

Brose enables comfortable opening and closing of liftgates



The concept for opening and closing the cargo area intelligently comprises the integrated liftgate drive(1), contact-free anti-trap protection (2), electronics (3), spoiler-integrated spindle drive (4), sensor (5) for hands-free opening and closing of the liftgate as well as the control-unit for the cargo area cover (6).

- · **Spoiler-integrated drive mechanism provides more design freedom**
- · **Touch-free anti-trap feature ensures maximum safety**
- · **Rear sensor allows comfortable loading and unloading**
- · **Optical sensor prevents collision**
- · **Liftgate platform latch is quieter and lighter than comparable systems**
- · **Integrated electric cargo area cover**

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At the 2011 IAA, the international automotive supplier Brose demonstrates mechatronic expertise in the field of cargo area management with an "intelligent" solution for opening and closing liftgates. A light liftgate structure, made of either steel, plastic or aluminum, which enables the use of a new drive concept with optimized kinematics, requiring just one spindle drive for the electronic opening and closing of the liftgate. The spindle drive is integrated into the spoiler, thus providing more design freedom and greatly improving the acoustics.

The concept features a touch-free anti-trap function to increase safety during liftgate closing and an optical sensor to stop the opening of the liftgate before obstacle collision

occurs (e.g. garage structure). A sensor makes loading and unloading vehicles more convenient, ensuring the touch-free opening and closing of the liftgate and cargo area cover if requested.

"Comfort means making vehicle operation easier and more convenient and we designed our integrated liftgate concept based on this approach. In addition to the aspect of lightweight construction, its purpose is to complete the cargo area management and to increase the driver's safety," explains Kurt Sauernheimer, Executive Vice President responsible for the area of door systems.

Spoiler-integrated spindle drive

The use of a light structure - Brose opted for plastic in its exhibit – allows the integration of an innovative drive concept: Only one spindle drive is required for the electronic opening and closing of the liftgate. Its horizontal position, packaged within the spoiler, makes it invisible from the outside. This also provides considerable acoustic benefits. Access to the cargo area has been significantly improved since all visible moveable components such as spindles or gas struts are no longer required.

Sensors for more safety

In contrast to standard electrically powered liftgates equipped with anti-trap features, which react

only in the event of a collision, Brose's design is based on capacitive sensors. This direct anti-trap function recognizes obstructions without any contact and stops the closing process prior to a collision. Through the use of plastic in the liftgate, the reception conditions for the sensors of the capacitive anti-trap protection function are improved and the antennae can be integrated safely and hidden in the liftgate structure. Yet, the use of this technology is by no means limited to plastics: Brose also offers the same anti-trap feature for metal structures and provides several solutions for safe, hidden integration.

Sensors for more comfort

When it comes to providing additional comfort, the use of sensors allows the integration of additional features. Brose has integrated a sensor into the bumper, for example, which responds to a simple foot movement to open and close the liftgate, making loading and unloading of the vehicle more convenient without any key operation or luggage being set down.

Another option is to combine the liftgate sensor with the cargo area cover, which opens and closes simultaneously with the liftgate. The system is completed by collision protection, a concept study of which is presented by the supplier in Frankfurt: An optical sensor recognizes obstructions and stops the opening of the liftgate, preventing any collision with the garage structure.

Platform latch with automatic soft-close feature

The platform latch integrated into the overall system astounds with its excellent acoustics, low weight and cost. Equipped with a cable actuator, it opens virtually noise-free like no other commercially available liftgate latch. With a weight of 400 grams, the latch is also 30% lighter than the products of competitors. The liftgate system comes with an automatic

soft-close feature that has been proven in series production and weighs just 230 grams, reducing the weight by another 25% compared with other commercially available systems.

The high degree of standardization reduces adaptation efforts considerably: the latch system can be adjusted to fit individual interfaces, geometry, and screw-on brackets. The different latch systems for trunk lids or liftgates – with or without additional features such as automatic soft-close– are compatible.

System expertise from a single source

Brose is the only supplier on the market with all-embracing mechatronic know-how for integrated solutions: mechanics, drive, electronics, anti-trap software, latch and sensors are developed and produced in-house.

Spindle drive, latch and control units with an anti-trap feature can be combined in plastic, aluminum or steel liftgates to make a proven and ready-to-ship module. This ensures optimal interaction between all individual components in the entire cargo area.