



“Hardware-in-the-loop simulation of electric drives”

The Theme: Electrical drives are increasingly used in industry applications. Rigorous performance evaluation has to be made during equipment development and before implementation on actual systems. In particular, interactions of the drive with the motion part have to be studied thoroughly. Computer simulation of the entire system is an established means to investigate interactions between subsystems to set the technical requirements. Within the past decade, Hardware-In-the-Loop (HIL) simulations became an advanced means for investigative experimentation, model validation and testing before implementation of drives in actual processes. In addition to pure computer simulation, HIL simulation replaces some simulation models of a system by one or several actual components. The rest of the system and processes are simulated in real time, which typically requires a parallel computing environment with adequate input-output capability for signals of adequate bandwidth. Most recently, incorporating power hardware (i.e. the drive) into an HIL simulation has been introduced by means of high power and high bandwidth power electronic amplification equipment. Due to the flexibility of HIL simulations to test a wide range of operating conditions and scenarios this method will contribute to improving the availability and reliability of drives (machines, power electronics, and control) and a better understanding of system interactions before their insertion on the system. Topics of interest of this Special Section include, but are not limited to:

- Real-time simulation of electrical systems, drives, and drive trains
- HIL simulations for controller board assessment, power electronics assessment, and electrical machines assessment
- Methods for organizing HIL simulation
- Specific devices for enabling HIL simulations (Amplifier, FPGA, DSP...)
- Software and hardware issues for implementation of HIL simulation,
- Applications of HIL in the area of renewable energy systems,
- Applications of HIL in the area of transportation systems,
- Application of HIL in the area of industrial drives

More info about this special section (recent references, special session in conferences...): <http://l2ep.univ-lille1.fr/ss-tie-hils.htm>

Manuscript Preparation and Submission

Follow the guidelines in “Information for Authors” in the IEEE Transaction on Industrial Electronics <http://tie.ieee-ies.org/tie/>
Please submit your manuscript in electronic form through Manuscript Central web site: <http://mc.manuscriptcentral.com/tie-ieee>. On the submission page #1 in the popup menu for the manuscript type, select: **SS on Hardware-in-the-loop**

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Timetable

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