

TEMI+

Manufacturing Execution System (MES)

world of innovation

TEMI ONE
TEMI +

WHAT IS "INDUSTRY 4.0"

The digitalization of production



A Manufacturing Execution System (MES) is the basis and backbone of production process control in modern injection molding plants.

With TEMI+ and TEMI_{ONE}, WITTMANN BATTENFELD offers a modular, easy-to-handle and simultaneously innovative MES.

- » Geared to the requirements of the plastics processing industry
- » Ready to meet the challenges of Industry 4.0 and digitization

TEMI+ and TEMI_{ONE} are the first systems worldwide to support the WITTMANN 4.0 auxiliaries as well.



- » Competitiveness
- » Transparency
- » Reliability
- » Quality
- » Traceability of production
- » Productivity
- » Cost reduction

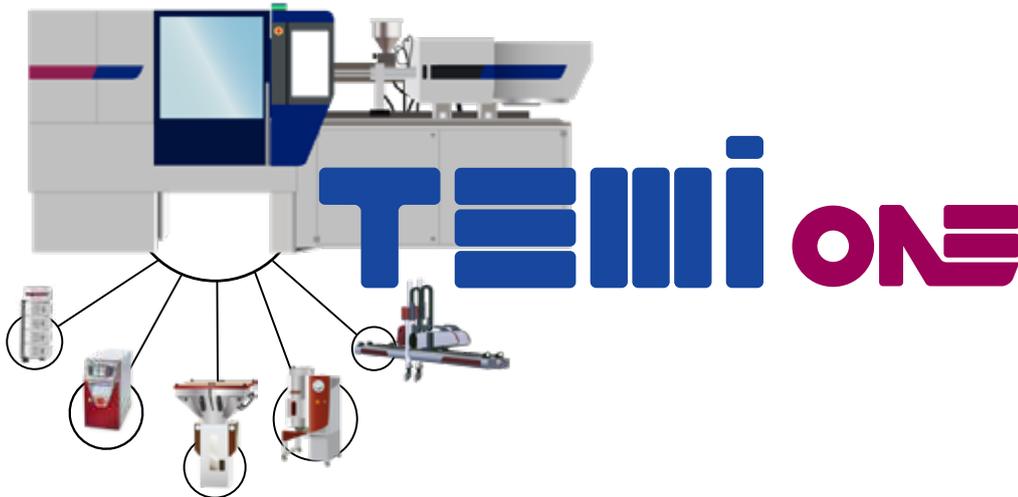
SMART PRODUCTION

MES

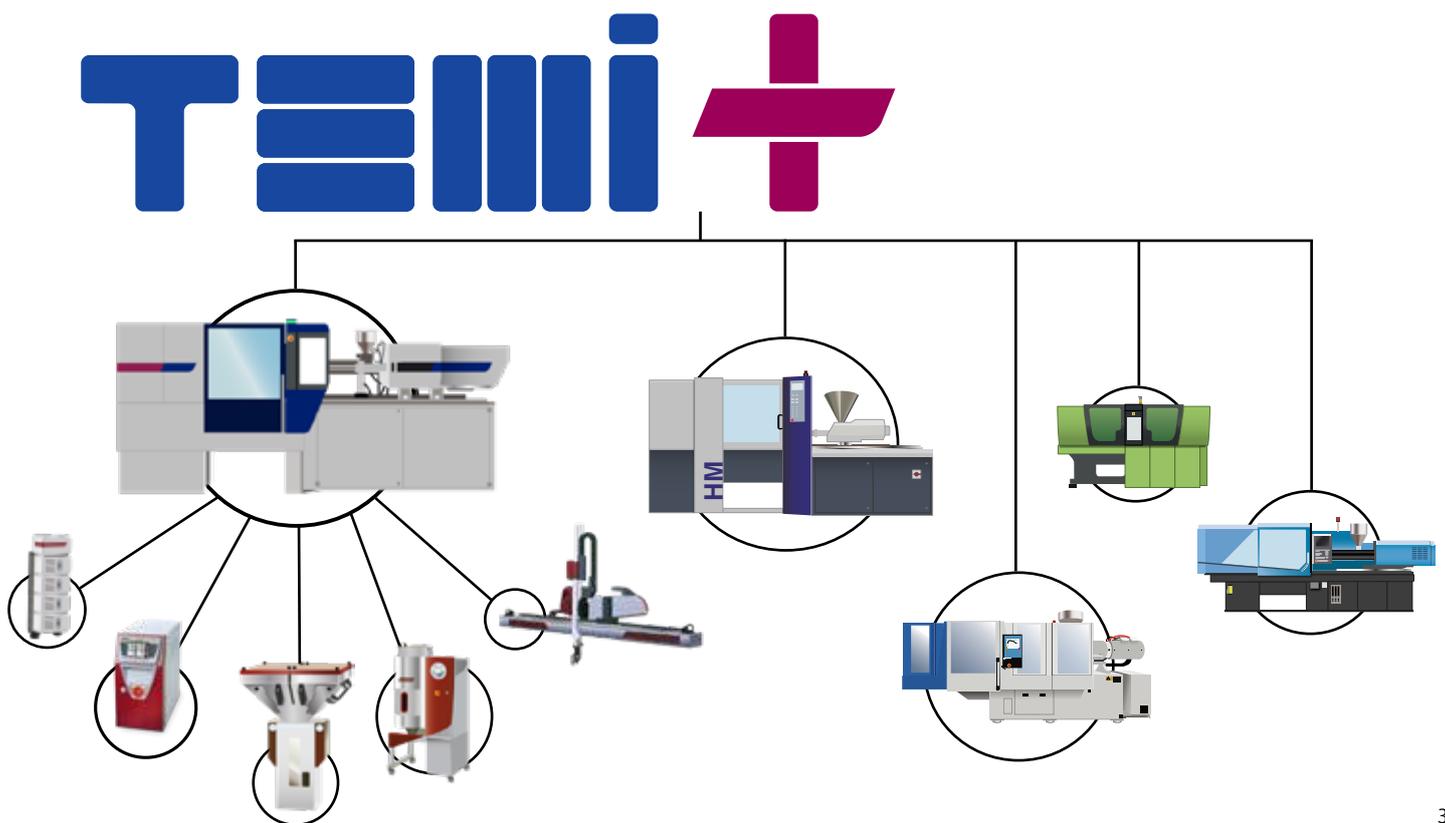
Wittmann

Battenfeld

TEMI_{ONE} is the on-board solution that gives the benefits of an MES on one injection molding machine. Thanks to the WITTMANN 4.0 integration TEMI_{ONE} is able to collect not only information from the injection molding machine but also from all the other WITTMANN auxiliaries connected.



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.



TEMIONE

A one machine MES

An MES already installed on the machine

When there is a need for traceability, KPIs monitoring and production data storing on just one machine, TEMIONE is the right solution.

TEMIONE:

- » Stand alone solution
- » Pre-installed on machine
- » Support of WITTMANN 4.0
- » No training needed
- » No network connection required

With TEMIONE it is also possible to export the stored data to an external computer for advanced analysis. The TEMIONE system can store nearly five years of production data.

Integrated buttons on the B8 status bar allow to simply interact with TEMIONE relieving the operator from complex operation with the interface: TEMIONE even works in "silent mode" in which it will auto-recognize the current machine status and operation mode.

TEMIONE: the first step into the world of Industry 4.0.

TEMIONE





Complete hardware and software integration:
 The hardware is present in the electrical cabinet of the machine, and the software is installed on the B8 control system. The only thing to be done is to start and produce.

