DOCOMO to field test solar-powered green base stations

March 22 2013

NTT DOCOMO, INC., Japan's leading mobile operator, announced that from April, it will begin field testing three conventional mobile-network base stations that have been installed with solar panels, high-capacity rechargeable batteries and green power controllers.

DOCOMO, which is developing disaster-proof, environmentally friendly base stations following the Great East Japan Earthquake, tested the equipment at its R&D Center from March 2012 to February 2013. The equipment will now be used to establish 10 green base stations in the Kanto-Koshinetsu region of Japan by late summer, including the first three in Tokyo, Kanagawa and Yamanashi prefectures.

DOCOMO's green base stations use solar panels to generate and store solar power during the daytime. If commercial power supply is cut off during a disaster, the station can rely solely on this power to run communication equipment during the day and use high-capacity, rechargeable batteries to store 14-16 hours' worth of power when solar power is not available.

The solar panels to be used in the field test generate up to 4.19 kW, whereas the maximum power consumption of a base station is 2.0 kW. Remotely controlled green power controllers will manage power used by the base stations, including utility-provided electricity, solar panel-generated electricity, and high-capacity, rechargeable batteries that discharge their energy as required.

To cut down on electricity costs, the batteries can be charged with electricity purchased at nighttime, when costs are relatively low. Later, the electricity is used during the daytime, when costs are higher, or when inclement weather prevents photovoltaic power generation. Solar panel power generation can be used during disaster-induced blackouts to operate facilities during the day and store any excess power for nighttime use.

The controllers also enable solar power to be stored as direct current (DC), which avoids energy loss of about 10% due to conversion to alternating current (AC).

Going forward, DOCOMO's green base station develop program may also include the introduction of fuel cell technologies and wind-powered base stations.