

Vibration-energy & Thermoelectric Power Generation Device Market: Key Findings 2011

~ Harvesting and recovery; the potential of the "Third-generation Power Generation
and Batteries" ~

➔ **Research Outline**

Yano Research Institute has conducted a study on the vibration-energy and thermo power generation device market in Japan based on the following research outline.

*Impact of the earthquake occurred in March 2011 has not been taken into account.

1. Research period: From January to April 2011
2. Research targets: Manufacturers of vibration-energy and thermoelectric power generation elements and devices, material manufacturers, manufacturers and organizations of environmental power generation elements and devices
3. Research methodologies: Face-to-face interviews by our specialized researchers, interviews via telephone and e-mail, and literature research

<What are the vibration-energy power generation and the thermoelectric power generation?>

Vibration-energy power generation:

A technology used to convert environmental vibration to electric energy. There are several different types of methods including piezoelectric generation, electret, electromagnetic induction, etc. The vibration-energy power generation devices with capacity of approx. μ watts level to several watts are covered in this study.

Thermoelectric power generation:

A technology used to convert a thermal energy to electrical energy through the use of Seebeck effect. It attracted attention as a technology that makes it possible to effectively utilize heat waste, and the devices for such a variety of applications as industrial furnaces and incinerators, industrial equipment, automobiles, solar power generation, etc. Some manufacturers aim for power generation of less than one watt by thermal difference between body temperature and several tens of degrees C for the use of the power source of sensing devices. In this study, the thermoelectric devices with capacity of around a little less than one watt to kilowatt class are covered.

➔ **Key Findings**

- ◆ **Vibration-energy power generation device market in Japan is projected to be 27 million JPY in 2010 and forecasted to be 1,845 million JPY in 2014.**

As of 2011, vibration-energy power generation devices available in the market include floor-type power generation systems, mat-type sensing devices used at worksites, paper fans, shoes, bags, etc. Most of them, however, are for trial introduction or low-volume production. In or after 2011, as well as sample shipment and market introduction of the sensing devices to be used as the power source of equipment that monitors aged deterioration of buildings, introduction of modules for light switches with success record in overseas will be introduced. In 2013, it is expected that remote control units (mainly for TVs) with a built-in vibration-energy power generation device, as a substitute of batteries, will be released in.

- ◆ **Thermoelectric power generation device market in Japan is projected to be 25 million JPY in 2010 and forecasted to be 1,098 million JPY in 2014.**

While demonstration experiment for the thermoelectric power generation devices and systems for industrial furnaces, incinerators and other industrial equipment has been already held, and introduction into the market has been partially started in Japan as of 2011, practical application has been just

started. By 2013 or 2014, most thermoelectric power generation device manufacturers in Japan will have started their business in the market, and the number of introduction will steadily increase as each manufacturer conducts experiments repeatedly. Development of the devices for automobiles and solar power generation has been advancing mainly for overseas national projects, and the devices are expected to be put into practical use in around 2016.

◆ **Report format:**

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Price: 95,000 yen (4,750 yen of consumption tax will be additionally charged for sales in Japan.)

