

**FOR IMMEDIATE RELEASE**

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**MITSUBISHI ELECTRIC DEVELOPS PRACTICAL USE  
MULTI-CRYSTALLINE SILICON SOLAR CELL WITH WORLD'S  
HIGHEST CONVERSION EFFICIENCY RATE OF 18.0%**

**Tokyo, May 31, 2007** – Mitsubishi Electric Corporation (President and CEO: Setsuhiro Shimomura) announced today its achievement of a world record<sup>1</sup> photoelectric conversion efficiency rate<sup>2</sup> of 18.0%<sup>3</sup> in a 150mm square practical use multi-crystalline silicon solar cell, an improvement of 1.2% over our previous models. We plan to present our technology at the Fukuoka 17<sup>th</sup> International Photovoltaic Science and Engineering Conference in December 2007.

<sup>1</sup> As of May 31, 2007

<sup>2</sup>Efficiency that solar light energy is changed to direct current electrical energy

<sup>3</sup> Results from evaluation by the National Institute of Advanced Industrial Science And Technology (AIST), a public verification agency

**Background and intent of development**

Due to increased global awareness of environmental preservation, photovoltaic production volume has been increasing as PV systems have garnered attention as a source of renewable energy. Silicon is an essential component in the wafers used to make solar cells, however the supply of silicon has not been able keep up with demand. Therefore, research continues in making thinner wafers that use less silicon and improving efficiency while also increasing electrical output.

We achieved the world's highest conversion efficiency rate of 18.0% by adding a low reflectivity surface texture on the multi-crystalline silicon as well as developing a process to print electrodes on the surface of the silicon (metallization) and reducing shade loss of front grid electrodes. In the same surface area as previous products, we have achieved a 7% greater electric output, making it suitable for even smaller installations such as narrow roofs.

## **Main features of cell**

### *1. Increased light absorption using a unique Reactive Ion Etching (RIE) method*

Using a nano-sized mask material, the RIE method uses highly reactive ions generated by RF plasma, letting ions precisely etch the target materials. This decreases reflectivity from the texturized surface of the multi-crystalline silicon, increasing the amount of absorbed light<sup>4</sup>.

<sup>4</sup> Based in part on the result of the NEDO commissioned project for R&D of innovative next generation photovoltaic system technology

### *2. Suppresses reduced electrical performance in crystalline.*

New metal electrode material reduces metallization time by approximately half that of previous models, and sustains electrical performance of crystalline.

### *3. Expanded effective electrical output surface area*

Using modified screens and front metal electrodes we reduced shading loss of front grid electrodes by 40% compared with our conventional cells

## **Future developments**

We will begin introducing this technology into our mass produced photovoltaic modules after the end of 2007. Pairing this with our power module, which has the industry's highest energy conversion efficiency<sup>5</sup>, will increase output of solar power systems. Mitsubishi Electric is committed to global environmental preservation and sustainable society through the spread of photovoltaic systems.

<sup>5</sup> PV-PN04F: 95.5%, PV-PN06F: 95.0% as of May 31, 2007. Based on JIS C8961 regulated rated load efficiency

**Patents:** 10 domestic and 10 international patents pending

## **About Mitsubishi Electric**

With over 80 years of experience in providing reliable, high-quality products to both corporate clients and general consumers all over the world, Mitsubishi Electric Corporation (TSE: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 3,855.7 billion yen (US\$ 32.7billion\*) in the fiscal year ended March 31, 2007. For more information visit <http://global.mitsubishielectric.com>

\*At an exchange rate of 118 yen to the US dollar, the rate given by the Tokyo Foreign Exchange Market on March 31, 2007.