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Road and Rail Infrastructure V

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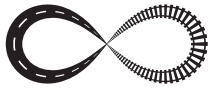
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POSSIBILITIES TO INTRODUCE A TOURIST TRAM LINE IN THE CITY OF ZAGREB

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Abstract

Presenting history of public transport in the City of Zagreb, especially by trams, is currently a matter of negligence in the past decades, because there is an unused potential in form of old trams standing in depots. Firstly, the paper gives examples of good practice in European cities regarding old trams, emphasizing their efforts to conserve cultural and technical heritage. Additionally, an overview of old trams in Zagreb (preserved and non-preserved, operational and non-operational) in the original form is presented. The paper also proposes the introduction of a tourist tram line as an additional service easily accessible to citizens and tourists, provided by the public transport authority in Zagreb. In creating the tourist line solution, the following was taken into consideration: optimization, resource savings, quality of the offer, and the costs. The proposed tourist line solution would lead to creating a better public transport image among the public, resulting in increased transport demand, better finances, improved vehicle utilization and even more sustainable modal split. In addition to the mentioned, there are also operational benefits for the old tram fleet, since the museum trams are best preserved by using them. The paper especially highlights the importance of popularizing public transport in the City of Zagreb as a part of cultural heritage for both citizens and tourists. The introduction of a tourist tram line in the City of Zagreb is expected to improve tourist offer in the City and preserve its recognizable identity in the future.

Keywords: City of Zagreb, cultural heritage, old tram, public transport, tourist tram line

1 Introduction

As an increasingly important tourist destination, the image of the City of Zagreb is presented to the world through its public transport system. Tram traffic is one of the most recognizable features of the City, with a long tradition since 1891 [1]. Besides its primary purpose, the system is culturally significant as well. Such significance is primarily related to old trams as cultural goods in their original shape, considering their usage and preservation. This article will propose a solution in designing and improving tourist offer by introducing a tram line and presenting museum vehicles, owned by Zagreb Electric Tram (ZET), the public transport authority in Zagreb. The proposed solution demands minimum investments, results in revenues, and has several benefits in long-term periods.

The paper consists of several chapters. Chapter 2 briefly presents the examples of good practices in Europe. Chapter 3 demonstrates the possible tourist offer in the City of Zagreb by trams (retired and operating). Chapter 4 explains the most desirable characteristics of the proposed tourist tram line. The Chapter 4 is followed by discussion and conclusion.

2 Public transport offer for tourists in Europe

In addition to the tourist offer in cities stated below, the following cities have established museum collections, tourist lines and other services in Croatian surroundings: Budapest, Debrecen, Miskolc, Brno, Ostrava, Liberec, Kosice, Rome, Geneva, Innsbruck, Basel, Bern, etc. All the mentioned cities recognized the importance of this topic, despite different assets, population, surface area and the size of tram network. Foreign examples have shown that presenting museum vehicles and introducing tourist lines was done mainly in two schemes. In the first scheme, old tram depots are converted into tram museums, as an additional offer besides the tourist lines. In the second scheme, the vehicles share depots with vehicles for regular traffic, and the vehicles are presented by numerous events such as doors open days. Tourist rides are organized by a scheduled timetable, and vehicle maintenance is carried out in the same place as for regular vehicles. A brief analysis of tourist offers and lines in selected European cities is shown below.

2.1 Prague

The tram museum is in the old Střešovice tram depot [2]. The museum offers sightseeing of the museum collection. The expert-guided tours and various other activities are also available. It is open from March to November on weekends and 09:00 to 17:00 on holidays. The entrance to the museum is charged 50 CZK (about 2 EUR), and 30 CZK (about 1 EUR) for children and the elderly. There are two tourist lines – 23 and 41. The tourist line 41 has a permanent route Vozovna-Střešovice-Vystaviště, with one-way cycle time of 35 minutes, operated by old trams. The line operates during the museum business hours – from 12:00 to 17:35. The line 23 is a regular line; however, only the old trams (the popular ČKD Tatra T3) operate on it. The T3 model represents the visual identity not only of Prague, but the entire Czech Republic and Slovakia. The line operates daily in from 08:00 to 19:00, with one-way cycle time of 30 minutes on workdays, and 15 minutes on weekends. Both lines use regular stops along the route. In addition to the tourist line, there are other rides and offers stated in the museum schedule.

