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Mitsubishi Electric Sets Two World Records in Solar Cell Conversion Efficiency

Carbon dioxide emissions reduction by raising solar power module output

Tokyo, February 16, 2010 – Mitsubishi Electric Corporation (TOKYO: 6503) announced today it has set two world records for photoelectric conversion efficiency in polycrystalline silicon photovoltaic (PV) cells, achieved by reducing resistive loss in the cells. Photoelectric conversion efficiency is the rate at which sunlight energy is converted into electricity, with higher rates meaning more output.

In response to the growing demand for PV systems that help tackle global warming, the global production of PV cells has reached 5,500 megawatts (MW) in the fiscal year ending March 2009 (FY2009), and is expected to reach 8,000 MW in FY2012. With the use of crystalline silicon PV cells continuing to increase, PV cell manufacturers are looking for ways to improve the conversion efficiency of these cells to gain more output power from limited surfaces. At the same time, PV cell manufacturers are trying to achieve more output power while reducing the thickness of PV cells, thereby reducing their dependence on silicon and the related risk of sharply fluctuating prices for this material.

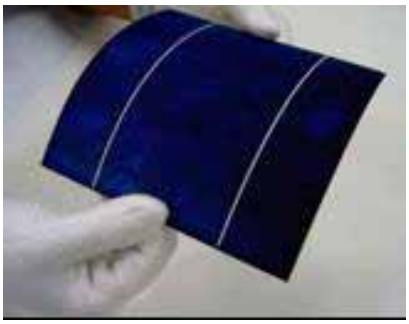
One of the world records, which Mitsubishi Electric has now renewed for the third consecutive year, is a 19.3-percent efficiency rating for photoelectric conversion of a practically-sized polycrystalline silicon PV cell of 100 squared centimeters or larger, with the PV cell measuring approximately 15 cm x 15 cm x 200 micrometers. The rating is 0.2 points higher than the company's previous record of 19.1 percent.

The second world record, achieved with the same technologies in an ultra-thin polycrystalline silicon PV cell measuring approximately 15 cm x 15 cm x 100 micrometers, is an efficiency rating of 18.1 percent, a 0.7-point improvement over the company's previous record of 17.4 percent.

The conversion efficiency rates have been confirmed by the National Institute of Advanced Industrial Science and Technology (AIST), in Japan.

Mitsubishi Electric will be developing mass-production technology to deliver these high conversion rates in commercial PV modules. The company also aims to increase the output of its PV systems by combining this technology with PV inverters capable of high-efficiency conversion of DC current to AC. By improving the efficiency of its PV systems, Mitsubishi Electric expects to contribute to environmental preservation as well as sustainable societies.

Polycrystalline silicon PV cell
with 19.3% conversion-efficiency rating
(15 x 15 cm x 200 micrometers)



Flexible, ultra-thin polycrystalline silicon PV cell
with 18.1% conversion-efficiency rating
(15 x 15 cm x 100 micrometers)

Background

Previously, Mitsubishi Electric, with support from the New Energy and Industrial Technology Development Organization (NEDO) under the Ministry of Economy, Trade and Industry (METI), improved the conversion efficiency of its PV cells by developing a low-reflection, honeycomb-textured surface that reduces sunlight loss due to reflection. In 2008, the company achieved a world-record photoelectric conversion efficiency rating of 17.4% with an ultra-thin polycrystalline silicon PV cell measuring about 15 cm x 15 cm x 100 micrometers.

Mitsubishi Electric also developed a reflective structure for the rear surfaces of PV cells to capture infrared rays that otherwise would pass through the cells and thus not be harnessed to generate electricity. Using these technologies, in 2009 Mitsubishi Electric achieved another world-record of 19.1 percent with a polycrystalline silicon PV cell measuring approximately 15 cm x 15 cm x 200 micrometers.

To further improve these photoelectric conversion efficiencies, however, the company decided to develop a new technology to reduce resistive loss.

Main Developments

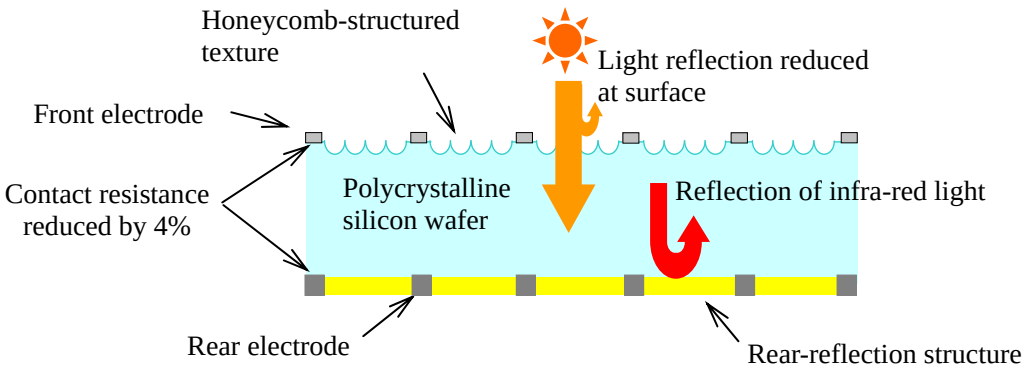
1) 19.3% efficiency in polycrystalline silicon PV cell (15 cm x 15 cm x 200 micrometers)

A certain amount of electricity generated in PV cells is dissipated as heat due to resistive loss between

silicon wafers and electrodes, so reducing the contact resistance at electrodes can improve conversion efficiency. Mitsubishi Electric's new technology applies a treatment to the wafer prior to electrode formation to improve electrical contact performance, thereby reducing resistive loss by 4 percent compared to previous PV cells. The 0.2-point improvement over the previous record of 19.1% enables the electrical output in a cell of practical measurements to increase by approximately 1%, from 4.16W to 4.2W.

2) 18.1% efficiency in ultra-thin polycrystalline silicon substrate (15 cm x 15 cm x 100 micrometers)

By applying the above-mentioned technologies in a practical-size, ultra-thin polycrystalline silicon wafer measuring approximately 15 cm x 15 cm x 100 micrometers, Mitsubishi Electric improved photoelectric conversion by 0.7 points to 18.1%.



New high-efficiency PV cell

Patents

The technologies announced in this press release encompass 59 Japanese and 8 international patents pending.

About Mitsubishi Electric

With over 85 years of experience in providing reliable, high-quality products to both corporate clients and general consumers all over the world, Mitsubishi Electric Corporation (TOKYO: 6503) is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, transportation and building equipment. The company recorded consolidated group sales of 3,665.1 billion yen (US$ 37.4 billion*) in the fiscal year ended March 31, 2009. For more information visit http://global.mitsubishielectric.com

*At an exchange rate of 98 yen to the US dollar, the rate given by the Tokyo Foreign Exchange Market on March 31, 2009.

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