furnace, a workshop, water towers for filling steam locomotives, a coal mill, as well as a turntable.

The reception building of the railway station in Jasenovo has the shape of an elongated rectangle, with the central part being the ground floor and the two annexes being one-storey and exiting the flat building in the form of projections. A recognizable triangular gable with a circular window accentuates the main building entrance. The decorative elements, made of brick, are concentrated around the openings, on the building corners and the cornices. The original facility had first and second-grade waiting rooms, a separate waiting room for mothers with children, a restaurant, a buffet and apartments for railway workers.

The railway station in Bela Crkva also has a rectangular base, with an accentuated one-storey central part, which ends with a triangular gable. In front of this part, towards the rails, there was a two-storey wooden porch, later removed. The side annexes are ground floor. While the spatial assembly follows the typical railway buildings concept of time, the decoration is very unusual, more classicist, without brick reliefs.

After the First World War, the line was successively abolished. So far, the rails have been completely dismantled, and most of the buildings along the former railway line have been completely devastated.

The railway station in Jasenovo, although a protected cultural heritage site, is in a rather bad condition and has no function, as does the station in Bela Crkva.

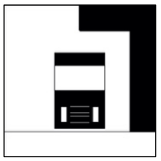
26346-26340, Jasenovo-Bela Crkva Banat, Serbia

44.940334N, 21.318643E

44.899917N, 21.410426E


ŽELEZNIČKA STANICA

NOVI SAD RAILWAY STATION



In 1960, the City Council of Novi Sad announced a public call for the passenger railway and bus station design. Since none of the proposals submitted met the requirements, the architectural studio "Architect" from Novi Sad was awarded the task. Imre Farkaš has been appointed chief designer. The modern railway station was designed in a dashing, creative atmosphere, integrating the open call requirements with expert suggestions for modernizing the railway. The station was built in record time, using simple construction techniques, and the costs were much lower than expected. The facility was completed ahead of schedule. The first train left the new station on May 24 1964.

The linear functional scheme of the object positioned along the railway line consists of four units, specialized for specific programs, as follows: the administrative part of the building with a courtyard, in which certain facilities for passengers are also located (A), the central station hall with ticket offices and waiting rooms, defined by the roof structure (B), a block of catering facilities with the accompanying infrastructure (C) and storage space for breakbulk cargo, connected to the platform by ramps (D).

The capacity of the main station hall testifies to the ambition of establishing rail traffic as the dominant form of arrival in the city.

The building is characterized by a sawtooth roof, a symbol of a typical Pannonian house roof. However, an even more curious fact is that 17 types of stone used to cover the walls and floors of the station came from different parts of the former state. Its application gave the building a high modernist expression.

The railway station has unused spatial capacities which are waiting for reactivation. The representative space hosts a movie theatre designed for projecting movies for passengers waiting for their train. Today, this extremely acoustic hall is not in use.

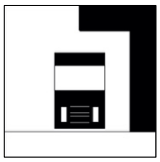
The Novi Sad Railway Station design represents an authentic step forward in conceptual, functional, constructive and urban terms. Despite not being adequately valorized, the railway station building, almost six decades later, is without a doubt a representative example of post-war modernism. Thanks to modern design, distinctly modernist composition and spatial capacities, this unique building has become a recognizable city symbol. The station was and still is the gate of the city. However, the emblematic “architectural miracle” became a feeble silhouette of a glorious past. Despite representing a unique architectural heritage of the post-war period, the railway station is still waiting for official confirmation of its values to become part of the corpus of Yugoslav modernism.

