FOR IMMEDIATE RELEASE
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Sendai Smart Machines, Co., Ltd, to be established for Sensor node development applying advanced vibratory energy harvester in the coming IoT era

Sendai, Japan – Professor Kuwano's group at New Industry Creation Hatchery Center of Tohoku University developed new sensor node technology integrating the MEMS-based energy harvester, which converts vibratory energy to electrical power, and announced establishment of a start-up company "Sendai Smart Machines, Co., Ltd. (CEO: Chiharu Takamadate)" in Sendai, Japan for utilization of the technology in the coming IoT fields. Sendai Smart Machines (SSM) takes over manufacturing process for mass-production and business activities in the market from now on. Tohoku University Venture Partners Co., Ltd. agreed to invest on SSM and support its growth strategy.

Professor Kuwano has advocated "Sensor Communication System" since his tenure of Nippon Telephone and Telegraph Public Corporation (NTT) as a senior researcher. The Sensor Communication System is defined the system where a large number and kind of sensors transmit a variety of information data through network and the data are made use of for many kinds of purposes such as facility maintenance & operation, new communication methods, environmental protection, safety & security, and so on. He assumed a professor of graduate school of engineering of Tohoku university in 2003, and successfully developed an advanced energy harvester device. The new energy harvester device is capable of more than 1 mW of electrical power generation with smaller footprint and weight than existing vibratory energy harvester devices in the market, and enables data transmission without wired electrical power or life-limited batteries. This time Sendai Smart Machines (SSM) was established in order to manufacture and distribute the new device as SSM's product in the worldwide market.

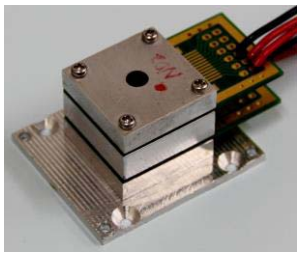
The new energy harvester device developed by professor Kuwano's group integrates piezoelectric material, AlN (Aluminum Nitride), which can generate electrical power from ambient vibration. Its electrical power output is more than 1 mW per 1 cc for 1 g of acceleration. Further, since it is formed on SUS (Stainless Steel) beam, it can reliably operate under severe vibratory circumstances , such as

automobile, railway, factory, and so on, with remarkable durability.

■ Product Sample Specification

Energy Harvester: Low power (AC) type		
Max power	**200uW**	
Resonant frequency	**~ 350Hz**	
Bandwidth	**50 Hz**	
Dimensions	**15 x 15 x 8 mm**	
Total weight	**4 ~ 6 g**	

(Note) Specification may be subject to change without notice.

Energy Harvester: Middle power (AC) type		
Max power	**1mW**	
Resonant frequency	**200 ~ 400Hz**	
Bandwidth	**50 Hz**	
Dimensions	**15 x 15 x 20 mm**	
Total weight	**20 g**	

(Note) Specification may be subject to change without notice.

■ Product website

http://www.ssmcoltd.co.jp

About Sendai Smart Machines Co., Ltd. (www.ssmcoltd.co.jp)

Sendai Smart Machines (SSM), a MEMS-based IoT device company for Industrial Internet of Things (IIoT), was founded in 2016 in order to build a safe, secure and cost-effective social infrastructure through development and supply of vibration energy harvester and sensor module in the coming IoT era. Applying the MEMS-based piezoelectric technology originally developed by Prof. Kuwano's research lab in Tohoku university, SSM develops and manufactures unique and unprecedented vibration energy harvesters.

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