News Release

Hitachi Astemo develops prototype of a new steer-by-wire steering device that expands cabin space

Prototype of new steering device that expands the cabin space

Tokyo, October 20, 2022 – Hitachi Astemo, Ltd. (President & CEO: Brice Koch; henceforth, "Hitachi Astemo") has developed a prototype of a new steer-by-wire steering device that eliminates the conventional steering wheel and expands the cabin space. Steer-by-wire is a feature that steers the vehicles electrically—an essential technology for self-driving and other next-generation vehicles.

The steer-by-wire technology links the steering and turning actuators[*] via electric signals to steer the car—providing the benefit of improved safety and comfort, as well as flexibility for interior design.

In anticipation of automated driving, Hitachi Astemo is leveraging the collective strength of the Hitachi Group in developing steer-by-wire technology. New steer-by-wire devices that retain the conventional steering wheel—or eliminate it altogether— give automobile manufacturers improved flexibility in designing next-generation vehicles.

* A device that converts power from motive force or driver operation into an action.

With steer-by-wire systems, the lack of a mechanical link enables the downsizing of steering devices to increase cabin space and eliminate the conventional steering wheel altogether. A smaller steering device, however, can result in the vehicle's steering being overly sensitive to driver inputs. To resolve this, Hitachi Astemo's new steering device incorporates advanced steering feel technology, developed by the former Showa

Corporation (merged to become part of Hitachi Astemo in 2021); and information control technology that detects and transmits road surface information, jointly developed with Hitachi, Ltd. The technology's speed-sensitive steering, optimized steering ratios to manage steering angle, and communicative control technology—which detects and suppresses distracting external disturbances such as road surface irregularities and inclines—enable smooth driving without being oversensitive to vehicle movement.

In addition, the optimization of the turning actuator, the elimination of control devices on the of the steering wheel/device, and a simple mechanical device for steering feedback not only make the system cost-effective, but also enable the optimization of driver assistance controls, such as emergency avoidance and behavior compensation control.

To prevent failures, which are a concern with steer-by-wire systems, fail-safe functions are integrated to ensure continued operation in the event of a failure or loss of circuitry. Two power supplies are used for the actuator, and the steering angle sensor detects the steering device's input angle in the actuator.

Hitachi Astemo is committed to strengthening its business and delivering technological innovation through a strategic business portfolio, which consists of the Powertrain & Safety Systems business, Chassis business, Motorcycle business, Software business and Aftermarket business. Aiming for a better environment globally and growth around the pillars of "green," "digital," and "innovation," we will deliver highly efficient internal combustion engine systems; electric systems that reduce emissions; autonomous driving for improved safety and comfort; advanced driver assistance systems; and advanced chassis systems. Through such advanced mobility solutions, we will contribute to realizing a sustainable society and provide enhanced corporate value for our customers.

■Company Profile
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Business: Development, manufacture, sales and service of machinery and equipment and systems for automotive parts and transportation and industrial use.
For more information, please visit the Hitachi Astemo website:
(https://www.hitachiastemo.com/en/).