

„Application and Potential of Tilting Trains in Railway Systems”

The use of tilting technology allows trains to pass curves at higher speeds without compromising passenger comfort due to increased lateral acceleration. The aim of this thesis is to investigate the technical and operational fundamentals of tilting trains in railway systems and to assess their benefits regarding railway capacity. At the beginning of the thesis, the relevant fundamentals of railway systems and the historical development of tilting trains shall be presented. Subsequently, the different technical principles of tilting trains (active and passive) as well as their operating principles and fields of application shall be examined. The vehicle-related and infrastructure-related requirements for the use of tilting technology shall also be analysed. In addition, the current state of development and the worldwide application of tilting trains shall be considered. Building on this, the advantages and disadvantages of tilting technology shall be identified. Particular emphasis shall be placed on the effects of using tilting trains on railway capacity. Finally, the thesis shall assess under which technical, operational and economic conditions the use of tilting trains is beneficial and how it compares with alternative measures for increasing railway capacity.