

TEMI+

Manufacturing Execution System (MES)

world of innovation

TEMI+

WHAT IS "INDUSTRY 4.0"

Digitized production



Do it smarter!

Manufacturing Execution System (MES) is a tool that provides real-time interactive communication and assists with data management. MES can track and document the whole process from the raw material to the final product.

TEMI+ is a MES software specially developed for the plastics industry. It helps make the best use of time and resources through a highly efficient intuitive human-machine interface.

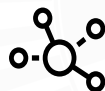


» Competitive edge



» Cost reduction

» Return on investment



» Connectivity and control



» Easy operation and intuitive design



» Remote working

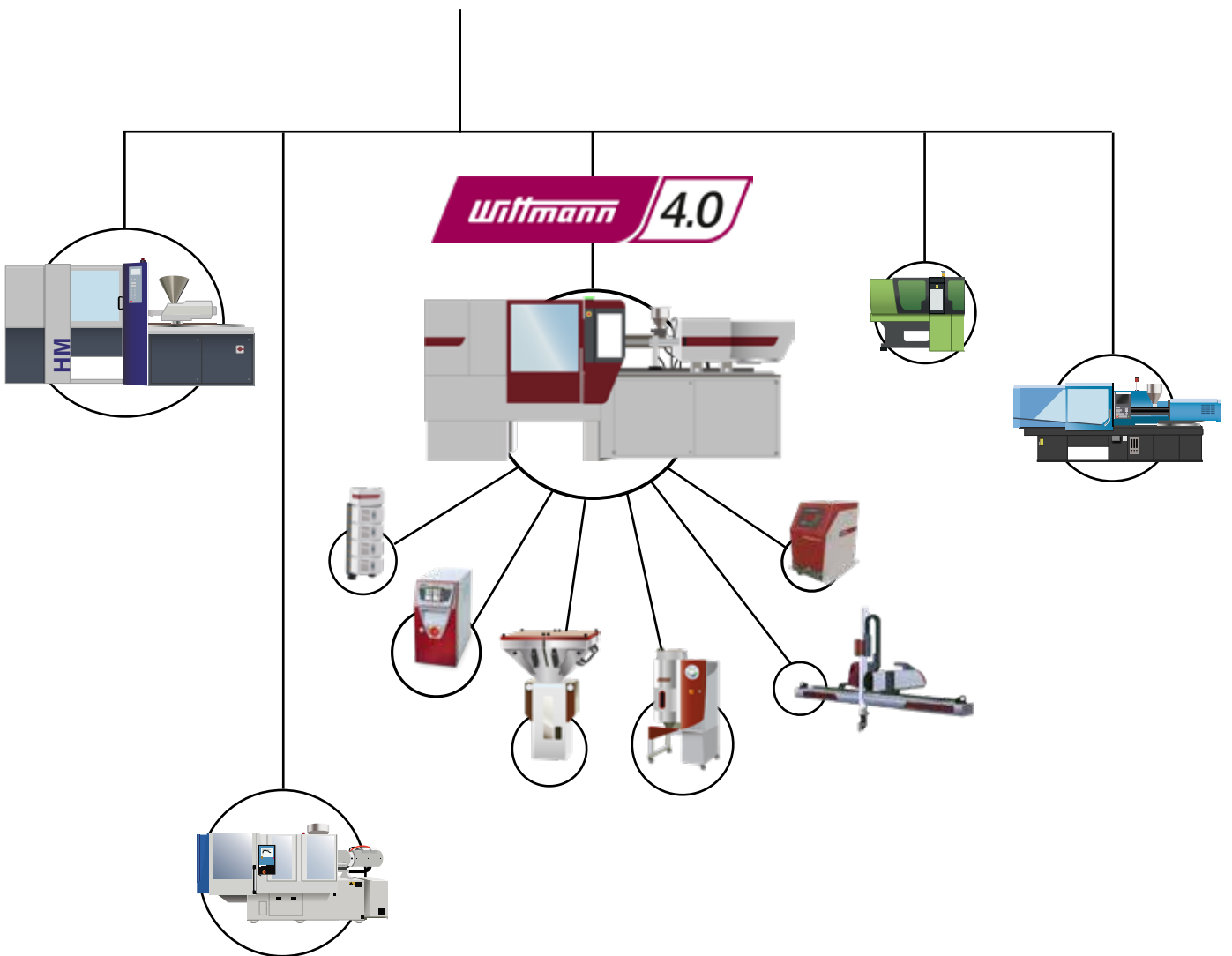
SMART PRODUCTION

MES

Wittmann

TEMI+ is the MES able to connect other brand machines, old injection molding machines and also the new WITTMANN BATTENFELD WorkCells based on the Wittmann 4.0 router for the collection of auxiliaries production information.

