

> End-of-line test rig for all-wheel drive systems

GKN Driveline is the world's leading supplier of automotive driveline components and systems. The product portfolio includes active all-wheel drive systems which allow the targeted activation and deactivation of the all-wheel drive and thus the distribution of torque in the driveline. For quality assurance at the end of the production line a fully automated end-of-line test rig is used, in which the control unit platform PUMA is integrated and used to run the system tests.

The switchable all-wheel drive system of GKN Driveline contains a power transfer unit (PTU) which is connected to the axle drive. In the PTU is a fast-disconnect device and brake, which brings the all-wheel drive system to rest upstream of the PTU's hypoid gears. In addition, an electromechanically actuated clutch located in the rear axle both biases the drive torque and disengages the all-wheel drive system downstream of the hypoid gears to save fuel. A specific drive control unit switches off the all-wheel drive when it is not needed. If the driver or the conditions require more traction, the all-wheel drive switches on again within 300 milliseconds.



All-wheel drive components in the driveline



Power transfer unit (PTU)

The flexibility and reliability of the PUMA platform allows fast and easy integration into different system architectures. Thus GKN Driveline uses PUMA control units amongst others in of end-of-line test rigs to test the the functionality of the newly built systems at the end of the manufacturing process. Therefore the PUMA platform is connected via CAN with the test rig computer. On demand it performs functional software for controlling the clutch position, thereby controlling the electromechanical coupling via the integrated power stages. In addition, GKN Driveline uses the PUMA platform both in the functional development of driveline systems as well as in test vehicles for system testing.