SILVER ATENA is developing a control unit, including power electronics, which is directly attached to the brake calliper. It controls the brake torque using electric motors according to information coming from the brake pedal as well as from a central brake control unit.

The control unit monitors the current brake control via rotor position, phase streams, voltage and temperature. The application software is generated and integrated as an auto code based on function models. This separation allows an agile development of the EMB functions, which can be implemented directly in the EMB and thus does not have to be calculated, signaled and monitored by a higher-level control unit. This includes adaptation to other vehicle types, but also the integration of other functions, e.g. a wheel-integrated ABS or dry-braking.

The Electro-Mechanical Brake (EMB), developed and patent-registered by the customer, replaces the usual hydraulic brake system of a passenger car. It provides precise brake torque extremely fast and individually for each wheel. The replacement of the hydraulic braking system by electronic motor control required a complete evaluation of the system topology and related safety aspects. The result is a technical safety concept with an ASIL D safety level according to ISO26262.
FEATURES

• Component design with regard to safety according to ISO 26262
• High dynamical control of brake force / brake torque via primary actuator
• Active wear adjustment control via secondary actuator
• Combination of main operational brake and parking brake
• Electronic control unit is integrated with the brake calliper
• Power supply via 12 V vehicle battery
• Usable with different on-board power supply architectures (single or redundant power supply of actuators possible)
• Dual-core architecture with intelligent Watchdog
• Redundant BUS communication via CAN and/or FlexRay possible

QUICK REALISATION THANKS TO SILVER ATENA’S POWER ELECTRONICS MODULAR SYSTEM:

With SILVER ATENA’s modular power electronics system, control units can be realised in a very short lead time, whilst conforming to automotive requirements such as safety, installation space, component qualification and availability.

ADVANTAGES

• Functional sample can be realised within a short time frame
• Allows for early realistic system tests
• Reduces technical risk
• Transparent development process
• “Automotive ready” for further industrialisation

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