First industrial internet solution for a printed electronics plant

May 18 2016

VTT's printed electronics pilot plant in Finland has moved into a new era - an industrial internet-based solution, the first for the printed electronics production in the world, has been installed for the control of the plant.. Environmental conditions affecting sensitive roll-to-roll production can be monitored, and temperature, humidity and pressure measurements can be performed. The measurement results are collected wirelessly to a cloud service, enabling the analysis and presentation of data on mobile devices. This enables the faster and lower-risk introduction of new products and services onto the market.

The pilot plant in Oulu serves various purposes, including research and development in relation to diagnostics for the health care and well-being sector, wearable electronics, smart lighting and IoT technology for industry and buildings.

"Cutting-edge IoT technology had never been used at the pilot plant, or by surprisingly many other electronics production lines. We wanted to change this by developing an easily installed sensor and visualisation system for the electronics production line, facilitating data-related added value services for interfaces with the outside world," says Principal Scientist Marko Jurvansuu of VTT.

The pilot plant offers a unique research environment for enterprises, where new sensor and IoT solutions can be customised and tested in a pre-commercial production environment. This lowers the threshold for practical implementation by companies in their own environments, and

speeds up the introduction of new products.

"The industrial internet solution enables access to continuous real-time data on the performance and condition of the production processes, individual equipment as well as the whole production line. "The process quality can be improved for example by faster and more rational preventive maintenance based on the measured data" says Team Leader Kari Rönkä.

The solution also facilitates major changes in operating methods since, thanks to measurement data, monitoring the condition of a printing machine and preventive maintenance, among other activities, can be partially outsourced.

Offcode, whose ADN IoT platform is integrated into the system, is the first company to use VTT's solution. The system combines collected sensor data, enabling each party to pick the items of information that are of interest to them.

"The industrial internet is the model based on which industrial companies will operate in the future. Business is moving towards services and data that generate higher added value than the actual physical products. This system provides access to this new world," says Jurvansuu.

In future, data from a printing machine will be accessible through a cloud service to companies that offer services related to data processing. When the scale of printing accuracy is in the range of tens of micrometres, even the most minor issues can influence the end result.

The system developed for the pilot plant is in itself a prototype product that can be duplicated for printed electronics production lines worldwide.

VTT Technical Research Centre of Finland has been engaged in the long-term development of printed electronics for over 15 years. VTT sells services to companies all over the globe, for the development and production of printed electronics products.

Provided by VTT Technical Research Centre of Finland