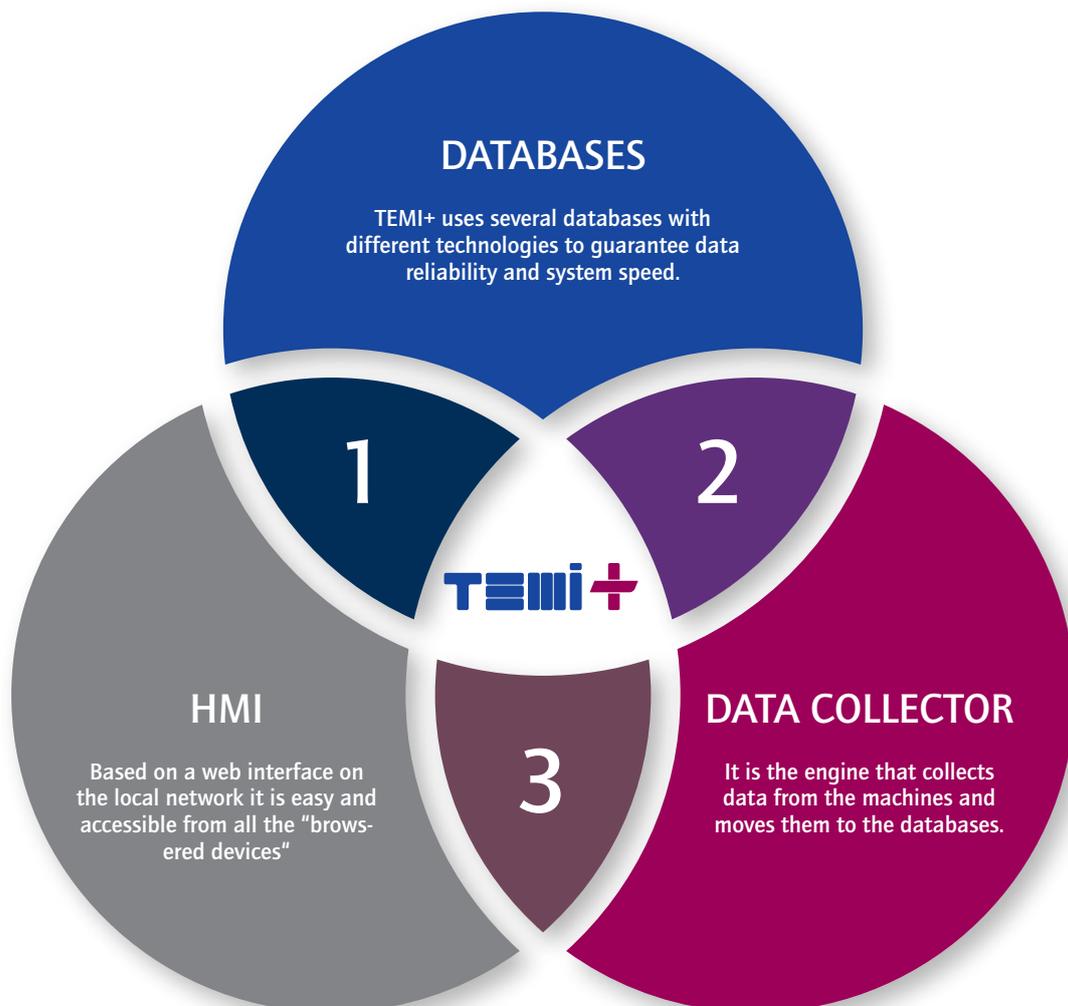
TEMI+

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 press manufacturers (e.g.: Euromap, OPC-UA, Profibus, Profinet, ModBus).





TEMI+ server



Solid state hard drive SDD/storage level 1



Magnetic state hard drive HDD/storage level 2 for redundancy

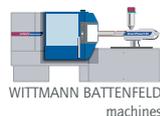
TEMI+ Company server



Production Planning



Monitoring



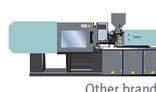
WITTMANN BATTENFELD machines



Accessories



Older machines



Other brands



WITTMANN BATTENFELD WorkCells

W4.0
WorkCell

Production

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

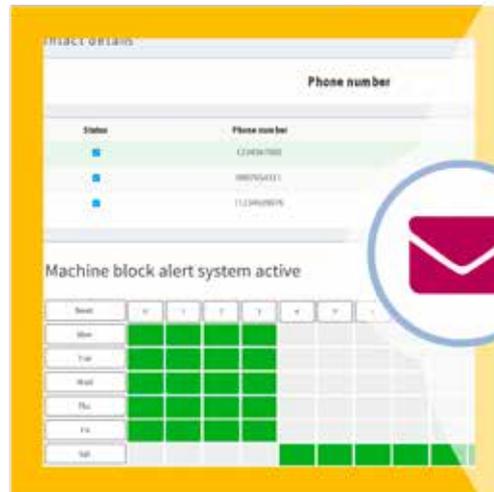
ERP connection module

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.



Alarm messenger

Even a production process with perfect parameter settings can be interrupted once in a while. In such cases, TEMI+ issues reports to mobile devices specifying the time and the cause of the standstill.



