Versatile Solution:
ZF Presents Modular Rear Axle System

- Innovative passenger car axle combines driveline and chassis technology in a single system
- Can be upgraded in accordance with customer requirements by adding an electric or conventional drive module as well as Active Kinematics Control (AKC) rear axle steering
- Can be used simply as a variant to the twist beam axle or link SLA axle

The ability to offer driveline and chassis technology from a single source has always been one of ZF’s major strengths – a virtue that is once again apparent in the e-mobility era. ZF uses a new modular rear axle concept to demonstrate how a modular system architecture translates into even greater customer benefits. This innovative solution enables a vehicle with a twist beam axle or link SLA rear axle to be converted easily to a steerable rear axle concept with just a few modifications to the body. This is based on a non-driven basic axle in which an electric axle drive or a conventional rear axle drive as well as the AKC rear axle steering can be integrated, depending on customer requirements. Thus, vehicle manufacturers can respond extremely flexibly to various market requirements with just one body variant.

“With the new rear axle system, we are offering our customers support for wide-ranging applications in disparate vehicle segments. The solution can be used in hybrid, fuel-cell, and battery-powered vehicles as well as being combined with conventional all-wheel modules or our active rear axle steering AKC,” explains Uwe Coßmann, Head of the ZF Car Chassis Technology division. Development costs are also reduced considerably for automotive manufacturers: ZF handles the individual coordination of the internal interfaces in the axle construction kit.
The basic axle entails a modular further development of a Semi-Trailing Arm Rear Suspension (mSTARS). As part of this setup, the rear of the two outboard kinematics points of the lower control arm were replaced with an integral link and a toe link added. This defines the track across the wheel hub and enables the toe-in to be adjusted precisely. As an alternative to a suspension strut, which tends to be used on semi-trailing link axles, the integral link in an extreme outboard position enables separate springs and dampers to be used. This solution tends to be cheaper and also provides more width between the wheel arches in the luggage compartment.

**Integrated electric axle drive system**
The basic axle can be combined, for instance, with the electric drive module positioned centrally on the axle; this module features an electric motor configured as a high-revving asynchronous motor. The electric motor, the single-speed transmission complete with differential, housing, and cooling unit, as well as the power electronics complete with control software form an integrated, extremely compact unit.

**Steering impulses from the rear**
The basic axle can also be combined with ZF's AKC (Active Kinematics Control) rear axle steering. In this case, the rear wheels actively assist the front steering angle and the passenger car enjoys enhanced agility or stability, depending on the road speed, when changing direction.
Captions:
1.) Modular rear axle concept: The basic axle can be combined with ZF's AKC (Active Kinematics Control) rear axle steering as well as with electric axle drive systems or conventional rear axle drives, depending on customer requirements.
2.) ZF's electric axle drive positioned centrally on the axle provides a mechanical output of up to 150 kW and high torques already at low speeds.
3.) The AKC principle: The ZF system provides various responses depending on the road speed – to increase passenger car driving safety, comfort/convenience, maneuverability, and driving dynamics.

Photos: ZF

Press contact:
Corina Dreher, Technology and Product Communications, phone: +49 7541 77-8238, email: corina.dreher@zf.com

Thomas Wenzel, Head of Technology and Product Communications, phone: +49 7541 77-2543, email: thomas.wenzel@zf.com

ZF is a global leader in driveline and chassis technology as well as active and passive safety technology. The company, which acquired TRW Automotive on May 15, 2015, is now represented at about 230 locations in some 40 countries. In 2015, ZF expects to achieve sales of €29 billion to €30 billion with approximately 138,000 employees (preliminary figures). ZF is one of the top three automotive suppliers worldwide.

For further press information and photos please visit: www.zf.com