

Predictive Maintenance with the Industrial Internet of Things

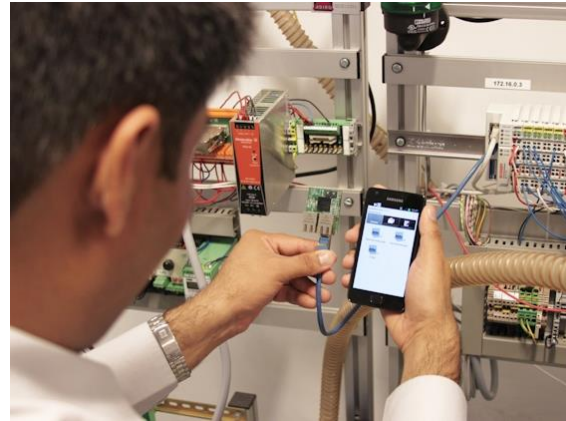
The Industrial Internet of Things is growing every day. When machines talk to each other, they will revolutionize industry as we know it.

The Industrial Internet of Things (IIoT), meaning real-time interconnectedness of industrial devices, is said to play a big part in the next industrial revolution, Industry 4.0. Pretty much all industrial devices, or Things, generate data. But data is not information. If it is to be valuable, it must be analyzed with the right tools so that the right decisions can be made. Ultimately, this will lead to a complete automation of the industrial process with smart machines talking and giving advice to each other.

Novotek, a company with long experience in the areas of industrial IT and automation, is launching an IIoT project together with a customer. As a part of this, a MSc thesis study was done on using an IIoT platform for predictive maintenance. The object of study was a veneer peeling lathe used in the manufacturing of composite wood products. Wood cutting constantly dulls the tools involved and they need to be sharpened or exchanged several times during a workday. If it is possible for the machine to “know” the sharpness of its knife, it can decide when the optimal point of maintenance should be. One possible method to predict this is to monitor overall vibrations in the lathe and look for any patterns.

To handle all the communication, storing and analysis of the data, specialized tools are needed. One such tool is the IIoT platform ThingWorx. ThingWorx has functionality for a

multitude of applications. It can keep track of all your Things and handle the communication between them. It also has components for advanced analysis of data, using machine learning and statistical algorithms.



*The IIoT will let companies monitor industrial process and make manufacturing decisions remotely, for example in a smartphone application. **

The results of the study are not conclusive but tests for the process imply the usefulness of the IIoT framework. The application implemented creates a well-defined path for data to follow. This functions both for the modeling of the problem as well facilitating predictive process monitoring in actual operation.

Once an IIoT solution has been implemented a company has a complete structure for connecting and monitoring all parts of their business. This goes beyond just reading production parameters from afar. This kind of connected industry can monitor itself. It can make predictions and take the right decisions for the manufacturing autonomously, only involving humans when needed. The possibilities for optimization and efficiency goes far beyond what was thought possible only a decade ago.

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Thesis title: Monitoring of a Veneer Lathe Knife by the use of an Industrial Internet of Things-platform