TEMI+

QMS module

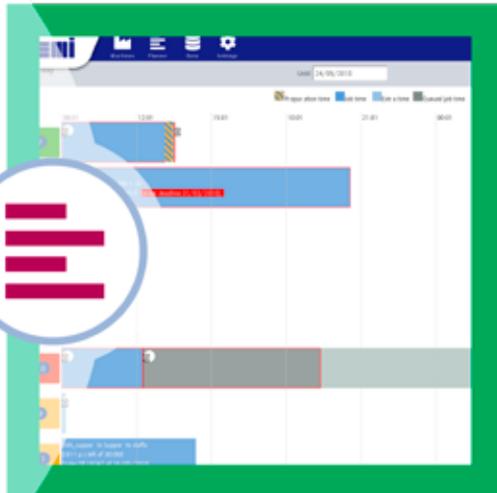
The instructions for quality inspection saved in TEMI+ can be retrieved during production, and the recorded process data or measurement readings for any parts produced can be traced completely and correctly allocated to the relevant lot.





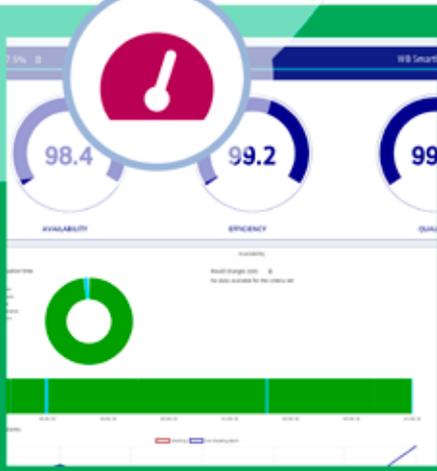
Production monitor

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.



