

Keeping the Right Speed

As a part of the European research project EASIS, DAF developed a safe speed function for trucks. It helps comply with the legal speed limit by slowing the vehicle automatically if necessary. To analyze and validate the function, DAF used a hardware-in-the-loop simulator from dSPACE in combination with a real steering wheel, pedals, and switches.

- DAF develops safe speed function
- Validation and analysis with dSPACE Simulator
- Part of the European research project EASIS

The EASIS Project

EASIS (Electronic Architecture and System Engineering for Integrated Safety Systems) is a partnership of 22 European vehicle manufacturers, automotive suppliers, tool suppliers, and research institutes. They aim to develop technologies for implementing future safety systems. In this project DAF developed a safe speed function (SSF) for commercial vehicles.



▲ To overtake, the driver overrules the Safe Speed Function.

Safe Speed Function

The SSF software receives traffic information signals and restricts the vehicle speed if the driver requests acceleration above the legal limit. To verify the new function, DAF used a hardware-in-the-loop (HIL) simulator from dSPACE for real-time simulations of a truck and its operating conditions. The test driver used a real dashboard, steering wheel, and pedals and received feedback via a screen showing the simulated truck behavior. The engineers implemented the new functions of the safe speed controller in a dSPACE MicroAutoBox connected to the physical part of the test rack, which contains sensors, ECUs, display, and switches, via a CAN network.



▲ The test driver has a real steering wheel and can see the truck's behavior on a screen.

Driving at Constant Speed

During the tests the SSF is given the speed limit as a traffic signal. If the driver keeps the accelerator pedal pressed to go above this limit, the SSF becomes active and restricts the vehicle to permitted speed. If the truck enters a zone with an even lower limit, the SSF adjusts the speed smoothly and keeps it constant. Full accelerator pedal kick-down means that the driver wants to overtake another vehicle. The SSF is then overruled and the truck can accelerate to a higher speed. When kick-down is released, the SSF reengages and the truck returns to a constant safe speed.



▲ The dSPACE HIL simulator computes the absent truck parts.

For more detailed information on the project, please see the video on www.dspace.com/goto?DAF_SafeSpeedFunction