Vehicle ICT reduces CO₂ emissions

EU study with Berner & Mattner on the environmental impact of ICT in the vehicle

Munich/Germany, October 26, 2015 – The use of information and communications technology (ICT) in vehicles and on the road significantly reduces CO₂ emissions. That's the result of an international study done on behalf of the EU. Assystem's engineering service provider Berner & Mattner, supported the research project with modeling of ACC-, driver- and powertrain functions and a newly developed simulation environment for driver assistance functions in traffic scenarios with several thousand vehicles.

Do driver assistance systems like Adaptive Cruise Control (ACC) offer measurable CO₂ savings? By how much could a city reduce their local emissions by using smart traffic management systems? And which systems can be combined for maximum effect? Questions like these can be answered with more precision in the future thanks to the EU study "Quantifying the Effect of Intelligent Transport Systems on CO₂ Emissions from Road Transportation". Therefore European companies and research institutions examined the environmental impact of current and future I&C systems in automobile traffic.

IT in the vehicle and on the road

The engineers put a wide variety of technologies onto the test bench, both by simulation and road tests: Variable speed limitation on the road, "green" navigation with energy-optimized routes, and modern traffic management systems were evaluated, as were the effects of "eco-driving" or start/stop and ACC systems. The results were clear for both new and conventional powertrain technologies. All the technologies examined contributed to reductions in CO₂ emissions. And the potential savings depended strongly on traffic conditions and the level of diffusion of the technology, means, more technology also results in greater average savings. With I&C systems for local traffic control, an average of up to 8% is saved in practice – and with systems in the vehicle, even as much as 15 percent.

Modeling of ACC-, driver- and powertrain functions

Berner & Mattner was responsible for modeling the ACC-, driver- and powertrain functions as well for the development of a simulation environment. This framework allows predictions to be made for an entire fleet of ACC vehicles.

"To simulate multiple thousands of vehicles with different technical equipment such as ACC, we built a new framework using various tools. That permits automated execution of the simulation for different drive system, fleet, and traffic scenarios," explains Jörg Reiner, software engineer at Berner & Mattner.

The heart of the system is the Berner & Mattner test and simulation platform MESSINA, on which models of the driving dynamics of individual vehicles were calculated. The models could be equipped with differently configured ACC systems, but also different driver behaviors. "That let us examine the specific effects of individual configuration parameters of the ACC vehicle technology and Car2Car or Car2X infrastructure on emission behavior," says Jörg Reiner, explaining the advantages of the newly developed framework. A connected simulation tool used a proprietary interface to provide background data for simulated traffic conditions.

The results of the study can be obtained through the ICT Emissions Library database, the application Berner & Mattner also developed: [http://ictemissions.meng.auth.gr](http://ictemissions.meng.auth.gr). The entire study is available for download at: [http://www.ict-emissions.eu](http://www.ict-emissions.eu).
**Available images**

The following images are available for download in printable format at:

[www.htcm.de/kk/bernermattner/](http://www.htcm.de/kk/bernermattner/)

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