

Press release

## **Kyocera introduces new touch feeling technology for real button feeling**

**The proprietary virtual reality technology enables innovative real touch feeling and a display feedback, which simulates the feeling of having pushed a mechanical button on a panel and pad. Automotive applications are expected to further improve driver safety.**

**August 27, 2015** – Kyoto/Neuss – The Japanese technology Corporation Kyocera, a leading manufacturer in the field of electronic devices, introduced a newly patented technology in Europe for real touch feeling and force feedback in display screens. The development of a real button sensation is expected to create a new type of user interface. It can be used in touch panel or touch pad products for a broad range of applications such as automotive and industrial equipment or in the field of information and communications.

The lack of sufficient real touch feeling and feedback is a well-known disadvantage of common panels where mistaken operations often occur as only a visual check can confirm whether or not the desired input has been registered. Kyocera applies its proprietary virtual reality technology to create a solution in simulating a mechanical keyboard on the display screen. According to the principles of virtual reality, the Pacini nerve in the finger is being stimulated to create the feeling in the brain of having pressed a real button.

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The technical principle of creating this sensation works as follows: the button impression is composed of pressure feeling (a button response feeling with micro-movement only), which is perceived by the finger while pushing the button at first, and a subsequent stroke-down impression (a button response feeling caused by movement). Kyocera's new technology called "Haptivity" evokes these impulses towards the nerve of the finger and creates the sensation of a real button operation by both pressure detection and specified frequency vibration output features. (Ex. Patent No. EP2461233B1 effective until 2030).

These sequences of special pressure detection and frequency lead to the feeling of pushing a normal button, a rubber-like key, an increment wheel and much more without a big movement of the surface of the panel. Corresponding software programming of the device can enable various effects.

Creative design makes several solutions possible to define the characteristic of a button or switch by software on the display.

Kyocera will deploy this patent technology within its products and is considering a licensing program.

"Kyocera holds various patents for this new virtual reality technology that we are calling 'Haptivity', which stands for real touch feeling and Sensitivity", explains Mr. Manfred Sauer, Managing Director, Kyocera Display Europe GmbH. "The Impressive mock-ups already indicate that a number of promising applications will be brought to market soon, including the systems composed of Piezo and Original custom IC based on the new patent technology".

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### For more information about Kyocera:

[www.kyocera.eu](http://www.kyocera.eu)

### About Kyocera

Headquartered in Kyoto, Japan, Kyocera Corporation is one of the world's leading manufacturers of fine ceramic components for the technology industry. The strategically important divisions in the Kyocera Group, which is comprised of 226 subsidiaries (as of March 31, 2015), are information and communications technologies, products which increase quality of life, and environmentally friendly products. The technology group is also one of the largest producers of solar energy systems worldwide, with more than 6 gigawatts of solar power having been installed around the world to date.

The company is ranked #552 on Forbes magazine's 2015 "Global 2000" listing of the world's largest publicly traded companies.

With a global workforce of over 68,000 employees, Kyocera posted net sales of approximately €11.74 billion in fiscal year 2014/2015. The products marketed by the company in Europe include printers, digital copying systems, microelectronic components, fine ceramic products and complete solar power systems. The Kyocera Group has two independent companies in the Federal Republic of Germany: Kyocera Fineceramics GmbH in Neuss and Esslingen and Kyocera Document Solutions in Meerbusch.

The company also takes an active interest in cultural affairs. The Kyoto Prize, a prominent international award, is presented each year by the Inamori Foundation — established by Kyocera founder Dr. Kazuo Inamori — to individuals and groups worldwide who have contributed significantly to the scientific, cultural, and spiritual betterment of humankind (converted at present €385,000 per prize category).

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