2.2 Vienna

The tram museum is in the old tram depot [3]. It offers a tour of the permanent collection. Expert-guided tours and various other activities are also available. The museum is open throughout the year on Wednesdays from 09:00 to 18:00 and on weekends from 10:00 to 18:00. The entrance to the museum costs 8 EUR. With early announcements, the groups can visit the museum Monday to Friday from 09:00 to 14:00 and on weekends from 10:00 to 16:30. The museum also offers a tourist ring-shaped line with a one-way cycle time of 30 minutes. The 8 EUR ticket is valid also for the line (9 EUR if bought in the vehicle), and the line route (using regular stops) passes by the most city sights. It operates every day from 10:00 to 17:30. In addition to the tourist line, there are other rides and activities stated in the museum schedule.

2.3 Graz

The tram museum is in the old Mariatrost tram depot (Figure1) [4]. The museum offers a variety of contents such as visiting museum exhibits and museum tram tours. The organized tours are also available. The museum is opened with a special schedule, and it is possible to visit the collection if announced earlier. The entrance to the museum is charged 8 EUR for children and 4 EUR for the elderly. The museum also offers a tourist line with a one-way cycle time of 30 minutes with one tram operating. In addition to the tourist line, there are other tours stated in the museum schedule. In addition to the domestic exhibits, the museum also holds exhibits

from other cities and states such as the summer trailer of the Dubrovnik tram. Some exhibits are kept or are waiting for restoration at the private Historama museum in Ferlach.



Figure 1 Graz Tram Museum at Mariatrost [4].

2.4 Bratislava

There is no special museum and the collection is held in the joint tram depot (Figure 2) [5]. The sightseeing of the old trams, tourist lines and other contents is available throughout the year and the public is informed about them via the authority website, social networks, etc. The most common events are doors open days, city day, city transport anniversaries, etc. Tourist rides are organized during these events, and the old vehicles operate on regular routes occasionally.



Figure 2 Ganz T100 and ČKD Tatra T2 on tourist lines in Bratislava [5].

3 Present and perspective tourist offers in Zagreb

Although ZET provides tram service since 1891, the tourist offer is inadequate. However, there is a modest old tram collection present. The current tourist offer of the ZET consists of sightseeing with special convertible buses on two lines, Christmas tram at the time of Advent and a 30-minute free ride by a museum tram on Sunday mornings. The ride is organized by the Technical Museum in cooperation with ZET by the 11+559 vehicle, but the service is not adequately advertised by ZET and within the city tourist board. Therefore, apart from the mentioned one free ride on Sunday morning, ZET does not provide a sightseeing tour of the city by trams (except around Christmas time), and the museum exhibits have been used to preserve the cultural and technical heritage only. An overview of the existing tram collection is shown in Table 1. Table 2. shows examples of vehicles planned to be included into the museum collection [6]. Other vehicles whose purpose has not been defined yet, are shown in Table 3.

Table 1 The existing old tram collection

| Type | Number | Description |
|----------------------------|---------|--|
| ZET M24 + Pagoda | 11+559 | Owned by the Technical Museum in Zagreb. Maintenance and usage by ZET. In driving condition. |
| ZET M24 + Košak | 88+520 | Vehicle owned by ZET. In driving condition. |
| ZET 101 + Đuro Đaković TP4 | 101+592 | Vehicle owned by ZET. In driving condition. Included in the Croatian Register of cultural goods. |

Table 2 Vehicles planned to be included into the old tram collection

| Type | Number | Description |
|-----------------------------|---------|--|
| Đuro Đaković TP4 | 600 | Trailer owned by ZET. On a major renovation. Included in the Croatian Register of cultural goods. |
| Đuro Đaković TMK201 + TP1-Z | 211+701 | Vehicle and trailer owned by ZET. In regular traffic. Included in the Croatian Register of cultural goods. |

Table 3 Vehicles for which purpose has not been defined, ranked by priority from largest to smallest

| Type | Number | Description |
|---------------------|---------------------|---|
| Đuro Đaković TMK101 | 164 | Serviced for the CIVITAS-ELAN initiative. Insufficient maintenance for regular traffic. Parked in the western (Trešnjevka) depot. |
| ČKD Tatra T4+B4 | 410+810 ... 480+880 | Total 13 vehicles. In regular traffic. Potential surplus compositions of motorcars and trailers for exhibition. |
| Đuro Đaković TMK900 | 900 | Withdrawn from traffic in 2007. Prototype. The first tram produced in independent Croatia. Insufficient maintenance for regular traffic. Parked in the eastern (Dubrava) depot. |
| Düwag GT6 Mannheim | 924, 943, 945 | Withdrawn from regular traffic in 2009. Questionable condition (all three vehicles). Parked in the eastern (Dubrava) depot. |