TEMI+



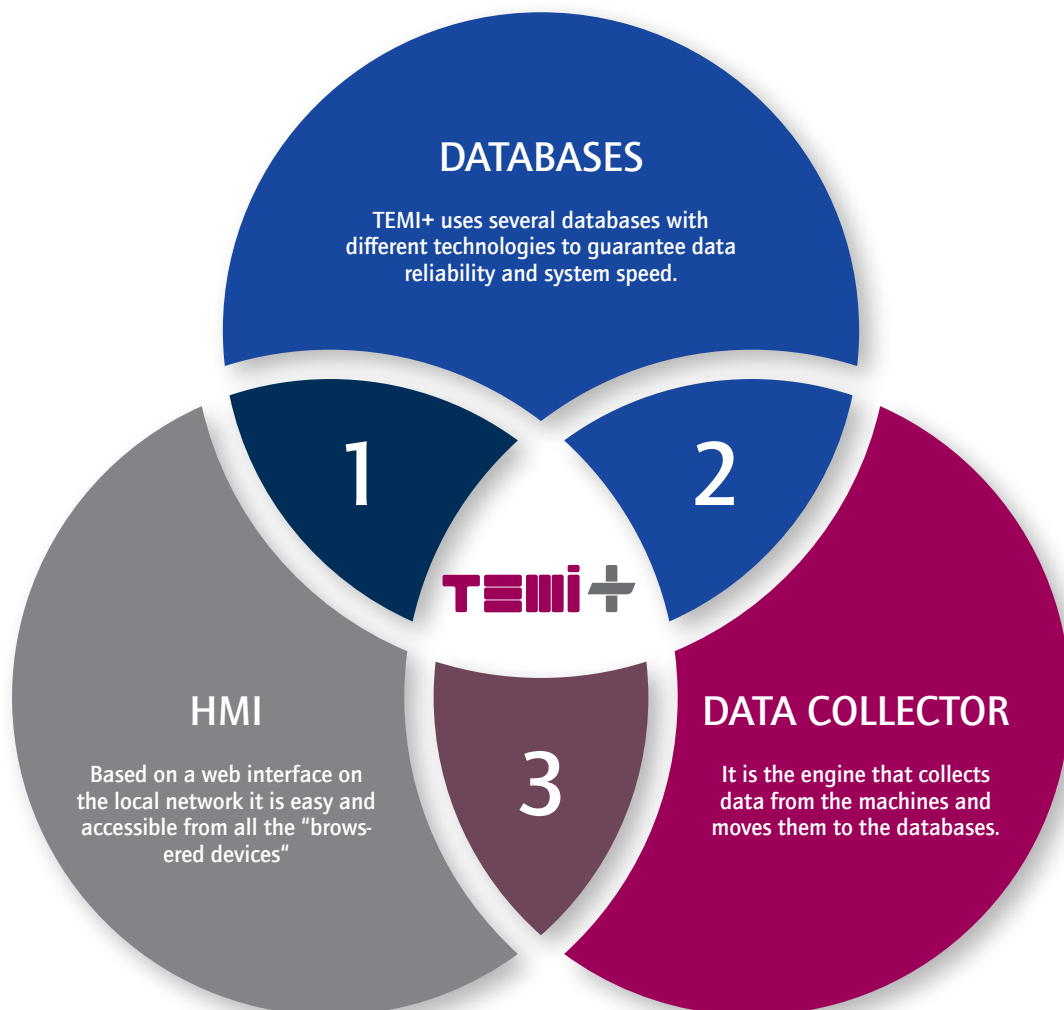
TEMI+

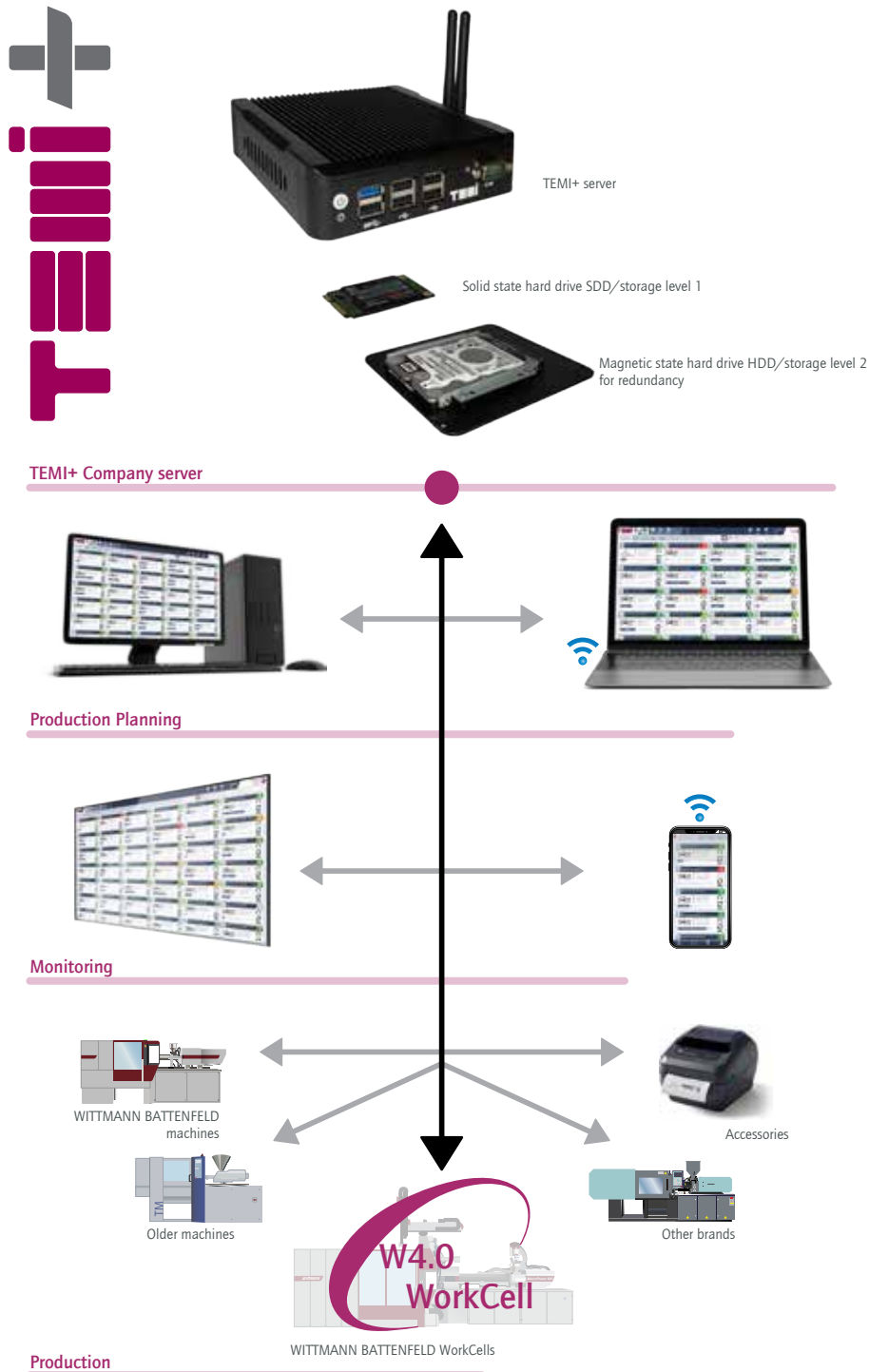
Hardware and software synergy

Thanks to the web-browser architecture and the TCP/IP communication protocol it is possible to visualize the TEMI+ interface on a variety of devices – this guarantees wide flexibility and versatility. The secure storage system makes the company compliant with the most restrictive quality standards ensuring efficient product traceability.

The simple use and soft impact on factory resources minimizes the change in working habits without sacrificing any benefits from interconnectivity, "Industry 4.0" logic and lean manufacturing approach.

One of the main features that distinguishes TEMI+ from other systems on the market is the ability to communicate with the communication languages of machine manufacturers (e.g.: Euromap, OPC-UA, Profibus, Profinet, ModBus).





TEMI+ has been developed with a flexible architecture for integrating different devices possibly already present in the factory and for reaching all the injection molding machines inside the production departments.

