

Vehicle System Dynamics



Special Issue of the Journal *Vehicle System Dynamics* on

“Hardware-in-the-Loop Simulation for Rail Vehicles”

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The hardware-in-the-loop simulation (HILS) approach has found wide application for the investigation of the behaviour of complex systems. It is commonly used for testing of control units, and it allows verification of new designs in less time and at a greatly reduced cost in terms of equipment for physical testing.

The HILS approach is based on the integration of different parts and components which are included in the mechatronic system:

- the hardware component or assembly to be tested;
- the physical system to be simulated (full rail vehicle);
- electronic control unit(s);
- communication equipment and interfaces.

This technology provides great potential for further development of test automation in the field of railway transport. In addition, improvement of rail vehicle design and rail safety issues using the new test technologies can be achieved by means of the introduction of almost the same running conditions as real operations and real-time condition monitoring of a vehicle's behaviour.

Main topics of the proposed issue include:

- hardware and software development for the HILS approach;
- numerical integrators;
- real-time wheel-rail contact models;
- real-time software for rail vehicle dynamics;
- real-time simulation of electric systems for rail vehicles;
- real-time simulation approaches and multibody simulation software;
- HIL prototyping of complex system(s) and their component(s);
- test automation processes based on HILS;
- communication interfaces between software and hardware products;
- correlation between scaled test rig models and full-size systems for rail dynamics applications;
- experimental application of the HILS approach.

Information for authors

This will be published as a special issue of the Journal *Vehicle System Dynamics* and must satisfy all the requirements of the journal. All manuscripts submitted will be subject to peer review and should follow the instructions published by Taylor & Francis at www.tandfonline.com/nvsd. When submitting a manuscript, please indicate that it is for the special issue 'Hardware-in-the-Loop Simulation for Rail Vehicles'.

Deadline for submission of a manuscript is July 1st, 2012.

The planned publication date is late 2012 or early 2013.

