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Possibilities of Increasing Territorial Coverage and Operational Performance of the Tatra Electric Railways

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Abstract

In the context of requirement of environmental protection in the Tatra National Park (TANAP) and the territorial coverage solution primarily with ecological railway transport becomes current demand of extending the current network of Tatra Electric Railways (TER) and possibly to connect Slovak and Polish side of the mountains. The basic prerequisite for a functional, safe and attractive operation of the Tatra Electric Railways is modernization of existing lines, because current state causes not only high maintenance costs, but also significantly reduces the speed, safety, reliability and operational efficiency. The paper suggests ways to reconstruct the existing network and upgrade it to achieve the required technical parameters in case of attractiveness of rail transport in the High Tatras.

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1. Introduction

Infrastructure in the region of High Tatras represents a unique transport system, where in addition to shipping, exists or existed perhaps all that it was possible to transport. There was an electrobus over 100 years ago running in the High Tatras, there are tracks of normal and narrow gauge, narrow gauge adhesive cog track, cableways and funicular railway. There is located the highest situated airport near Poprad for airliners in Central Europe providing mainly charter flights in the winter and summer season.

High Tatras welcomed the first visitors already in the 16th century and the first foreign explorers and scientists began to be interested in the mountains in the 18th century. They found paths in the forest from the Tatra villages used by hunters, herbalists, shepherds, and treasure hunters. The first log cabin was built in acid springs under the Slavkovský Peak up in 1793 [1].

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Nearly one hundred years later – in 1871 there was opened a 139 km long section of Košice-Bohumín Railway (hereinafter referred to as “KBR”) from Poprad to Žilina, which resulted in a breakthrough in the development of tourism. The connection of the highest station of KBR – Štrba and Štrbské Pleso with cog railway was established in 1876.

In spite of the rapid development of settlements, the construction of the luxury grand hotels and bathhouses, adequate connection was still missing. Tatra settlements were connected with each other by narrow paths, roadways led only to "parent" villages in Poprad basin. Due to competitive reasons, some of them even resisted the road connection with neighbouring settlements. Also for these reasons, the first motorists from Poprad arrived in Starý Smokovec in 1900. Electrobuses – pioneering three-axle vehicles on wooden wheels - were running on this route from 1904. They proved to be unreliable and slow on the steep road with uneven surface – they overcame 12 km long route in 75 minutes. For these reasons, the operation was inflexible, but still an attractive tourist line, completed in 1906, and there started the preparatory work for the construction of electric railway connecting Tatra settlement with Poprad.

Already in 1906 there were initiated measuring works and a year later the actual construction of narrow gauge railway track. Transport at the first, 12.8 km long section of electric railway from Poprad to Starý Smokovec, was launched on 20th December 1908. Number of defects in a newly installed railway claimed to take radical measures to build a network of electric railways by the construction of a railway connection Starý Smokovec – Tatranska Lomnica and Starý Smokovec – Štrbské Pleso, and the realization of extensive reconstruction of existing electric railway (comprising mainly replacement of the superstructure, route changes of some sections, modernization of power facilities, construction of a new depot in Poprad and later the station building in Starý Smokovec). The reconstruction work was initiated in March 1910 and the most important building structures were put into use three months later. The construction of other track sections ran together with the reconstruction of the first section. Public operation in the section Starý Smokovec – Tatranska Lomnica (section length of 6.0 km) was initiated on 16th December, 1911 and the first train visited from Starý Smokovec to Štrbské Pleso on 13th December, 1912 (section length of 16.6 km) [1]. The Tatra railway network should have expanded even further and although the section from Štrbské Pleso to Podbanské, with a possible extension to Liptovský Hrádok, branching-off to Popradské Pleso and railway from Tatranská Lomnica to Tatranská Basin and Levoča. However, all of these bold plans at that time were frustrated by the beginning of World War I and the railway tracks remained at approximately the extent that we know them today [2].

In the mid-50 years of the last century, narrow gauge tracks in the High Tatras were threatened by extinction. Accumulating problems in keeping the operation of unsafe vehicles on the tracks with poor maintenance, which led to many emergency situations, resulted in the need to find a definitive solution to the future of the Tatra railway. Government Transport Design Institute (Státní ústav dopravního projektování – SUDOP) in Prague and Košice subsequently developed extensive reconstruction studies for standard gauge railway from Poprad to Tatranská Lomnica and its extension through Starý Smokovec to Nižné Hágy and its connection to the main track in Štrba [3].

The decision to hold the FIS Nordic World Ski Championships in 1970 opened consideration of reconstruction of Tatra transport system, with a number of solutions proposed. One of them was even complete cancellation of TER and its replacement by road transport. However, the proposals to rebuild the "Cesta slobody" (Road of Freedom) on four-lane road did not meet with understanding of Tatra National Park Administration (TANAP). The environmentalists' requirements were heard and the invasion of cars, at least for some time, was averted [4].

Another design should be the realization of monorail of ALWEG type, which should replace the existing narrow gauge railways and connect Poprad with Štrbské Pleso. Monorail sparked controversy among experts in the field of transport, but perhaps the whole Republic discussed about the pros and cons of this overhead railway. Bold plans then counted with the extension of the track to Ždiar, Lysá Poľana, but also its connection with the Polish side of mountains. After careful consideration of the advantages and disadvantages of the possible alternatives of transport service of the High Tatras, there were eventually proposed to continue the reconstruction of TER, modernize funicular Starý Smokovec – Hrebienok and restore earlier cancelled cog railway Štrba – Štrbské Pleso [1].

Narrow gauge railway is the central transport system in the High Tatras for over 100 years. During this long development, many parameters of tracks gradually changed due to reconstructions, relocation and other modifications. The biggest building interventions during the existence of tracks include relocation bypassing the urban part of Poprad-Veľká with a new entry site in Poprad-Tatry railway station, construction of a new depot in Poprad and Štrbské Pleso railway station in a new location – close to the existing station of cog railway to Štrba.

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