A powerful and robust industrial PC server controls the TEMI+ software through the customers Ethernet LAN with the TCP/IP communication protocol. The on-board data storage system has been engineered with HDD and SDD technology to increase the stability of the OS and the data safety, while the access to the software pages is possible using a web-browser.

PACKAGES

A complete and flexible solution

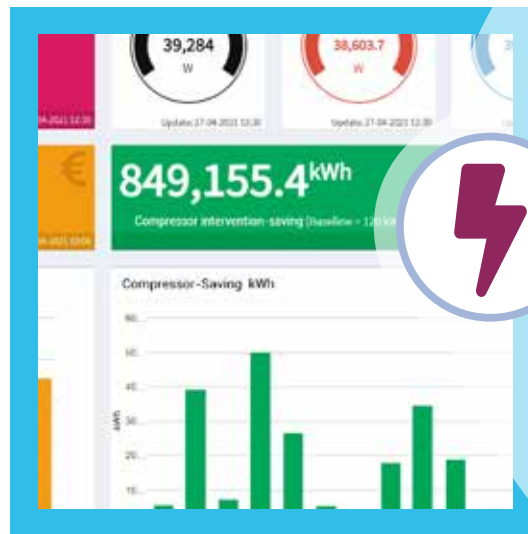
ERP connection module

Work orders from an existing ERP (Enterprise Resource Planning) system can be transmitted automatically to TEMI+ and completion feedback sent to the ERP system from there.



IMAGOxt

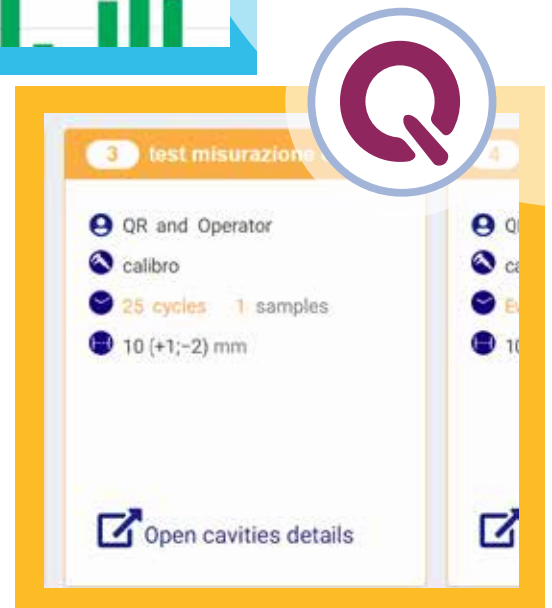
IMAGO is a module providing detailed analysis of energy consumption to make one's own company "greener". By installing sensors at all points of consumption, energy consumption can be measured and visualized across the entire facility.



TEMI

QMS module

The instructions for quality inspection saved in TEMI+ can be retrieved during production, and the recorded process data or measurement readings for any parts produced can be traced completely and correctly allocated to the relevant lot.



Mold and machine maintenance

The maintenance module of TEMI+ keeps track of all maintenance work performed in the plant. The data are also transmitted to the production planner so that delivery times can be planned more accurately.