Bulevar Jaše Tomića, 4, 21000, Novi Sad, Serbia
45.26562N, 19.82960E


Kiadja Bruck Sándor Zombor, gymnasium mellett.
Zombor.
Indóház


196

SOMBOR RAILWAY STATION



The decision on the Sombor - Subotica – Szeged railway construction, made in 1864 at a conference in Subotica, was followed by the Committee for the railway construction establishment in Sombor. Five years later, on September 11, the first train entered the newly built station. Along with numerous citizens and the entire city leadership, the Hungarian Secretary of State attended the ceremonial entry of the first train into Sombor. By 1870 the railway was extended from Sombor to Sonta and Bogojevo. In the following years, two newly built railway lines connected Sombor with Novi Sad and Baja in 1895, Bečej in 1906 and Apatin in 1912, respectively. These lines were local vicinal. Sombor has become a significant railway hub, which has given it a new impetus for economic progress and faster trade development.

The central railway station planned simultaneously with the railway line was built far from the urban core, on the northern periphery. The station building was a typical building of the first type. The station building was one-story, with two side ground wings and a central part crowned with a tympanum. The openings ended in a segmental arch were rounded by decoration made of brick. It was designed according to the architectural and construction standards of the time, in everything similar to the station buildings in other major centres of the Habsburg Monarchy.

The railway connected all the surrounding villages and numerous farm settlements with the city. The railway infrastructure was supplemented by two bridges over the Grand Bačka Canal, on the railway towards Bogojevo. Sombor remained a significant railway centre in the interwar period. On the first day of the Second World War, during the German attack on the Kingdom of Yugoslavia, the railway station was significantly damaged by bombing.

The building was renovated during the war. The central part of the building has undergone sizable changes regarding its shape and style since a stepped gable replaced the tympanum. In front of the former main entrance is a closed porch surmounted by a terrace with a wrought iron fence. Other parts and elements of the building remained unchanged. The addition introduced modernist elements that deviated from the aesthetics of the original building.

For almost a century, the Sombor railway station has been a focal point, a window to the world. However, in the sixties of the 20th century, when the railway traffic fell into the shadow of the road, the railway lines were gradually closed, and the station building became neglected.

