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Ricoh launches the world's first solid-state dye-sensitized solar cell modules

Latest Ricoh innovation leads to global breakthrough and first availability of new energy source

TOKYO – February 4, 2020 – Ricoh Company Ltd. has announced the launch of the world's [first solid-state dye-sensitized solar cell \(DSSC\) modules](#), the RICOH EH DSSC series. This latest innovation from Ricoh can generate electricity from indoor light and produce new, renewable energy to allow electronics to maintain a charge.

In today's Internet of Things (IoT) society a solution for affordable, renewable energy that can be produced indoors without reliance on natural light is crucial to empowering digital workplaces and day-to-day lifestyles. Inventing a solution of this kind has been a long-term goal of the Ricoh innovation team.

How it works

DSSC technology works by mimicking the photosynthesis process, replacing chlorophyll with light absorbing dyes. Incoming light then excites molecules to a higher energetic state and the energy produced is collected by a structure of electrolytes and catalysts, replicating the structure of a leaf in photosynthesis.

While DSSC technology has long been lauded as an affordable way to generate electricity, safety concerns have prevented it from being used in commercial applications. Traditionally in a liquid state, the iodine and organic solvents used in the process can easily be volatilized and leak. By developing a DSSC consisting of an electrolyte made with only solid-state materials, the RICOH EH DSSC series eliminates the liquid-based safety concerns. In addition, it achieves higher power generation efficiency under weaker light sources, such as in warehouses, because the organic dyes used work most optimally with the wavelengths of indoor light sources.

DSSC in use

The largest sensor in the new series, the RICOH EH DSSC5284, is currently being used for the desk "LOOPLINE T1", an office desk created by Taisei Corporation and Design Office Line. It is equipped with DSSC cells allowing mobile devices sitting on top of the table to maintain a consistent charge during a full day of work.

Ricoh Company, Ltd. www.ricoh.com

1-3-6 Nakamagome, Ohta-ku, Tokyo 143-8555 Japan E-mail : koho@ricoh.co.jp

“We recognize the need – both within business and society – to identify new sources of renewable energy. In today’s IoT era, we are even more committed to our energy harvesting efforts,” said Tetsuya Tanaka, General Manger, Energy Harvest Business Center, Ricoh. “Originally, our DSSC technology applied the organic photoconductor technology that we developed to drive our multifunction printers. The power of innovation and belief in technology that fuels the future led us to leverage that same DSSC technology to fuel renewable energy in environments critical to our customers, such offices with little natural light. We’re thrilled to introduce solid-state DSSC technology to the world and are eager to continue developing new applications for this critical renewable energy source.”

The RICOH EH DSSC series is currently available in red cells. By changing the color of the dye used, the color can be changed. Ricoh is currently developing see-through transparent cells for use on devices like cell phones.

Sustainable Development Goals

Today’s announcement is one of many steps Ricoh is taking as part of the company’s pledge to the [United Nations Sustainable Development Goals \(SDGs\)](#) including a commitment to affordable and clean energy.

Availability

The RICOH EH DSSC5284 (52mm x 84mm) will be available in Japan this month, followed by the RICOH EH DSSC1719 (17mm x 19mm) in March and RICOH EH DSSC2832 (28mm x 32mm) in April.

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| About Ricoh |

Ricoh is empowering digital workplaces using innovative technologies and services enabling individuals to work smarter. For more than 80 years, Ricoh has been driving innovation and is a leading provider of document management solutions, IT services, communication services, commercial and industrial printing, digital cameras, and industrial systems.

Headquartered in Tokyo, Ricoh Group operates in approximately 200 countries and regions. In the financial year ended March 2019, Ricoh Group had worldwide sales of 2,013 billion yen (approx. 18.1 billion USD).

For further information, please visit www.ricoh.com

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