'Diesel Reloaded': A vehicle for Rethinking Mobility Rolls into Hannover Messe

'Innotruck' demonstrates radical, holistic approach to electromobility

The public and press can see the latest progress in a unique, ongoing electromobility research project during the international trade fair MobiliTec, which takes place April 23-27 at the Hannover Messe. Embodied in a sleek, Colani-designed tractor-trailer that looks more like a spaceship than a truck, the project "Diesel Reloaded" aims to demonstrate how paradigm shifts in automotive, energy, and information technologies can help to address major societal trends and needs. The research group, based at the Technische Universitaet Muenchen, is led by Prof. Dr. Gernot Spiegelberg, who has responsibility for electromobility initiatives at Siemens Corporate Technology and is a Rudolf Diesel Industry Fellow of the TUM Institute for Advanced Study.

What the Diesel Reloaded researchers envision goes far beyond a shift from fossil fuel-burning vehicles to electric alternatives. With regard to energy, they see the vehicle both as a small-scale "smart grid" that can be optimized for cost reduction and as a vital element in stabilizing regional-scale energy networks that will rely increasingly on fluctuating input from renewable sources. Rethinking the human-machine interface, the researchers see a path toward making the vehicle a "mobility partner," with displays and controls that adapt not only to the driver's individual capabilities and typical behavior, but also to changing conditions such as traffic and the driver's alertness. These transformations in energy management and the human-machine interface are supported by a further paradigm shift: redefining a vehicle as an integrated information and communication system with a modular, scalable architecture. With centralized computing and plug-and-play applications, the vehicle's system architecture allows for straightforward integration of new capabilities such as car-to-car and car-to-infrastructure communications to help optimize traffic flow and safety.

The main lines of research are being pursued by doctoral candidates Claudia Buitkamp (drive train and energy optimization), Ljubo Mercep (human-machine interface), and Hauke Stähle (system architecture). These lines meet and intertwine in the so-called Innotruck, which serves as both a research testbed and a demonstration vehicle. Over time, more and more of the team's ideas are being tested and implemented in the Innotruck; it is on its way to having a permit for drive-by-wire operation on public roads.

As members of TUM's International Graduate School of Science and Engineering, the doctoral candidates receive additional scientific support from Computer Science Prof. Alois Knoll and Mechanical Engineering Prof. Markus Lienkamp. "Traditional education tends to prepare engineers for the engineering of the past," project leader Spiegelberg says. "This approach prepares them for the future. There is a cycle of knowledge generation, transfer, and application at work here," he adds, represented by TUM (science), Siemens (translational research), and application-oriented partner companies such as BeBa Energie, an engineering firm that specializes in renewable energy systems.

According to Spiegelberg, their research anticipates and addresses "the megatrends of environmental care, urbanization, and demographics." Caring for the environment has inherent value but also implies major economic costs, he explains. Yet environmentally friendly changes in infrastructure, products, and services can pay for themselves if they also, for example, provide new options that enable members of an aging population to remain independent and mobile despite changes in their physical and cognitive abilities.

Posted by Ron M. Seidel, Editorial Intern

April 19, 2012

Source URL (retrieved on *07/24/2014 - 8:04pm*):
http://www.wirelessdesignmag.com/product-releases/2012/04/diesel-reloaded-vehicle-rethinking-mobility-rolls-hannover-messe