Can Photovoltaic EH support Wireless Condition Monitoring in an Industrial Environment?

In the drive toward improving the efficiency of the digital factory, industry has increased the deployment of wireless Condition Monitoring sensors to monitor the health of their assets. While IIoT greatly increases the availability of machine health data, the hidden cost of replacing batteries has received little attention. Changing batteries for 100's of wireless sensors in an industrial facility, many deployed in hazardous environments or locations that are difficult or unsafe to reach.

Many IIoT applications use disposable primary cell batteries, with the associated impact on our environment, but new developments in rechargeable energy storage technology when coupled with Energy Harvesting (EH) offers the promise of eliminating the cost of battery replacement, reducing the cost of system ownership.

This talk reviews the results from experimental application of Photovoltaic EH technology to a commercially available wireless Condition Monitoring sensor, with focus on assessment of available technologies strengths and limitations.

Author Profile

Ed Spence is the Founder and Managing Director of The Machine Instrumentation Group, representing a network of consulting and contract engineering service providers helping clients define and develop new sensors for machine health instrumentation.

Previously the Marketing Manager of the MEMS Sensor Technology Group at Analog Devices (2008 – 2017), Ed defined the MEMS accelerometer roadmap for vibration based Condition Monitoring, winning an Innovation Award at Sensors Expo 2017 for the innovative ADXL1002 high frequency accelerometer. Ed has long experience in new product development and thrives on defining new solutions for client applications.

Ed has published or presented on subjects related to CBM / PdM on numerous occasions, maintaining an ongoing dialogue with the PdM eco-system regarding technology trends on subjects such as the application of MEMS accelerometers, wireless sensor networks (IIoT) and data engineering for Predictive Maintenance.