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Piovan at K 2016: Winfactory 4.0 - Piovan supervision software for the smart factory

This is not a new version of the historic Winfactory, which Piovan launched in 2008 as the first remote factory monitoring and control instrument. This new application is already ready for Industrie 4.0, the group of protocols and technologies, being implemented, that constitutes the core of the fourth industrial revolution: the digital manufacturing.

Industrie 4.0: control and optimisation of production processes

Industrie 4.0 has been created from a strategic German government project for the technological evolution and optimisation of industrial processes, aimed at implementing a detailed system that allows for maximum production efficiency, the best use of energy and the highest possible goods customisation even in a mass — production context thanks to the adoption of four basic principles that are implemented in the **Smart Factory**:

- **Cyber-Physical Systems (CPS):** guaranteed interoperability thanks to a global network created by businesses that include machinery, logistics, structures and operators that are interconnected and continuously dialogue through the *Internet of Things (IoT)* and the *Internet of People (IoP)*.
- **Integration of data to the context:** using information systems able to aggregate the raw data received directly from the machines during the production process in the full context, ever more timely needs can be fulfilled.
- **Digital Interconnection** during the entire process: from the end user to the manufacturer and vice versa, the process engineering allows for the customisation of the product through the system that independently collects the information needed to perform the required task.
- **Decentralisation of decisions:** thanks to the integration of their components and their connection, the CPS are able to perform their tasks autonomously notwithstanding exceptions, interferences or continent needs.

Winfactory 4.0: the fourth industrial revolution according to Piovan

The integration between the production, distribution and information structures of the manufacturing industry is the key **Smart Factory** concept. Piovan has implemented this with the evolution of its process control and management software based on the Industrie 4.0 guidelines, creating communication networks with an exchange capacity well ahead of schedule (2020) to allow for connections between the various parts of the technological ecosystem.

Ready to communicate

Winfactory 4.0 uses OPC - UA (Open Platform Communication - Unified Architecture), the protocol selected by Industrie 4.0 before issuing the **Smart Factory** specifications: developed by the OPC Foundation in 2015, it defines the communication rules and data exchange between the various entities that make up the system.

Thanks to the use of this protocol, Winfactory 4.0 makes it possible to **supervise and ensure dialogue between Piovan machines and machines of other manufacturers (OEM)**. There is no longer the need for an interface that "translates" the data provided by each device into a common format: the information exchange becomes immediate and the various systems can interact independently. A similar communication platform allows **access and use of the software on tablets and smartphones**, despite the complexity of the technological challenge that Piovan undertook, Winfactory 4.0 allows the utmost flexibility in managing equipment and processes.

Advanced management of energy use

In parallel with the development of Winfactory 4.0, Piovan created a group of integrated functions that allow for the control of very accurate operative parameters to be used to **manage factory energy sources**: knowing how and why they are used for each individual process based on the production volumes, the efficiency level of their use is determined. The data volumes necessary to identify the KPI and best practices **to adopt to optimise energy consumption**, just one of the factors that greatly influences production costs, can be collected quickly from various factories that are far from one another. This is the Big Data collection and analysis concept, made sector-specific to meet the needs of Piovan's clients.

A bit of history

The supervision software owned by Piovan was launched as Winfactory in 2008, even though the company began operations in 1996 to develop and produce remote management software for its equipment. Winfactory was **the first application of this type dedicated exclusively to the plastic processing industry**: it has all the internal functions that are used for transformative companies. The number of installations that Piovan has implemented has gone from 35 in 2008 to nearly 200 a year since 2012.

With the new product, the typical Winfactory supervision functions are accompanied by many others, which can be added to the basic installation to make up a **customised application set**. Available in 11 languages (with the option to add others) with a new customisable graphic interface, barcode reader, touchscreen support, email notification function in case of alarms and log reporting, Winfactory 4.0 is an extremely evolved instrument for the careful and efficient management of the entire production process.

Winfactory 4.0: configurations

The **Energy** configuration is not specific for the plastic sector but is focused on monitoring the use of energy based on the type of industry and can be integrated in all superior configurations. The possibilities of Winfactory are further extended by a series of **optional and on-demand functions and services** like, for example, tracking, OPC-UA Server, remote assistance, line power, formula, production and necessary material reordering management. **The system itself automatically manages the use of the lines** based on what and how much must be produced, for example, by selecting to maintain the lowest possible critical level. For example, producing a lot with a certain formula is more convenient if it can be done at a factory that was already used for the same type of mix since there are fewer interventions necessary to clean the machines. With the installation of the OPC-UA protocol, both the basic and additional Winfactory 4.0 features can be made available on the machines, systems and automation devices not produced by Piovan and can interface directly with the management system at the individual plant as well as the company network. In this way, information can be shared between the various systems and data can be collected to optimise the processes, creating the **Smart Factory of the fourth industrial revolution**.

Thanks to the evolution of the production systems for Industrie 4.0, an instrument like Piovan's new Winfactory 4.0 will allow for the optimisation of all processes, the qualitative improvement of production and evolution towards more efficient manufacturing in the use of global energy resources.

Photo Piovan

[Back \(en/news/auxiliary-devices.html\)](#)