Temi Plus – Standard Package



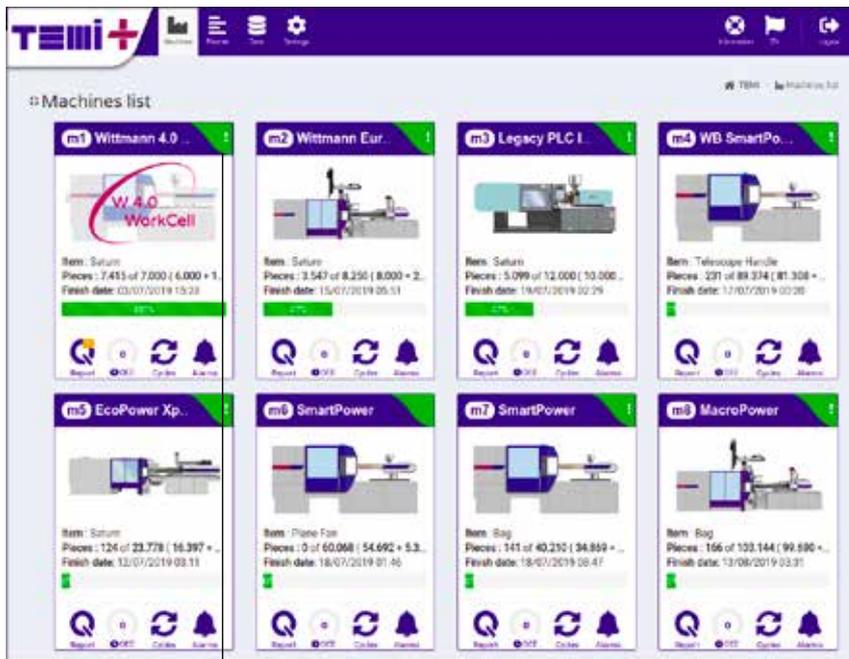
Advanced Package



Connect Package

TEMI+ STANDARD PACKAGE

Easy, immediate and intuitive



Intuitive display of the machine status

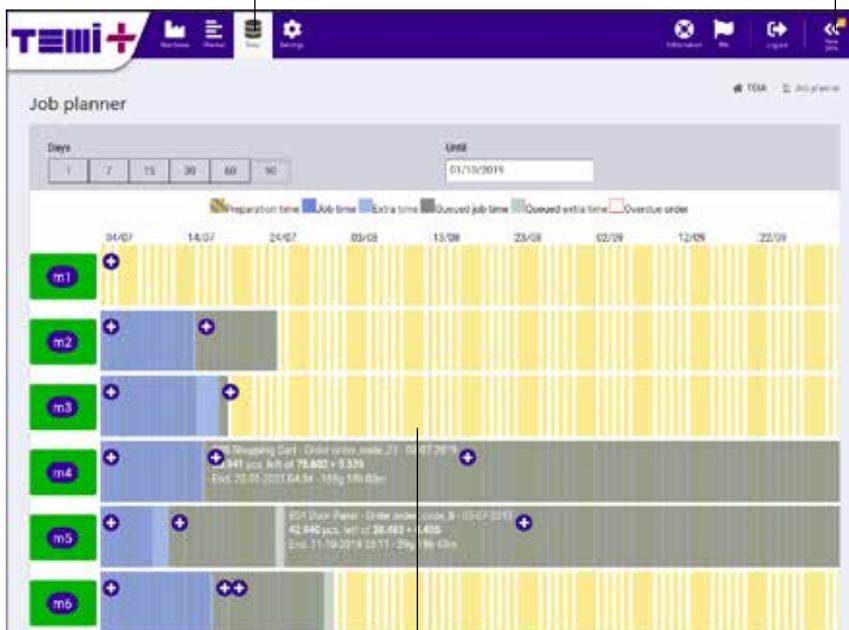
Machine status

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

Data access

Jobs waiting to be assigned



Gantt production chart

The planning

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

- » Order loading
- » Activity planning

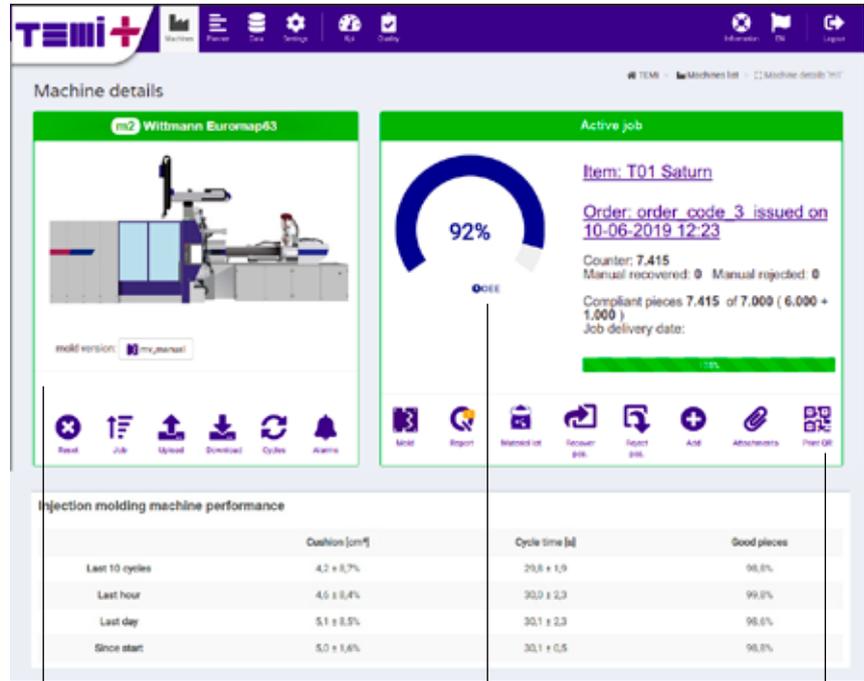
Using configurable product cards, optionally importable from existing management systems, it is possible to create a job to be allocated to machines. Planning relies on a simple and intuitive Gantt chart: the production manager, knowing the machine's operative status, organizes new orders easily while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