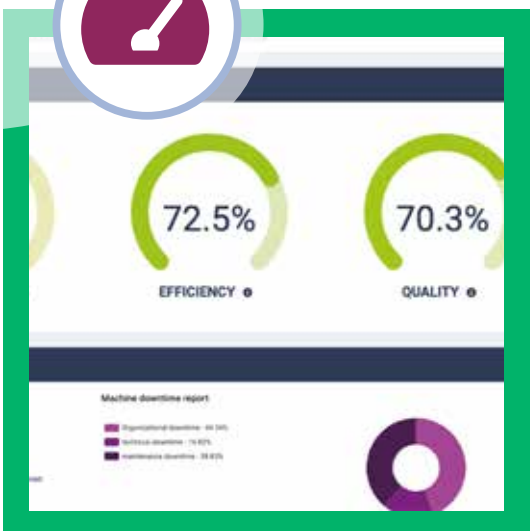
Production monitor

Here, the condition of all machines and their current order processing can be checked live "at a glance". More detailed information about the individual production cells can be accessed easily from there.



Production planner

Knowing what needs to be done, and when, is the key to successful production planning. This module provides an easy way to make the right decisions and optimize the production process.



KPI pro

TEMI+ presents in the form of a simple, clear graphic chart the key production figures which are essential for the commercial success of an injection molding plant.



IMAGOxt



Temi Plus - Standard Package



Advanced Package

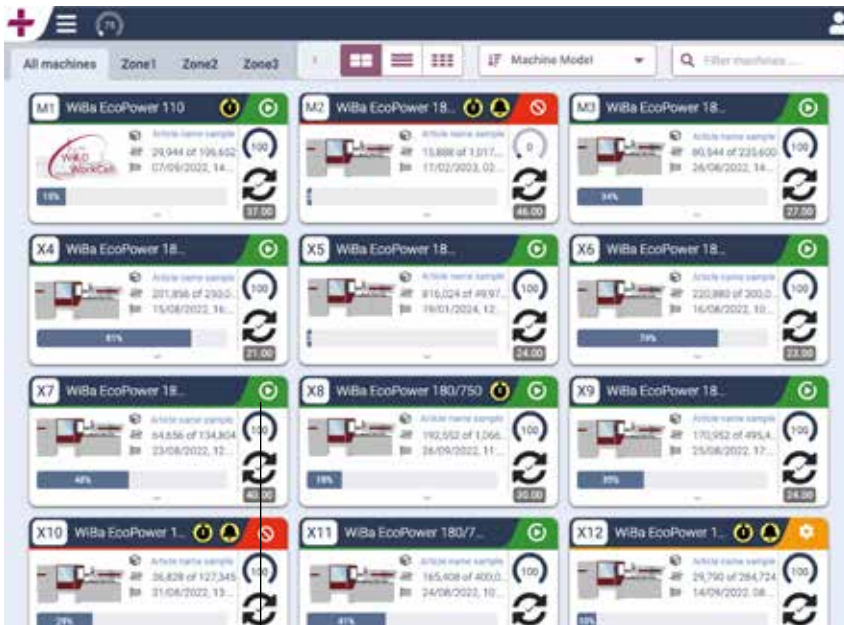


Connect Package

TEMI+ STANDARD PACKAGE

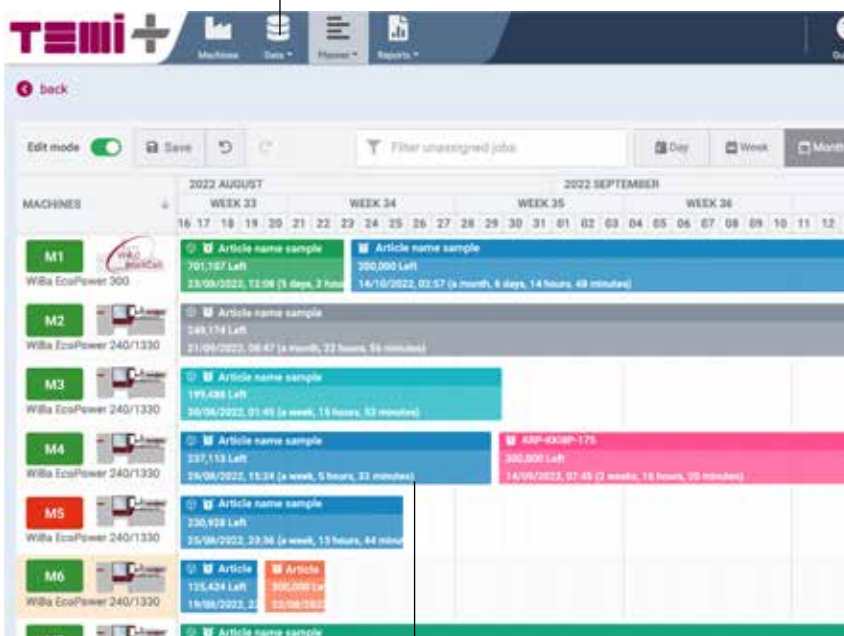
Easy, immediate and intuitive

The standard package stands out by its simple, intuitive operation and provides a direct overview of the plant's entire machinery.



Intuitive display of the machine status

Data access



Gantt production chart

Machine status

This screen shows the real-time process data. Machine status is color coded, and a progress bar reports order completion percentage.

A simple and intuitive view is provided to show global process advancement. Specific production details are provided for each machine with a single touch.

