



Wheel and Rail Maintenance Planning with Support of Computer Simulation

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Abstract

Maintenance due to wheel and rail damages is a significant part of the total cost of railway operation. To minimize these costs, it is desirable to only maintain when necessary but not too late either to not compromise safety. The KTH Railway Group has long experience of developing simulation tools to predict wear and Rolling Contact Fatigue on wheels and rails. These tools are now in many cases quite mature and validated and could be used as digital twins to predict maintenance needs due to a specific train operation. In the seminar examples of how simulations could be used to optimize rail grinding intervals or to predict the wheel life to forecast wheel turning needs will be presented.

Bio

Sebastian Stichel holds a B.S (1989). and a M.S. (1992) in Mechanical Engineering (Vehicle Engineering) from TU Berlin. He also holds a PhD (1996) in Vehicle Dynamics from TU Berlin. Dr. Stichel is professor at KTH Royal Institute of Technology in Stockholm since 2010. Since 2011 he is director of the KTH Railway Group. From 2013 to 2019 he has been vice head respectively head of the Department of Aeronautical and Vehicle Engineering. Since 2020 he is vice head of the Department of Engineering Mechanics.

From 2000 to 2010 Dr. Stichel was employed at Bombardier Transportation in Sweden where he headed a Vehicle Dynamics department with employees in Sweden, Germany, UK and France since 2003. He is Vice-Chair Academia of the European Rail Research Advisory Council (ERRAC) since 2017 and was Chairman of the Shift2Rail Scientific Committee from 2016 to 2018. He is board member of SWEDTRAIN – the Swedish Association of Railway Industries - since 2019.

Dr. Stichel has a primary research interest in the dynamic vehicle-track interaction mainly using multibody simulation. Main concerns are improved ride comfort and reduced wheel and track damage. He is also involved in research on active suspension and the dynamic interaction between pantograph and catenary.