

Receipt of the Imperial Invention Prize for technology to automatically adjust electronic compasses, which contributed to the expansion of the smartphone market

A patent for technology to automatically adjust electronic compasses, developed by Asahi Kasei Microdevices Corp. (AKM) and Asahi Kasei Corp.(Asahi Kasei), has been recognized with the 2012 Imperial Invention Prize, the highest award to be presented at the 2012 National Commendation of Invention by the Japan Institute of Invention and Innovation. In connection with this award, Asahi Kasei will also receive the Award for Distinguished Contribution for Driving the Invention into Implementation.

Electronic compasses measure geomagnetism to determine azimuth. This is used for electronic map applications such as pedestrian navigation systems to rotate the map to match the direction the users are facing. This technology has been applied to a wide range of portable devices, especially smartphones.

When the electronic compass is mounted in a portable device, it is influenced by strong magnetic fields from surrounding magnetic parts such as speakers, which introduce error in the calculation of azimuth. With conventional electronic compasses, users are required to perform a complicated adjustment procedure to eliminate such errors and obtain more accurate measurement of the weak geomagnetism. The procedure involves rotating the device in particular manner, which many users found to be troublesome and inconvenient. Furthermore, the adjustment needed to be performed regularly due to temperature changes and magnetization of parts within the device, which can reduce the precision of the adjustment.

The present invention has enabled automatic collection of geomagnetic data while the device is used in natural manner. The device constantly calculates azimuth and performs error corrections by using statistical estimations. More accurate measurement than with conventional technology is achieved since the continuous error correction adjusts for any changes in magnetic field which occur while the device is in use. The patent recognized by this award is the world's first invention which enables continuous and accurate calculation of azimuth while the portable device is used naturally.

This technology has improved the usability of electronic compasses significantly, and gave rise to a new business model based on solutions that combine hardware and software. The Imperial Invention Prize recognizes these achievements due to their contribution to expansion of the smartphone market.

The Imperial Invention Prize

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Koichi Hikida: Manager, Multi-Sensors, Marketing & Sales Center, Asahi Kasei
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Award for Distinguished Contribution for Driving the Invention into Implementation

Taketsugu Fujiwara: President and Representative Director, Asahi Kasei Corp.