Because of the historical credibility, the attractiveness of the vehicle, and the tourist service itself, the vehicles should be kept and exploited in some of the original shapes in which they operated in regular traffic. The attention to the mentioned has not been sufficiently paid, so the existing collection has a lot of historical inaccuracies. These inaccuracies are a consequence of the decisions mainly from the public transport authority in the past, disregarding the Register of movable cultural goods of the Republic of Croatia.

4 Tourist tram line proposal

Following foreign examples, ZET should complement the tourist offer with a special tram line with an adequate old vehicle collection. At forming the solution, two aspects were considered – the interest of the operator (ZET) considering the optimization and savings in resources, and the interest of the potential users (tourists) considering the quality of the offer [7].

Because of its recognition, branding and availability, the line would be designated with number 21. The number was selected according to the standard way of designating tram lines in Zagreb, and the number is recognizable as a historical symbol (until late 1980s, the line 15 operating today was designated with number 21). It would have a fixed route, such that the line follows the usual scheme for naming directions.

A route has been selected for the line that, within a limited time span, visits as many attractions and sights as possible. On the line, only old trams within the collection would operate. The line route is defined so that the ride does not last longer than about 70 minutes. The line title would be Ljubljanka – Mihaljevac. The route in direction A (to Mihaljevac) would be: Ljubljanka – Savska Street – Jagičeva Street – Austrijska Street – Jelačić Square – Mihaljevac, and in the direction B (to Ljubljanka) would be: Mihaljevac – Draškovičeva – Main railway station – Zrinjevac – Jelačić Square – Savska Street – Ljubljanka. One-way cycle time would be 30 minutes. At the terminals, the drivers would rest 5 minutes. In that period, tourists can see the vehicle, take photos or talk to the staff. On the line, there would be one tram, emphasizing operating and personnel costs. Therefore, one vehicle on the line would have a 70-minute cycle time and interval. The departures can easily be modulated in the timetable and make a schedule convenient for both operator and the users. All regular stops would be used on the line. Therefore, the line should have all stations and the timetable listed, making the availability of this service satisfactory.