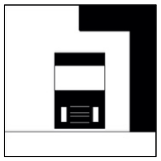
Železnička, 25000, Sombor, Serbia

45.78613N, 19.411409E

SLOVAKIA


K

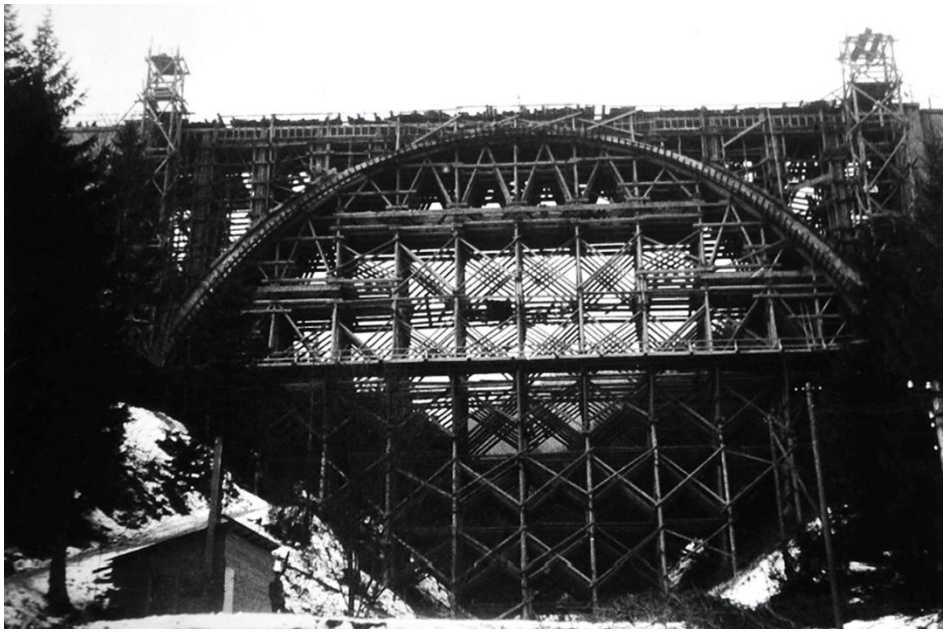
MUSEUM OF TRANSPORT IN BRATISLAVA



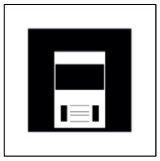
The Museum of Transport in Bratislava is a branch of the Slovak Technical Museum. The museum is a comprehensive museum of transport with a permanent exhibition on the means of road and rail transport. The museum is located on the premises of the first Bratislava steam-engine railway station, the former Hungarian Central Railway from the 19th century, on the premises of its track and two adjacent warehouses. The General Directorate of the Railway Police is located in the main building of the station itself. The museum complex together with the building of the General Directorate of the Environment is a national cultural monument and is found in the ÚZPF register under no. 599 / 1-4. The museum is located in the dormitory and two adjacent warehouses. The warehouses date from the second half of the 19th century along the track, which houses locomotives, wagons, a steam crane and a plow, and other railway exhibits. In Stock no. I. (Hall A) located behind the Station building where the DG Environment is located, there are railway exhibits presenting the development of security, signaling, and communication technology, as well as other artifacts of rail transport, such as the development of the fastening of railway superstructures. The next department contains exhibits on road transport from two historic bicycles with large front wheels (so-called “skeletons”), as well as motorcycles and cars of the early era of motoring in the years 1900 to 1939. In Stock no. II. (Hall B) located behind Warehouse I., there is a diorama of the city’s ruins, government cars from the time of the Soviet Union, and vehicles presenting motoring after the Second World War and showcasing Czechoslovak motoring. The atmosphere is completed by an STK (technical control) diorama with equipment from the sixties.

The warehouse buildings are unique and illustrate the spirit of railway transport, as they are made in the industrial so-called railway style, a typical brick design with stone elements and pillars supporting the roof. Warehouse no. I. is 150 meters long and 15 meters wide. Warehouse no. II is a similar structure, though it is longer and wider. In addition to the permanent exhibition of railway history, which is located here, the Museum of Transport also works closely with the Railway Museum of the Slovak Republic - ŽMSR), with which it is connected by a railway line and especially by railway vehicles. ŽMSR performs comprehensive documentation activities in the field of railway development in Slovakia, t. j. collects, evaluates, professionally manages and presents appropriately selected three-dimensional and area artifacts from this area.

Museum of Transport
Šancová, 1/a, 81105, Bratislava- Staré Mesto, Slovakia
48.9218N, 17.6223E
https://www.welcometobratislava.eu/museum-of-transport/



EXPRESS 34 TUNNELS



The route runs from Banská Bystrica, through Harmanec, to Kremnica and back through Hronská Dúbrava and Zvolen. The journey ends again in Banská Bystrica. The line between Banská Bystrica and Horná Štubňa is named the SNP Line. Its represents uniqueness, as well as the unique stories that took place on the route between Kremnica and Zvolen.

The original Zvolen - Vrútky line was part of the Hungarian Northern Railway Budapest - Salgótarján - Lučenec - Zvolen - Vrútky (connection with the Košice-Bohumín Railway), which was put into operation on August 12, 1872. Considerations about the connection of Zvolen with the Košice-Bohumín Railway via Ružomberok or Harmanec were not implemented due to high costs. In the end, the variant leading through Kremnica was chosen.

The section between Zvolen and Banská Bystrica was included among II. class lines and began operating on September 3, 1873. The connection of B. Bystrica with Turiec was out of date for many years. The interconnection of the lines leading to Pohronie and Turiec was started only in the interwar period, when the so-called Central Slovak transversal - Nitra line or Trenčín via Prievidza, Handlová, Dolná Štubňa, Banská Bystrica and Margecany with Košice.