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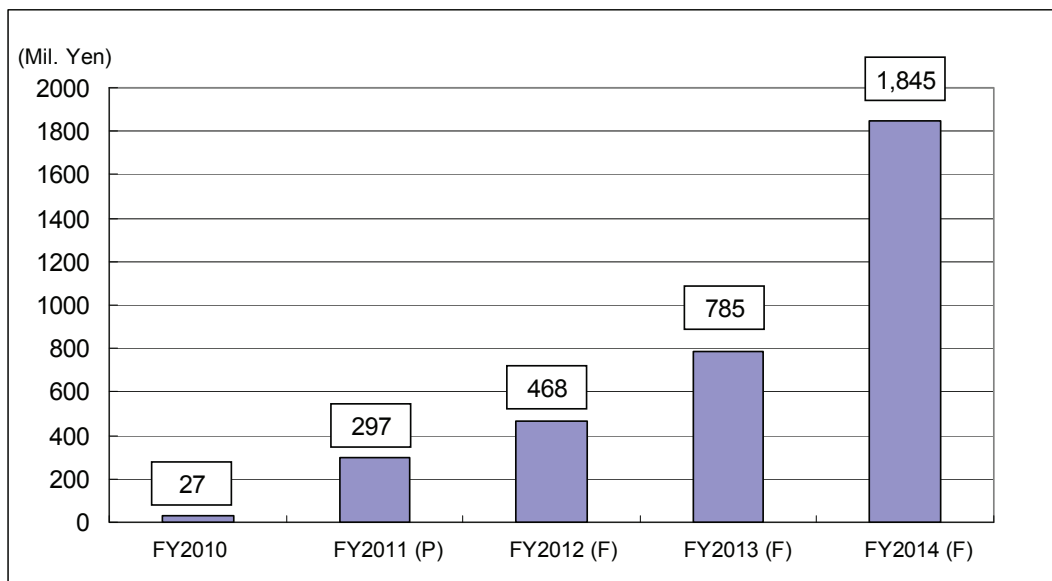
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**Figure 1: Market Size for the Vibration-energy Power Generation Devices
in Japan (Transition and Forecast)**

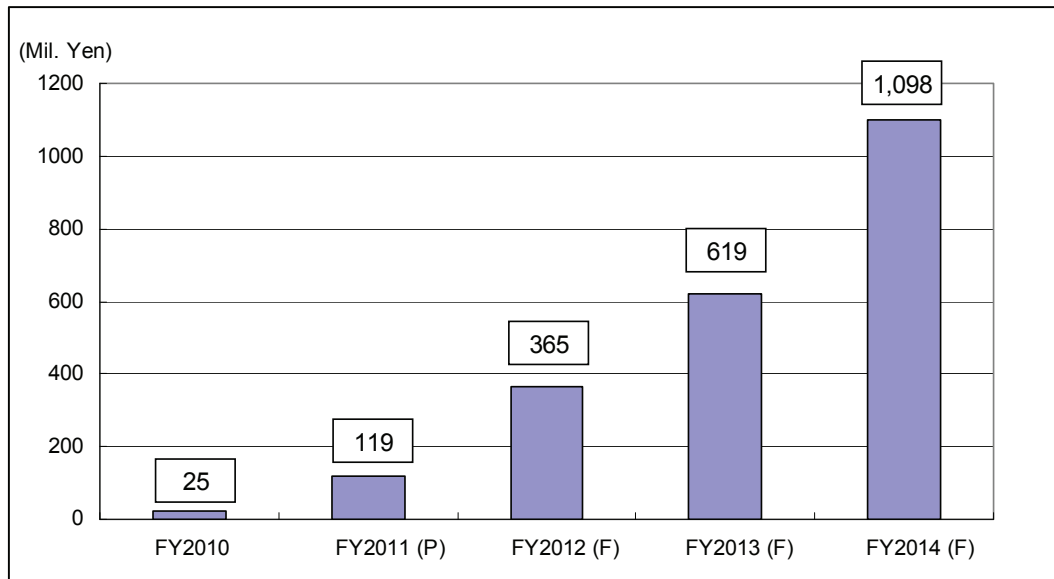


Estimated by Yano Research Institute

Notes:

- 1) The above figures are based on the shipment value of modules.
- 2) (P) stands for "Projection", and (F) for "Forecast"
- 3) Impact of the earthquake occurred in March 2011 has not been taken into account.

**Figure 2: Market Size for the Thermoelectric Power Generation Devices
in Japan (Transition and Forecast)**



Estimated by Yano Research Institute

Notes:

- 4) The above figures are based on the shipment value of modules.
- 5) (P) stands for "Projection", and (F) for "Forecast"
- 6) Impact of the earthquake occurred in March 2011 has not been taken into account.