The planning

Planning is a crucial aspect of production. Here, it consists of two steps:

- » Order loading
- » Activity planning

Using configurable product cards, optionally importable from existing management systems, it is possible to create a job to be allocated to machines. Planning relies on a simple and intuitive Gantt chart: the production manager, knowing the machine's operative status, organizes new orders easily while involved departments are effectively notified.

Using dedicated anagraphic and product pages, it is easy to control the customer orders status, the production and the raw materials.

Machine monitor

Each machine is given a useful and meaningful page. It consists of a real-time view of order progress and planning data accompanied with process data: cushion constancy, dosing time, injection time, alarm history and other useful data are automatically retrieved and aggregated to lot information.

This screen also enables printing of an adhesive label (or QR code) which allows to retrieve product details like article code and description, number of produced parts, lot number and product code. Tracing production code in TEMI+ database provides even more information on the product.



Real time access to the machine

Machine KPI

QR Code



Production KPI

Key Performance Indicators (KPI) represent process markers useful to monitor, understand and improve the efficiency of a production plant.

Merging process and quality data that TEMI+ retrieved from the machines gives meaningful insight on the system. Average machine setup time, alarms quantity and recurrence, injection times constancy and repeatability are just some of the obtainable critical performance indicators. The production manager may take advantage of this information to improve product quality and enhance molding.

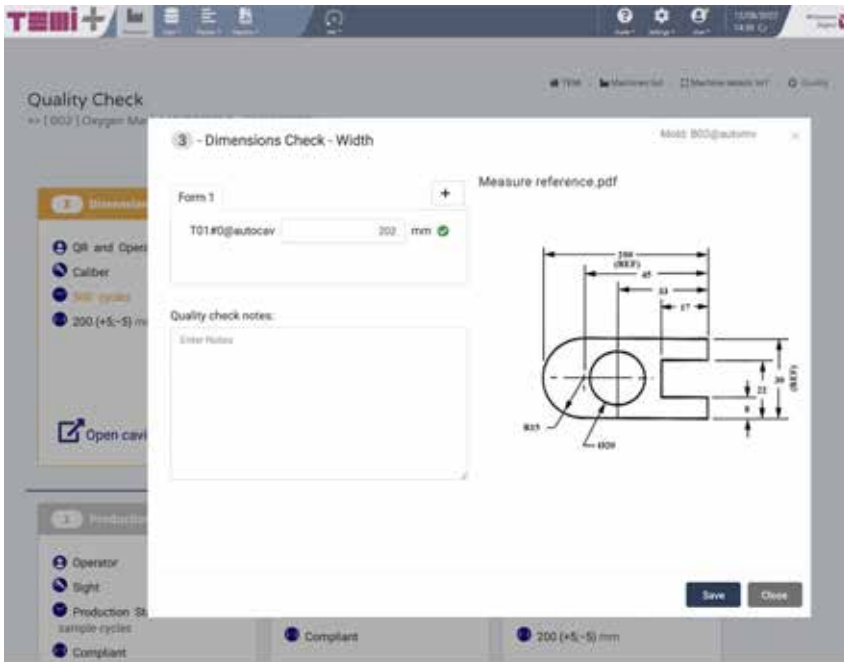
Overall equipment efficiency



TEMI+ ADVANCED PACKAGE

For every need

The advanced package offers visualization of both maintenance work and quality checks via the MES.

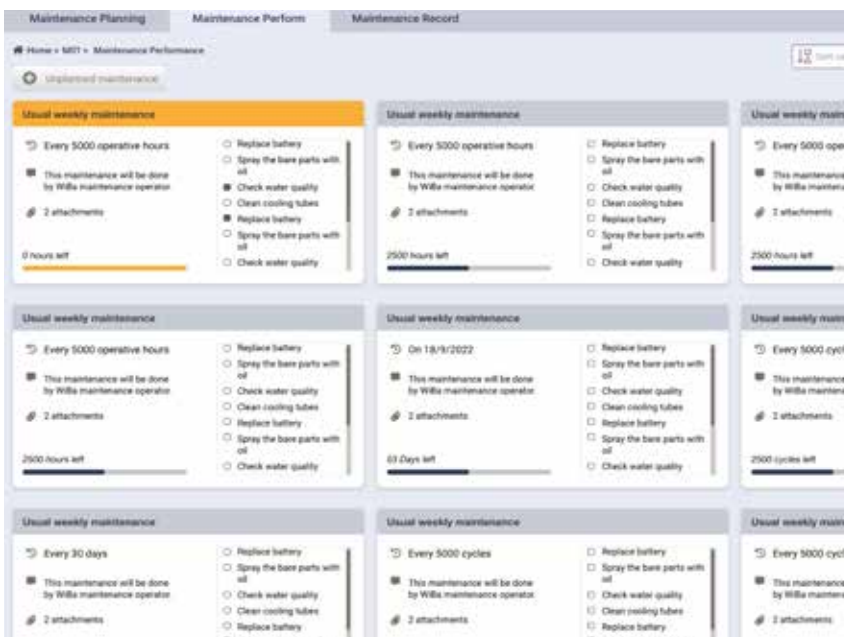


QMS (Quality Management System)

The complete system, based on the ISO:9001 certification guidelines is easy and intuitive, which allows the compilation of quality control forms.

One can create control cards that can be edited directly on the machine with the "Print ToPress" option.

The card can be accompanied by checks and measurements made in compliance with the standard, but with the advantage of immediate archiving, absolute traceability and a reduction in time and processing.



