Kinematic simulation of train bogie

Description

More and more kinematic and structural modelling is needed in order to support mechatronics system architecture and design validation. The use of simulation tools supporting this activity is imposing itself because of complexity. The subject of this thesis is to provide in an overview on the existing mechanical modelling tools and methods and implement an initial simulation, modelling the movement of a train vehicle on a modeled rail track.

Such modelling and simulation will bring insight w.r.t. the effect that certain defects have on the vibration signature of the train bogie parts:

* vibration induced by wheel roundness issues

* vibration induced by track problems

* torsion induced by track inparallelism

The results of the simulations are of high importance in mechatronics validation engineering since such defects are hard to introduce during test cycles because of cost, safety and complexity.

The master study could follow the following approach :

* Study on the different modelling techniques

* Evaluating the available tools and their possibilities (Matlab, Modelica, ...)

* Building models for a train bogie

* Simulate train bogie behaviour

Verification based on real train data

If you are interested in this topic, please also register this on the Televic website at: https://www.televic.com/en/careers/internships-and-students so we can confirm the topic is still available.

Televic Company/Department:

Televic develops, manufactures and installs top end high-tech communication systems for specific niche markets. A financially independent and stable group, Televic is divided into divisions that each focus on their specific market:

- Televic Rail: passenger information systems and on-board control systems for trains
- Televic Healthcare: communication systems for healthcare
- Televic Conference: conference systems for large venues
- Televic Education: multimedia and e-learning solutions for staff training and educational institutions

Televic creates added value for its customers by developing custom-made solutions and by continuously innovating at the cutting edge of technology.

With headquarters in Belgium and offices and plants across Europe, Asia and the US, Televic employs nearly 700 people worldwide.

About Televic Rail

With over 30 years of experience in designing, manufacturing and maintaining on-board communication and control systems, Televic Rail is a leading, trusted partner for railway operators and train builders worldwide.

Its Passenger Information Systems and Control Systems are high quality, tailor-made solutions that offer the flexibility, user-friendliness and stability that our clients ask for. Our various types of on-board control systems such as our bogie monitoring systems are innovative yet reliable products which are designed specifically for the railway business.

Trains and trams all around the world are equipped with Televic Rail solutions, from New Zealand to Canada, from China to the United States, from India to Belgium, England and France.

Contact

C.Viaene@TELEVIC.com

https://www.televic.com/en/careers/internships-and-students

Nature of the work

Level	Specialty	Type of work.	Location	Type of activities	Num of students
Master	Mechanical / Product design	Research: 40% Implem.: 30% Experim.: 30%	Televic, University	Experimenting, Measurements, Simulation	1 or 2