In 1931, the Handlová - Horná Štubňa railway line, connecting the Ponitrie and Turiec regions, was put into operation, and in 1936, so the Červená Skala - Margecany line, which was fed to the Žilina - Košice line. After the completion of these sections, in 1936 the construction of the last section between Banská Bystrica - Dolná Štubňa began, which was meant to connect the existing lines.

The missing section between Banská Bystrica and Dolná Štubňa was to have a length of 40,956 km and would overcome an altitude difference of 373.78 m from the Bystrica side and 125.62 m from the Turiec side. The number of tunnels and the length changed during construction due to difficult geological conditions. The highest point of the track reached an altitude of 692.94 m above sea level.

The demanding mountain track at the junction of Veľká Fatra and Kremnické vrchy uses 22 tunnels with a total length of 12,211 meters, along with 112 bridges and culverts. Up to 12,339 workers worked on the construction site (May 1938), and so it was ceremoniously opened on December 19, 1940.

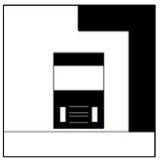
At the end of World War II, most of the viaducts and bridges were destroyed by the retreating Germans, and after their repair, traffic was resumed on March 17, 1946.

29. augusta, 97401, Banská Bystrica, Slovakia

48.8231N, 18.8705E


ŽELEZNIČNÁ
STANICA
BANSKÁ
BYSTRICA

BANSKÁ BYSTRICA RAILWAY STATION



The competition for the new railway station in Banská Bystrica took place in 1941 (during the Second World War). It was won by the architect Ján Štefanec with a symmetrical composition. Two two-story wings were situated on the sides of the check-in hall. In these side wings, areas were located for railway traffic and equipment for staff and passengers. The competition project was generous in terms of architectural design. The central accent of the entire architectural composition – the check-in hall – was 12 meters high. However, during the preparation of project documentation in the years 1941 to 1945, the terminal of the check-in hall was reduced to the final 10 meters. The modified project solution was closely based on the original tender proposal. Although the railway station has a relatively complex material solution (with regard to its complicated operation), the design was created in the spirit of functionalism. The final project confirmed the original solution of the building as a linear building with a central check-in hall, which is connected by two longitudinal wings.

The architecture of the railway station is presented mainly by the high mass of the check-in hall with the areas of the main facades facing the city and also to the track. The facades are divided by tall windows, which are separated by pillars (a total of eight fields). At present, the window openings are fitted with stained glass windows with the theme of historical events in Central Slovak towns. The stained glass windows are located in the main façade facing the city; the windows illuminating the check-in hall from the side of the track are glazed only with embossed glass. At the level of the entrances to the ground floor of the check-in hall, the ground floor of the railway station is separated and highlighted by the line of the advanced awning. The middle tract of the station is lined with white travertine boards. Monumental sandstone sculptures are located on the sides of the entrance staircase in front of the railway station.

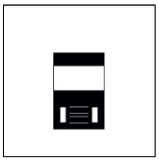
The interior of the check-in hall is lined with polished marble. Large-format travertine tiles are used on the floor. In the interior of the check-in hall of the Banská Bystrica railway station, there are 8 tall windows due to its illumination. Originally, they were glazed only with embossed glass to allow scattered light to enter the check-in hall. In 1959, artistic stained glass windows with motifs of the Central Slovak towns Banská Bystrica, Banská Štiavnica, Brezno, and Zvolen were added, which are characterized by their historical landmarks (4 stained glass windows) and figural motifs with the text FAMOUS OF FAMILY 1944 - 1945 celebrating the end of World War II uprising, liberation, and the Slovak people (4 stained glass windows). The whole composition is designed and realized in the intentions of socialist realism, which was at that time the basic form of all kinds of art. However, in the case of the railway station in Banská Bystrica, it does not act violently and currently forms a natural part of the interior and exterior of the check-in hall. The work was realized by three creators. Their names appear at the bottom of one of the stained glass windows.

