

# The Innotruck

**Diesel Reloaded – A holistic approach to electric mobility**



Embodied in a bio-dynamic Colani design, the Innotruck is a serial plug-in hybrid truck which demonstrates how paradigm shifts in automotive, energy, and information technologies can help with addressing the major societal trends and needs. These include environmental care, urbanization, and demographic shift. Caring for the environment has long-term value but often implies economic costs. Yet environmentally friendly changes in infrastructure, products, and services can pay for themselves through different kinds of added value.

The research group behind the vehicle, based at the Technische Universität München, is led by Prof. Dr.-Ing. Gernot Spiegelberg, who is leading the research on Electric Mobility at the Siemens Corporate Technology in München and is a Rudolf Diesel Senior Industry Fellow at the Institute for Advanced Study of the Technische Universität München.

The main lines of research are being pursued by TUM doctoral candidates Claudia Buitkamp (drive train and energy optimization), Ljubo Mercep (human-machine interface), and Hauke Stähle (system architecture).

Our vision goes far beyond a shift from fossil fuel to electric alternatives.

With regard to energy management, we analyze the Innotruck from two perspectives. In the first one, it is an array of various electric energy sinks and sources, which can be optimized for reduction of operating costs through a market-based energy trading model. In the other one, it is an active and intelligent element which stabilizes external energy grids which increasingly rely on renewable sources.

Rethinking the human-machine interface and its connection to the driver assistance systems, we present a path toward turning the vehicle into a driver-supporting mobility partner. The approach relies on context awareness, the context being all the elements of the human-machine interaction - the user, the vehicle and the environment.

The vehicle is further equipped with a modular and scalable system architecture. The plug-and-play capability allows for straightforward integration of new functionality such as car-to-car communication components or driver assistance systems, to help optimize traffic flow and safety.



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