# Plug & Play Smart Factory Primed to Support Industry 4.0 Services

## **Challenge & Solutions**

Factories are prime candidates for the real-time monitoring capabilities offered by Internet of Things (IoT) devices. Well-placed sensors can help maintain product quality, detect when machinery needs maintenance, and provide strategic insight into production processes, among other benefits. But realizing this vision is challenging, because factories are very heterogeneous, with diverse arrays of machinery, software, networks and control systems. As a result, implementing IoT technology typically requires costly site-specific integration and custom hardware and software, none of which transfers easily to other facilities.

The startup Stoorm5 has developed a potentially wide-ranging solution: Plug & Play Smart Factory (PPSF). It starts with versatile, inexpensive cyber-physical system (CPS) gateways that gather data from and share information with production-line systems, and adds an industrial IoT software service platform capable of integrating and managing the gateways. This "smart middleware" approach provides an affordable, adaptable way to gather and manage factory-floor data from a diverse range of devices without custom components. It also enables easier integration into higher-level systems, overcoming one

widespread problem with existing Supervisory Control And Data Acquisition (SCADA) systems: they are seldom linked to broader IT networks, which limits information-sharing and the ability to optimize processes and operations through CRM and ERP systems.

Under the PPSF program, Stoorm5 and Alleantia tested the concept at Whirlpool Europe's manufacturing facility in Biandronno, Italy. The experiment demonstrated the capability of connecting with vibration sensors on production tools and remotely monitoring them. Shop floor personnel were able to reliably view and track previously unavailable information that helped them perform proactive and predictive maintenance.

### **EuroCPS Support**

EuroCPS facilitated collaboration among Stoorm5 and several partner organizations, including Whirlpool. Especially important was EuroCPS's ability to bring STMicroelectronics into the group, which provided access to the iNEMO family of system-in-package sensors with accelerometer, gyroscope, and magnetometer functions.

## **Digital Skills**

**Stoorm5**: Developer of PPSF IoT platform and gateway to support the monitoring and control of remote devices and systems. **Alleantia**: Contributed access to its vast library of IoT devices, to support PPSF's capability of recognizing and managing thousands of physical devices in plug & play fashion.

**STMicroelectronics**: Provided access to its iNEMO multifunction sensor platform and assistance integrating it with the Alleantia and

#### Company

Stoorm5's innovative IoT software platform supports real-time monitoring and control of remote devices ranging from small objects at home to industrial equipment.



Impact / What's next

Stoorm5 solutions.

With these results, PPSF will be widely available for creation of Industry 4.0 services on top of a versatile Industrial IoT structure composed of CPS Gateways.

Thanks to the PPSF's platform's flexible architecture and high potential for customer return on investment, Stoorm5 expects to sell more than 12,000 units in the first five years following its 2017 market launch, with sales seen reaching 2M€ annually by 2022. In addition, the company expects to double its staff to 14 during that period, in large part because of benefits provided by the PPSF project.



**EuroCPS** is an European funded project gathering several design centers in order to boost and initiate synergies between innovative companies, major CPS-platforms and CPS-competency providers.