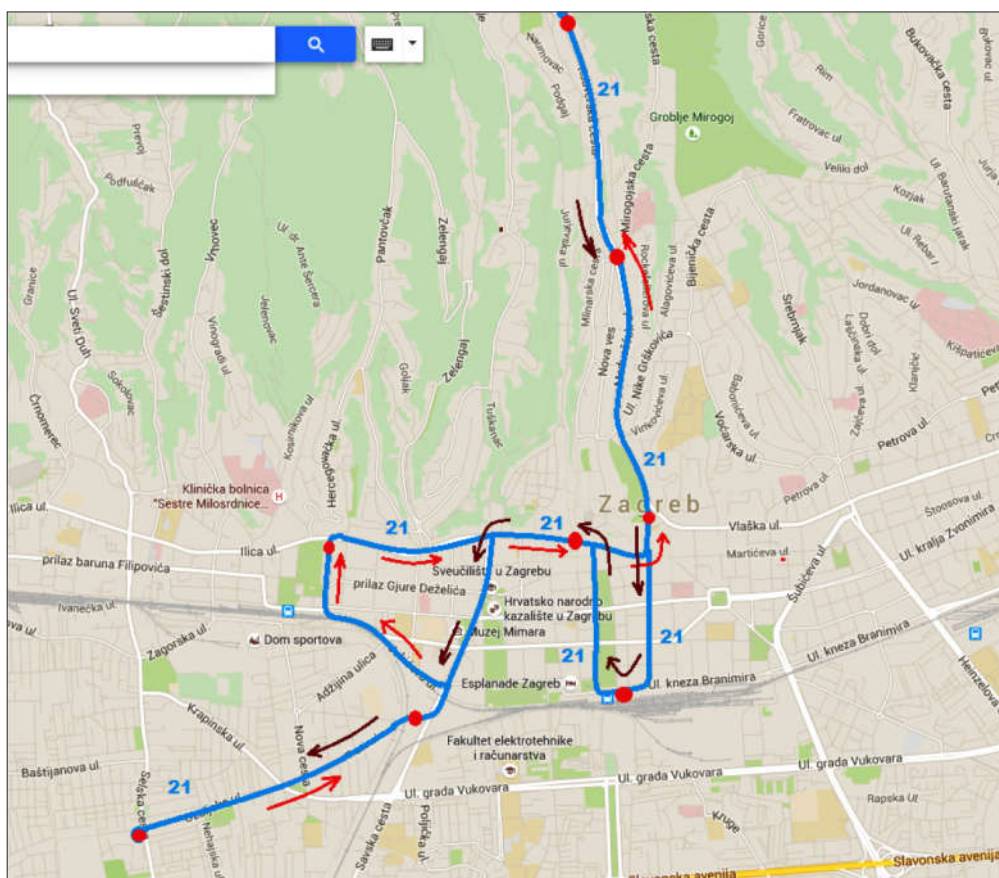


Figure 3 The route of the proposed tourist line 21 with directions and important stops along the route

The fare would be charged with a special ticket that can be purchased outside the vehicle and in the vehicle. Along with the ticket, each user would also get a suitable flyer with information and tram photos.

During a year, the line would operate by two timetables – summer and winter. The summer timetable would be valid from the beginning of May to the end of September, and the line would run every weekend from 12:00 to 19:00. During the winter timetable, valid from October to December, the line would operate as follows: the weekends of October and November and the third week of December from 11:00 am to 18:00. Such a schedule would be adjusted to weather conditions and the demand. With the schedule mentioned above, the line would cover one driver shift. The stated timetable aims to achieve a good supply to demand ratio to minimize the costs and vehicle maintenance, having no impact on the quality and availability of the service.

To be able to drive various types old trams, each tram in the collection (Table 1) would exchange every weekend. With the expected additions to the collection with type 201 and additional vehicles, the service could be drastically improved in variety. In the case of M24+Kořak, besides the driver, there would be a need for another staff member to open the trailer door manually. Such a practice is already common on the special line operating at the Night of Museums event in Zagreb.

5 Discussion

The future research is attempting to identify historically most significant periods, and vehicles will be sorted and conserved accordingly, depending on type, including suitable vehicle equipment, technology and materials corresponding to the selected period. This includes future vehicles to complete the collection. In addition, the future research should be put in development, conservation and presentation of certain parts of other segments of the tram subsystem such as the transport section which includes: historical signs of the stations, tram line descriptions, line routes, historical images, tickets, historical data, etc. In the engineering sector, descriptions and photos of tram track technology and power grid technology should be also provided. The tram design data should include technical documentation, machine parts, cross sections, etc. All this should be merged into a special ZET service that offers a unique museum exhibition accessible to the public.

The proposed tourist line exceeds the basic need for profit, and its significance manifests in terms of economy, culture, education, transport and the environment. To achieve such effects, it is necessary to promote such a line properly – for example, by advertising at the official website of ZET, city webpage, social networks, and the vehicles. Furthermore, it is necessary to establish cooperation with the agencies such as the Zagreb Tourist Board, to create a brand service. For example, a brochure with a brief technical description of the vehicle, photograph and a brief overview of the ZET and the services can be given to every traveller of the tourist line along the map. The financial benefits are expected because of the special ticket sales. The ticket price should be affordable to domestic standard. An image growth of ZET also positively reflects on economic indicators because of the increased public transport interest, and it also contributes to reducing traffic congestion and emission of harmful gases.

6 Conclusion

The tram is a trademark of Zagreb, representing the city worldwide. It is therefore necessary to pay attention to the culture and history as part of the city identity. Old trams are ideal technical systems as practical demonstrative examples at all levels of education as well as in various branches of engineering. The museum collection and the ride are suitable for organizing school or student trips and visits. By cultivating history and tradition, the popularity of public transport is growing.

The introduction of the tourist tram line for ZET, City of Zagreb and Croatia is multiple. For the implementation of this idea, no big investment is required as much as good will, patience and knowledge, and therefore co-operation with the authorities and services on the issue is necessary to propose the line.

The brand itself is what sells a product and adds value, and branding needs to be achieved by an adequate promotion of the service to all the available channels. Bringing this kind of tourist service strengthens the image of ZET, ultimately resulting in growth of transport demand for public transport services in general.

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