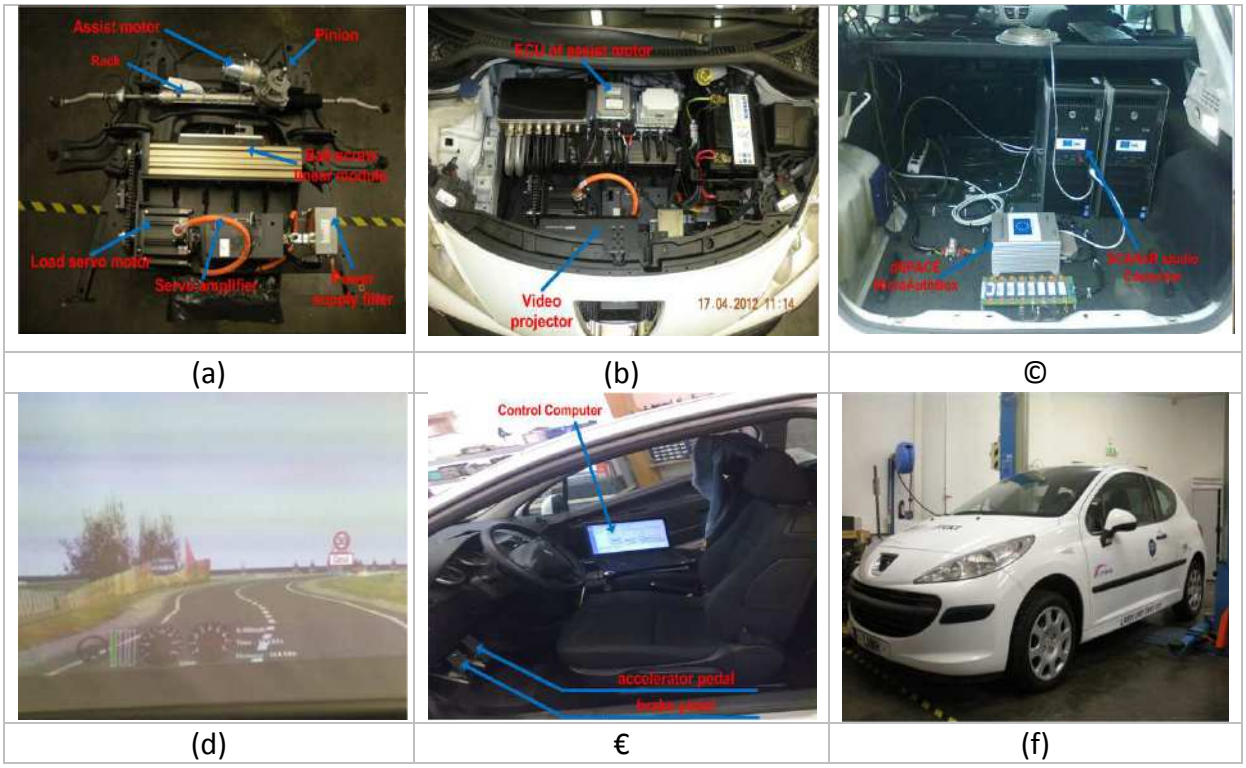
II. HIL simulator

C. Sentouh, M. Djemai, S. Paganelli, J. Floris, P. Pudlo
LAMIH UMR CNRS 8201, University of Valenciennes and Hainaut Cambrésis, France

The LAMIH laboratory has a Hardware-In-the-Loop (HIL) simulator which enables to perform tests in interaction with the human driver. The developed HIL is composed by the EPAS system, the reaction force system, and the SCANeR studio software. The EPAS system is the real existing system in market vehicles equipped with EPAS provided by JTEKT Corporation. The reaction force system generates the road reaction force on the rack using the target road reaction force received from the SCANeR studio component (e.g., vehicle model). Then a control algorithm is applied to generate this force on the rack. The SCANeR module generates also the 3D driving environment (e.g., road, decoration, traffic). The assistance motor and road reaction motor are controlled by MicroAutoBox 1401/1505 via the CAN bus and driven by a computer with Matlab/Simulink software. The assist motor angle, the steering wheel angle, the steering torque and the reaction force applied on the rack are measured.



(a) (b) © (d) € (f)

HIL simulator structure, (a) assist and load system, (b) assist and load system assembled in the engine compartment, (c) dSPACE MicroAutoBox and SCANeR studio system, (d) Driving course and examples of the presentation screen, (e) driver's seat, (f) photography of the assembled HIL

Last publication

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