Development of monitoring technology for individual solar panels

Smart grid technology to prevent power generation loss by detecting malfunctions of solar panels

We have developed a small and low-cost system to monitor the power generation of each individual solar panel. The data transmitter of the monitoring system is very compact to be built into a junction box of a solar panel.

Information of power generation of each panel is sent via already installed direct current lines and is received by a receiver located near a power conditioner. Therefore, malfunctions of solar panels are expected to be found easily. The cost of a built-in transmitting device for each panel would be very low (i.e. less than a few dollars) when it is mass-produced. A consortium starts in 2011 for information exchange on this new monitoring system.

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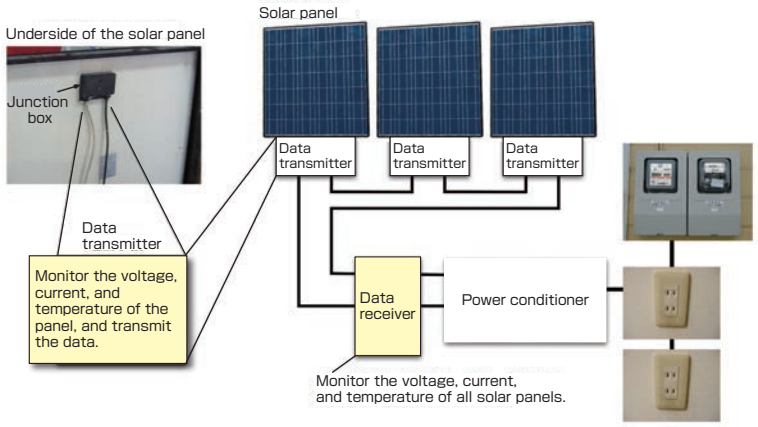

Solar power generation monitoring system

Low-power indoor positioning system that is robust to signal loss, fluctuation, and noise

Analysis of ZigBee wireless packets with stochastic reasoning

We have developed a low-power positioning engine with stochastic reasoning and a navigation system that can run even on mobile phones' MPU. The system is robust to signal loss, fluctuation, and noise by analyzing ZigBee wireless packets by stochastic reasoning, and is light weight enough to work even on powerless MPU installed in mobile phones. In addition to positioning, the system provides a functionality of transferring emergency signals using the sensor network only. Users can enjoy navigation services such as shopping guidance in normal circumstances, and once when emergency signal is received, the system automatically switches to emergency mode and provides routing information to the nearest emergency exit.

The system is installed at Landmark Plaza in Minato Mirai area, Yokohama City, and its functionality is verified in an actual building.

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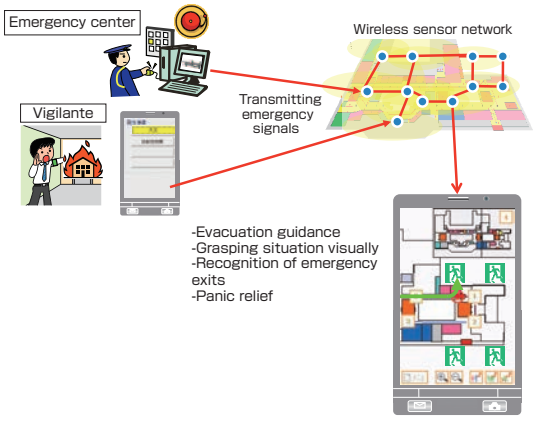

Emergency guidance and navigation