In relation to the symmetrical composition of the railway station facade, two monumental sculptural works are placed in front of the railway station – life-size male figures. In the first case, it is the figure of a lumberjack (pictured). Opposite the lumberjack stands the second sculpture with the figure of a metalworker. The author of both works is the sculptor František Gibala.

29. augusta, 974 01, Banská Bystrica, Slovakia
48.4407N, 19.0948E


© Múzeum Slovenského národného povstania

ARMORED TRAIN ŠEFÁNIK



After the outbreak of the uprising, the 1st MS. army in Slovakia lacked heavy weapons, so the construction of improvised armored trains began. They were built according to the pre-war Czechoslovak regulation, while the set was supplemented by tank wagons based on the experience of the German and Soviet armies.

The order for the construction of the Štefánik armored train was issued on September 4, 1944. Lt. Col. took part in its construction. Štefan Čáni and Lt. Col. pion. in. from. Hugo Wainberger. The construction took place in the workshops of Slovak Railways in Zvolen. The first train was completed in a record time of 14 days, and the second Hurban train in eleven. Including the third Masaryk train, the trains were built together in five weeks. Štefánik and Hurban were the first trains to intervene in the fighting at the beginning of October 1944 – Štefánik near Stará Kremnička and Hurban near Čremošno, although Štefánik mostly operated on the southwestern section of the front within the III. tactical group (Zvolen - Hronská Dúbrava, Zvolen - Krupina) Hurban was deployed in the fighting on the line Harmanec - Čremošné and Brezno - Červená Skala. Masaryk was deployed at the end of October in heavy defensive battles on the Brezno - Červená Skala line.

Zvolen workers and railway workers lacked professional documentation and there was not enough material, especially thick sheets that were needed to arm the locomotives and wagons. A boiler plate old wagons and immovable tank were used to arm the first two trains.

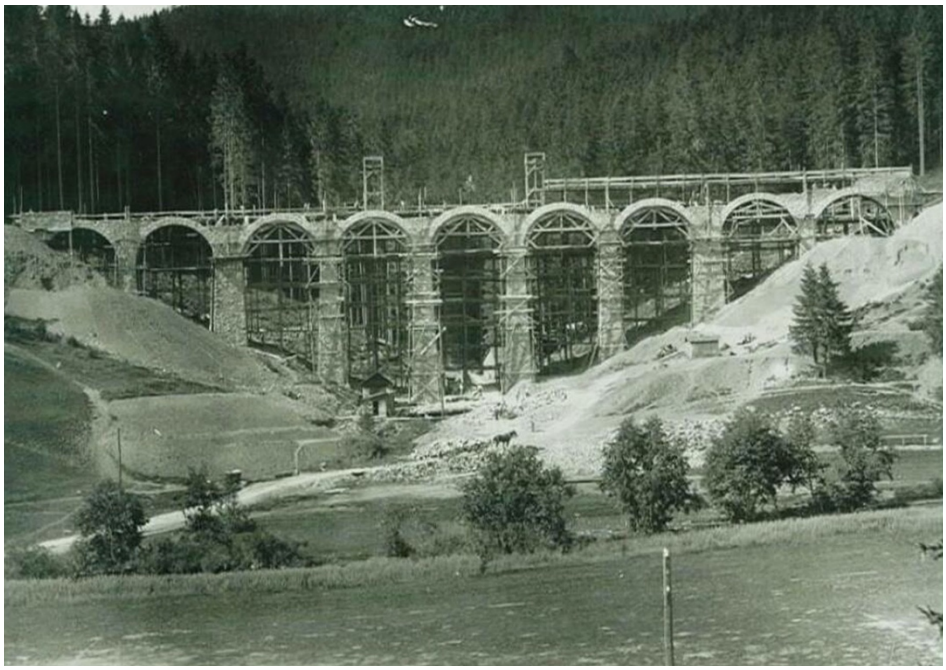
The train consisted of five wagons and a locomotive, the so-called tentacle wagon. It was a platformer loaded with rails and other material that served to defend the train from track conditioning. To make the distance between it and the other set greater, it was connected by a rod. It was followed by a cannon and tank wagon. This was followed by a locomotive, a tank, and a machine gun carriage.

