

# Smarter Wireless Energy Monitoring System

## Background:

It is paramount and timely for European manufacturing companies to adopt innovative energy/carbon-related evaluation, planning and monitoring systems to enhance sustainable competitiveness. Supported by the European Commission FP7 Research Programme, a Smarter Wireless Energy Monitoring System has been developed by Coventry University, CIM and INENCO. From 2014, the system has been deployed in production lines of Swedish companies for real-time energy consumption monitoring.

## System description:

The Smarter system is for monitoring, visualising and unearthing energy consumption of production equipment to enhance energy consumption awareness and manufacturing sustainability.

The architecture of the system, depicted below, is divided into two subsystems: wireless energy monitoring and Big Data storage. By integrating cutting edge technologies, such as Wireless sensor Networks, Cloud computing, Big Data and Cloud data security, the Smarter system has the following distinguished advantages, compared to other commercial systems in the market:

- Cost-effective: low-cost sensors (less system cost) and advanced wireless sensor network systems (less system maintenance cost)
- Extensible and Customisable: extensible to extra sensor nodes as networks for multiple machine monitoring, and other types of sensors (e.g., temperature, humidity, brightness, etc.), customised data collection frequencies, and new analysis software function design according to customers' requirement
- Real Time: high-frequency data collection (up to 100 times per second), real-time data processing and visualisation
- Big Data Processing and Security: large amounts of data processing by using cutting edge Big Data and data security technologies such as Hadoop and Hive
- Bi-directional Communication and Control: Internet of Things technologies used to implement data collection and monitored node remote control

