



Feature Article: New Businesses and CSR [ Electric Walking Assist Car ]

## Implementing “Fall prevention” for society Derived from MURATA BOY technology



A project initiated by MURATA BOY development team and in-house recruited members to challenge something new

“MURATA BOY” is Murata’s original bicycle-riding robot filled with various sensor, control and communications technologies. Side by side with unicycle-riding robot “MURATA GIRL,” he has taken the role of a PR robot for Murata technologies. He has been a pride and joy of the development team. However, the development team did not stop at just giving him a PR role. They had a strong urge to implement MURATA BOY technologies to create something useful for society as real products. The idea of Electronic Walking Assist Car project was incubated from such an urge. This development project was initiated by the MURATA BOY development team and engineers recruited in-house. “Fall prevention” technology developed for MURATA BOY and MURATA GIRL project was at its foundation. A gyro sensor in Electronic Walking Assist Car senses the tilting angle of the unit and keeps it standing by moving a wheel in the direction of the tilt. The unit can move forward/backward in reaction to slight

push/pull motions without complex switching operations. It would not fall over when body weight is applied, and can go up an incline with ease. We exhibited the unit at CEATEC JAPAN with possible applications in assistive products, baby cars and shopping carts in mind, and received several inquiries from these industries. Safety is the key issue in this technology catering to senior citizens and people with weak muscle power. Ease of operation is a key point as well. Therefore, we had to make sure to build in features to prevent malfunction, misoperation and any other unforeseeable errors. We have expanded the team and brushed up the technology in preparation for its commercialization. We are very excited about the prospect of Murata, a specialist in unseen components within equipment, coming up with technologies that will be highly visible to contribute to society. The development team will carry on with their feeling of excitement as they enter the next step.



Main features of Electric Walking Assist Car are “fall prevention” and “power assistance.” It is built with a slim body thanks to its inverted pendulum control.

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Feature Article: New Businesses and CSR [ Wireless Power Transmission System ]

## High efficiency, easy-to-use and simple construction in the plug-free recharging system

Very first capacitive coupling wireless power transmission system  
With a potential to become infrastructure for the smart energy society

Wireless power transmission system recharges battery without a power cable, simply by placing a unit on a designated area. Murata’s New Product Development Group was researching this technology years ago while people were only dreaming about it. There are roughly two different categories of power transmission systems. One is the electromagnetic induction where current flow in the coil of the recharger generates magnetic flux, causing current flow in the coil of the equipment via magnetic flux to charge its battery. Coils on the transmitting side and the receiving side must be aligned precisely, or otherwise feed efficiency becomes degraded considerably. Further, current flow in coils inevitably generates heat resulting in more energy loss. Another is capacitive coupling, where electrodes are placed on the recharger side and equipment side, and energy is transmitted via the electric field generated as two electrodes are brought close together. Capacitance being generated between

electrodes, this is the principle of a capacitor. With this method, it is possible to make the recharger smaller and thinner giving more freedom of design. Misalignment up to 4cm or so would not decrease the feed efficiency either. Lack of heat generation from this method further reduces energy loss. Murata acquired a patent for this method. In November 2011, Hitachi Maxell, Ltd. released its “AIR VOLTAGE for iPad2” using the module Murata developed. This marks the dawn of wireless recharging system becoming a part of our lives. As this technology advances, recharging equipment plug-free and cable-free will become a common scene. Not only does this technology contribute to saving energy, it will also make our life more convenient. As smart energy society develops in the near future, and EV ( electric vehicles ) are everywhere on streets, wireless recharging will be an essential technology for our daily life. Murata is drawing a big picture surrounding this technology.



Realizes wireless recharging system ( where equipment can be recharged just by placing it on a recharging stand without a power cable )

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