In the last days of the resistance of the insurgent army, the trains were concentrated in the area of Harmanec - Uľanka, where their crews left and became the prey of the German army after the defeat of the uprising.

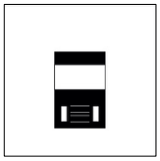
After the end of the war, three armored train wagons returned to Slovakia. While one tank ended in scrap, the other was reconstructed and preserved in Zvolen, originally for the railway station, today located in the area of ŽOS Zvolen.

In 2014, after years spent on the rails, important presentations, and several combat demonstrations, the Štefánik Improvised Armored Train returned to Banská Bystrica and became a permanent part of the Open-Air Museum of Heavy Combat Technology in the SNP Memorial complex.

Open-Air Museum of Heavy Combat Technology
Kapitulská, 317, 974 01, Banská Bystrica, Slovakia
48.07357N, 19.1485E
https://en.infoglobe.cz/tips-for-trips/sk-banska-bystrica-snp-memorial/



HOREHRONCIE EXPRESS



The route runs from Banská Bystrica to Brezno, then continues through Červená Skala to Dedinky, along one of the most beautiful railway lines in Slovakia and through monumental technical monuments – Telgárt and Chmaroš viaducts, the Kornel Stodol tunnel, and the Telgárt Loop, presenting a real experience not only for train lovers. The atmosphere on the train will undoubtedly be guaranteed by the accompanying program, which is sure to entertain and educate.

The track is part of the so-called Central Slovak transversal and forms part of the connection between the Košice-Bohumín railway (in Margecany) with an important transport hub in Zvolen. At the same time, it connects the Červená Skala - Margecany line with the Vrútky - Zvolen line through the Hron valley. The railway connection was built in three stages. The first section was operated from Banská Bystrica (where the line from Zvolen ended) to the Podbrezova ironworks on July 26, 1884. After Brezno, the line was extended on December 15, 1895, and further the section along Červená Skala until November 28, 1903.

The Telgárt Loop is part of the Červená Skala - Margecany railway line and is one of the most demanding railway technical works in Slovakia. Construction began in 1931 and they managed it in an incredible 5 years. Unimaginable today.

The Telgárt Viaduct has a main arch span of 32 meters. It rises to a height of 22 meters, exceeding 86 meters in length.

The Chmaroš Viaduct is also nearby. With its length of almost 114 meters, 9 arches, and a height of 18 meters, it crosses the Chmaroška valley, which is the entrance hiking trail to Kráľova hoľa. The bridge is the target of many photographers.

In Brezno, there is the possibility to transfer towards the historic cog railway Tisovec - Zbojská or to the historic Čiernohronská Railway.

The Čiernohronská Railway (formerly ČHŽ; older names: Hronecká štátna lesná železnica, Čiernohronská lesná dráha, skr. Č.H.L.D., Fekete Garamvölgyi Vasút, skr. F. G. V.) runs on the routes Podbrezová-Chvatimech - Hronec - Čierny Balog, Čierny Balog - Vydrovo and Čierny Balog - Dobroč.

It was considerably branched, and historically the largest total length of the network was reached after World War II at 131.98 km. Before the abolition of traffic in 1982, another 36 km of track was in operation. The railway lines ran through the valleys of Čierny Hron and its tributaries. In 1982, it was declared a national cultural monument of the Slovak Republic. In 2011, the Čiernohronská Railway was also declared one of the seven wonders of the Banská Bystrica self-governing region.

29. augusta, 974 01, Banská Bystrica, Slovakia

48.4407N, 19.0948E

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