

**FOR IMMEDIATE RELEASE**

**Hitachi Automotive Systems Develops Semi-active Suspension Electronic Control Technology that Reduces Both Vibration and Position Changes during Driving by Approximately 10 %**

**Tokyo, April 23, 2015** --- Hitachi Automotive Systems, Ltd. today announced that the company has developed new semi-active suspension<sup>(1)</sup> electronic control technology that successfully suppresses vehicle vibrations during driving and vehicle position changes while turning on curves by approximately 10 %. This has made improvement of both driving comfort and steering stability possible. Such improvements were previously difficult to achieve.

In recent years, many types of technology for the electronic control of automobile driving have been researched with the aim of improving passenger safety and comfort while increasing vehicle steering stability. Issues faced during the development of the steering control system with semi-active suspension were increasing spring flexibility to reduce vehicle vibration to ensure driving comfort while simultaneously improving steering stability, as the ability to keep the auto body parallel during driving maneuvers such as curves decreases as the spring flexibility increases.

Hitachi Automotive Systems developed algorithms to more precisely analyze vehicle vibration and tilt, and also made more flexible spring elastic control of semi-active suspension possible. Specifically, an algorithm that included more parameters than are conventionally used was developed. These parameters quantified factors that affect vehicle vibration such as the rate of changes in acceleration over time to improve driving comfort. To improve steering stability at the same time, the behavior of a vehicle with high steering stability was expressed as a formula, and an algorithm to reconstruct this behavior was developed. Incorporating these two algorithms into the electronic control unit of the semi-active suspension has allowed for smoother driving comfort and improved steering stability.

Normally, seven sensors are used to detect vehicle status in order to control the movement of semi-active suspension. However, Hitachi Automotive Systems has utilized technology to make the highly advanced prediction of vehicle status to enable with only four sensors the offering of the same performance as conventional seven-sensor models. This has also made the reduction of costs possible.

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Going forward, Hitachi Automotive Systems will continue with the commercialization of this technology and will offer semi-active suspension electronic control technology that provides smooth driving comfort while also improving steering stability.

This technology will be presented on April 23, 2015 at the SAE 2015 World Congress, which is being held in Detroit, United States.

- (1) Semi-active suspension: Shock absorbing technology employing a vibration control device. Sensors fitted to the vehicle detect the vehicle status. Shocks from the road surface are absorbed naturally by the elasticity of the springs in the case of small vibrations. For large vibrations, spring movement is assisted with an actuator that utilizes elements including oil pressure.

**■About Hitachi Automotive Systems, Ltd.**

Hitachi Automotive Systems, Ltd. is a wholly owned subsidiary of Hitachi, Ltd., headquartered in Tokyo, Japan. The company is engaged in the development, manufacture, sales and services of automotive components, transportation related components, industrial machines and systems, and offers a wide range of automotive systems including engine management systems, electric power train systems, drive control systems and car information systems. For more information, please visit the company's website at <http://www.hitachi-automotive.co.jp/en/>.

**■About Hitachi, Ltd.**

Hitachi, Ltd. (TSE: 6501), headquartered in Tokyo, Japan, delivers innovations that answer society's challenges with our talented team and proven experience in global markets. The company's consolidated revenues for fiscal 2013 (ended March 31, 2014) totaled 9,616 billion yen (\$93.4 billion). Hitachi is focusing more than ever on the Social Innovation Business, which includes infrastructure systems, information & telecommunication systems, power systems, construction machinery, high functional materials & components, automotive systems, healthcare and others. For more information on Hitachi, please visit the company's website at <http://www.hitachi.com>.

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