Machine and mold maintenance

With the new maintenance module, it is possible to record all mold or machine maintenance work performed in the production plant. In this way, the operator obtains useful information about machine and mold status, as well as more reliable calculation of delivery times.

TEMI+ CONNECT PACKAGE

Connection between systems

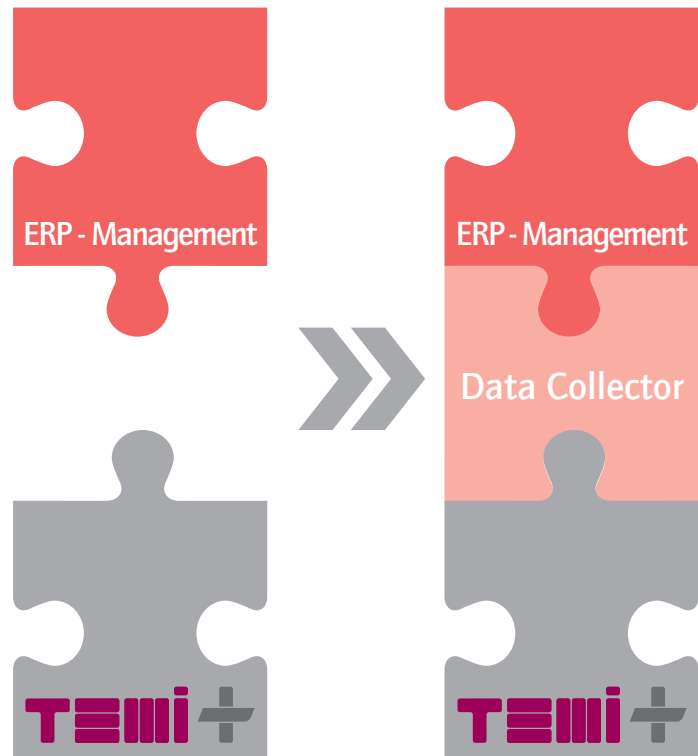
Wittmann

ERP Connector

With this package it is possible to interface the management systems already present in the company with the TEMI+ system through API http.

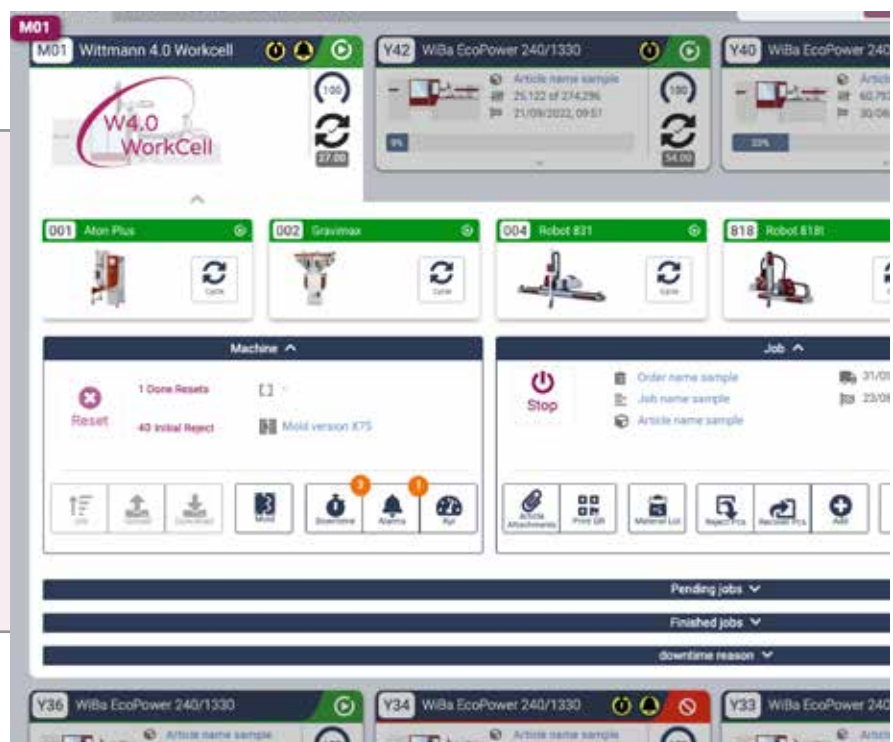
The main functions are:

- » Sending the orders and the items to TEMI+ to be assigned to the machines in an automatic way through a specific xml format required by TEMI+.
- » Retrieve all the production data in the database of TEMI+ including cycle parameters and alarms.
- » Ask TEMI+ to upload or download the recipe from or to a machine that has the "upload function remote recipe".



Wittmann 4.0 WorkCell

- » Easy to understand right away
- » Intuitive and user-friendly
- » Automatic data collection from all auxiliaries connected to the Wittmann 4.0 production cell
- » Can be operated from any location thanks to web browser architecture



IMAGO

The monitoring system for a "green" company

The market is constantly evolving with an increasing need for optimization of energy resources. More and more companies are being pushed to install systems to monitor their consumption to get access to state incentives, and to optimize their processes in the face of new regulations in the energy efficiency field. No longer just simple meters, but comprehensive devices, which collect, store and process data coming from measurements at the points of consumption, provide process administrators with tools for optimizing energy resources.

