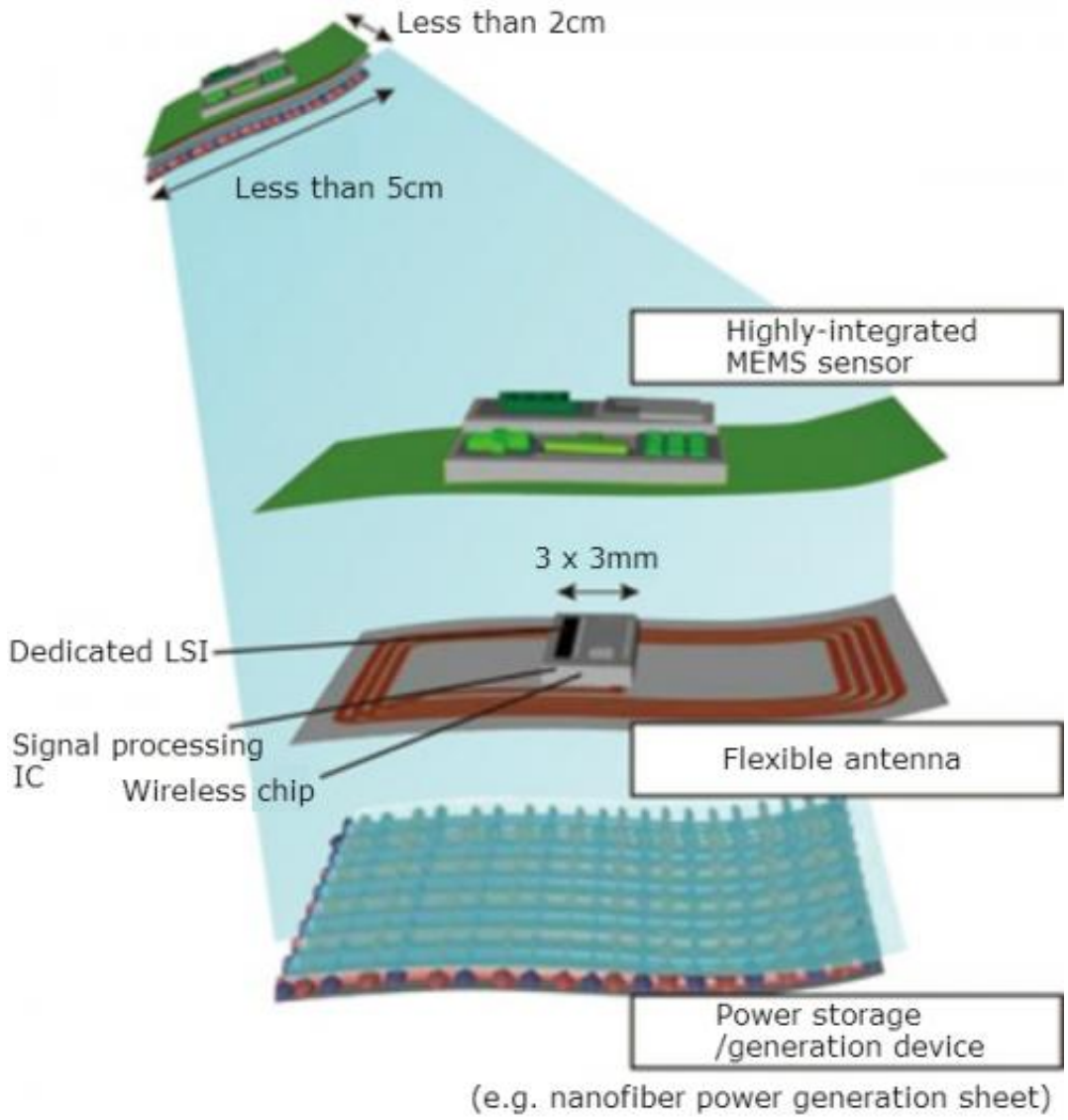
Japanese association unveils tape-like environmental sensors

July 10 2013, by Bob Yirka



Credit: Tech-ON

(Phys.org) —Green Sensor Network Laboratories of NMEMS TRA, a technical research association in Japan, has unveiled a new type of environmental sensor that is very small and easy to install. With a surface area of just 2 x 5cm and 1mm thick it attaches to surfaces much like a piece of tape. The development of the sensor was part of a larger nationwide project called "Sensor System Development Project to Solve Social Problems"—its goal is to foster the development of inexpensive and easy to deploy sensors for monitoring a host of sites for environmental conditions.

The need for inexpensive and easy to deploy sensors has become more critical as governments around the world have become more aware of the dangers of environmental factors, particularly those that are man-made. Current sensors generally involve a person making the rounds, retrieving modules to take back to a central location for testing—an expensive and time consuming process. The thinking is that if small easy to install sensors could be used that send data automatically, than many more of them would be put into service, making life safer for everyone in the vicinity. Project leaders hope such sensors can be deployed en masse in factories, schools, office buildings, hospitals, etc. across the country.

Each sensor, once deployed, becomes part of a network via wireless communications and can be configured to detect a variety of environmental factors such as CO2, temperature, VOC, infrared light, dust, and even electromagnetic field strength. The sensor measures the amount detected and relays that data to a central processing unit. Besides being small and easy to install, the sensors are inexpensive as well, with a cost per unit expected to be less than $10. Amazingly, the sensors also power themselves.

Each sensor is a three layer construct: a highly integrated MEMS sensor, an antenna and a power generation and storage layer. The power layer is

a thin, flexible, organic semiconductor nanofiber that is still under development. The current version is able to supply 80 percent of the power needed. The researchers hope to bump that to 100 percent before offering the sensors to the public.

More information: via Tech-ON: techon.nikkeibp.co.jp/english/ … _EN/20130709/291562/

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