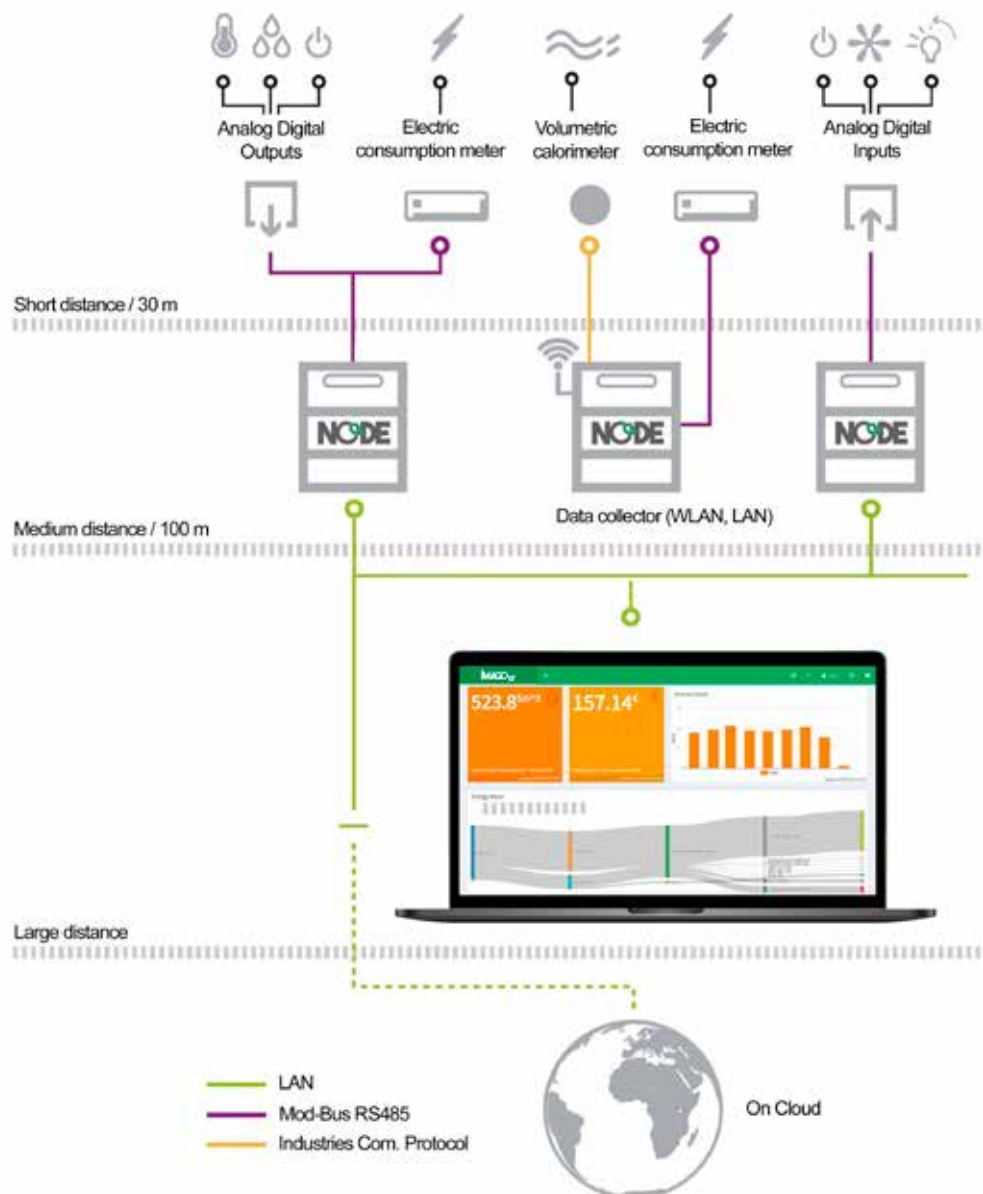
Added value

The advantages of this new model include not only potential economic savings, but also a more responsible approach to energy consumption that makes one's own company even greener and more eco-friendly.

- » Intuitivity: The simple layout and intuitive graphical representation help to get a full picture of all data and to understand complex analyses immediately.
- » Awareness: The precise representation and analysis of the company's actual resource consumption enables the implementation of effective and strategic decisions for action.
- » Waste reduction: The analysis enables early identification and implementation of the most viable methods and processes to minimize resource and energy waste.
- » Environment: All measures contribute to improving the state of the environment and making the own company more sustainable!



Monitoring System












IMAGO is an integrated system able to create a dynamic image of energy consumption by communicating with a widespread network of measuring instruments. In addition to recording the consumption trends, it enables the creation of customized KPIs (Key performance indicators), so that the energy performance of the company can always be kept in mind.

The customization of the IMAGO monitoring system is tailored to the customer's needs, designed for the integration of all industrial communication instruments, including previously existing equipment. Thanks to the cloud service, IMAGO can guarantee reliable access to the data acquired and offers an extensive choice of solutions for data processing and visualization. All these features ensure the achievement of the important objective: maximizing the effectiveness of the entire company.

INSTALLATION

The ALL-IN-ONE solution

MES interfaces for all types of machines – independent of existing protocols, every machine can be easily connected to TEMI+. Regardless of the machines' age or brand.

Injection molding machine type	Extra hardware	Communication protocol	Connection to TEMI+
WorkCells 	-	 OPC-UA server through Wittmann 4.0 router	 Ethernet (RJ45)
IMMs with EUROMAP 	-	EUROMAP 63 (file sharing) EUROMAP 77 (OPC-UA)	 Ethernet (RJ45)
IMMs w/o digital connection 		 (I/O signals, cabling needed)	 Ethernet (RJ45)



Remote service

The system is equipped with a remote software which makes it possible to carry out numerous service functions simply via the Internet. If desired, the WITTMANN BATTENFELD service hotline can access the user's system to provide live support, analyze log files, execute diagnostics programs or remedy defects directly online.



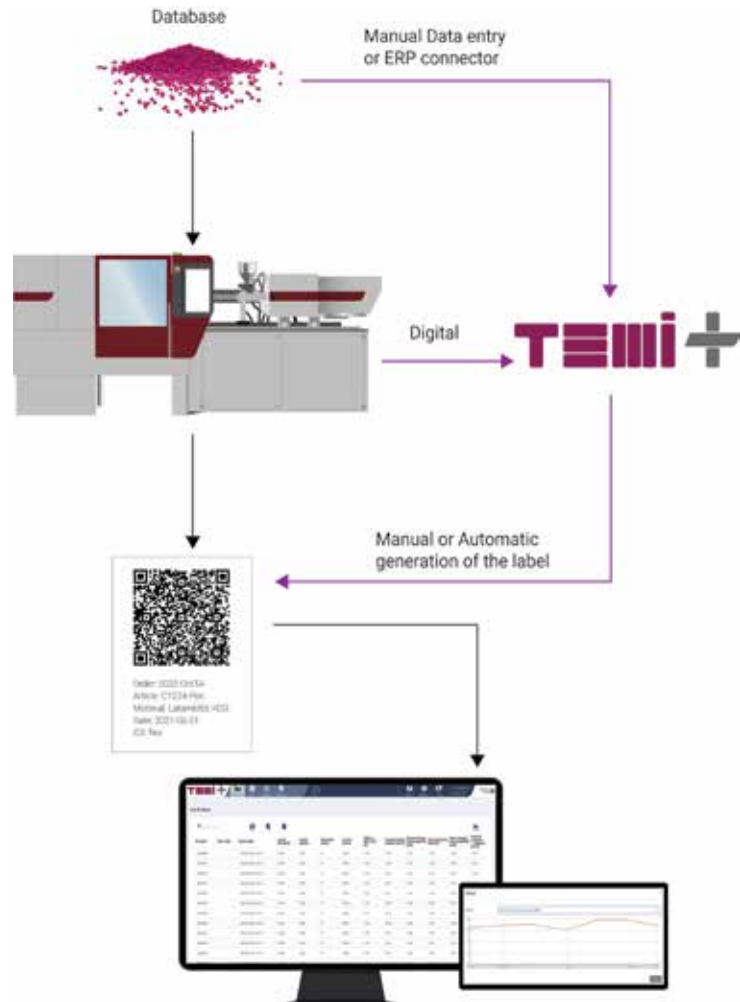
Wide range of services via remote access

- » Troubleshooting, user support, monitoring and remote inspection
- » Round-the-clock access to the expert knowledge of WITTMANN BATTENFELD worldwide
- » Increased system availability through short response times

Traceability

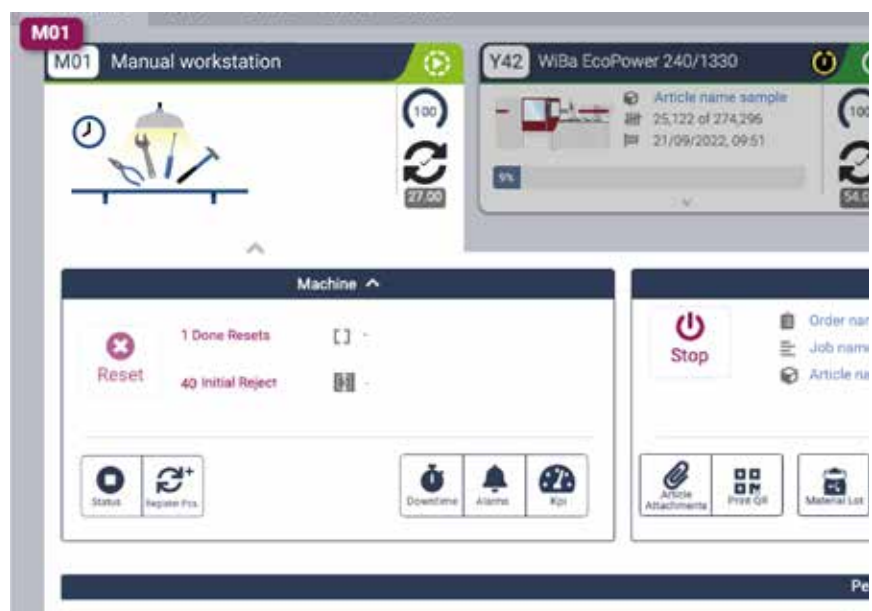
Thanks to the print label function included in the TEMI+ features, traceability on the highest level, down to every single part produced, has become available to customers.

This feature contributes to building confidence in the products, among both customers of the plastics processing industry and the end consumers.



Manual assembly

Beside the main target of TEMI+ to integrate automated injection molding machines in the system, it is also possible to connect manual assembly tables. In this way, additional data and information are provided to improve the overall efficiency of the plant.



The Wittmann logo is displayed in a stylized, italicized font within a magenta-colored parallelogram shape.

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