Basic molding KPI

QR Code

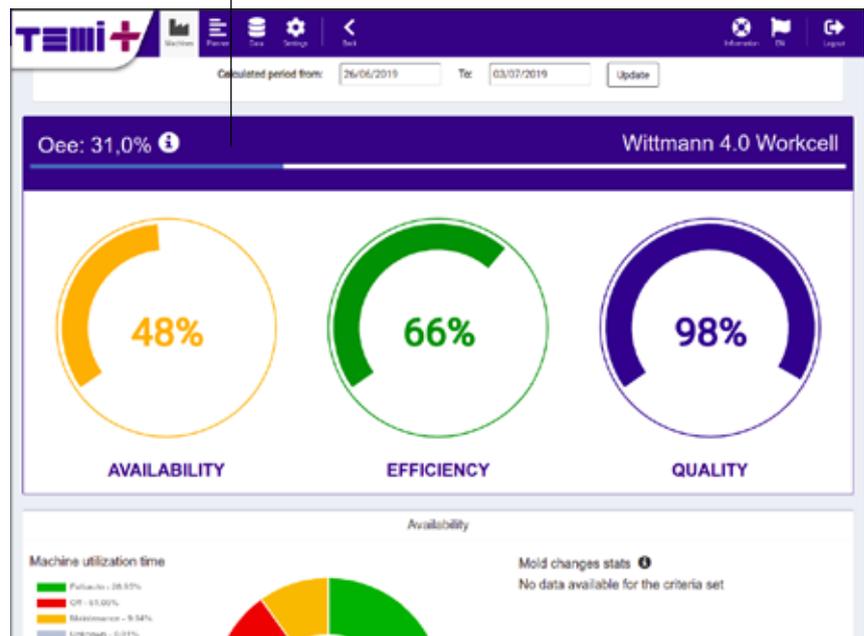


Overall equipment efficiency

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 press 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.



TEMI+ CONNECT PACKAGE

Connection between systems

Wittmann

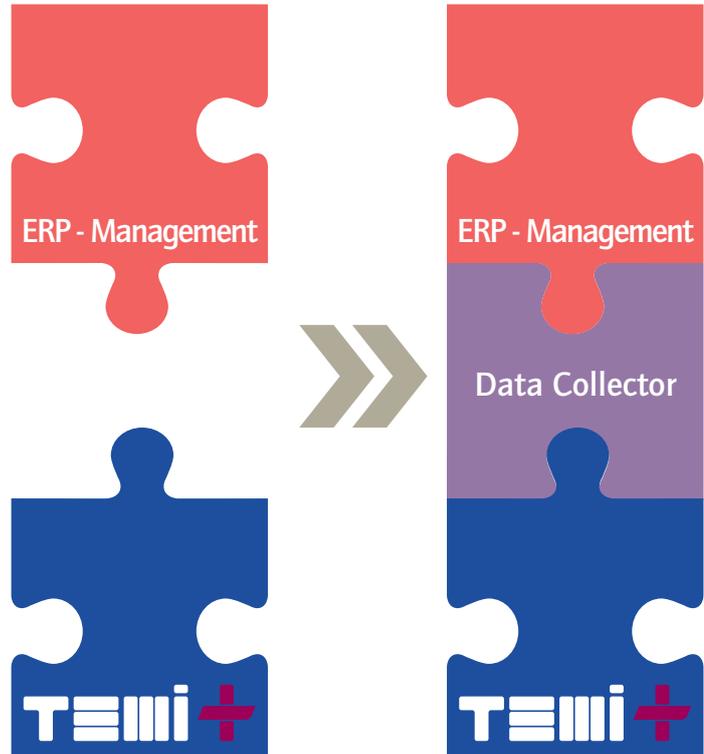
Battenfeld

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".



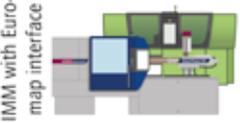
WITTMANN 4.0 WorkCell

- » 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

INSTALLATION

The ALL-IN-ONE solution

MES interfaces for any kinds of machines

Injection molding machine type	Extra hardware	Communication protocol	Connection to TEMI+
 W4.0 WorkCell	—	Wittmann 4.0 <i>plug & produce</i> Euromap 77, Euromap 82 OPC-UA WITTMANN 4.0	 Ethernet
IMM with Euro- map interface 	—	 Euromap 63, Euromap 77	 Ethernet
IMM w/o Euromap interface 		 (I/O signals, cabling needed)	 Ethernet



Remote service:

The machine is equipped with a control system 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:

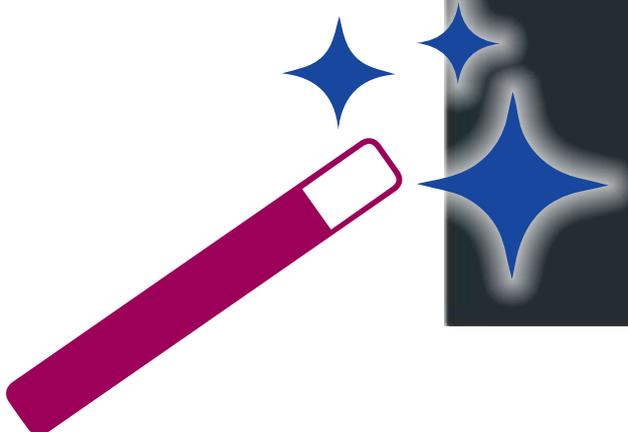
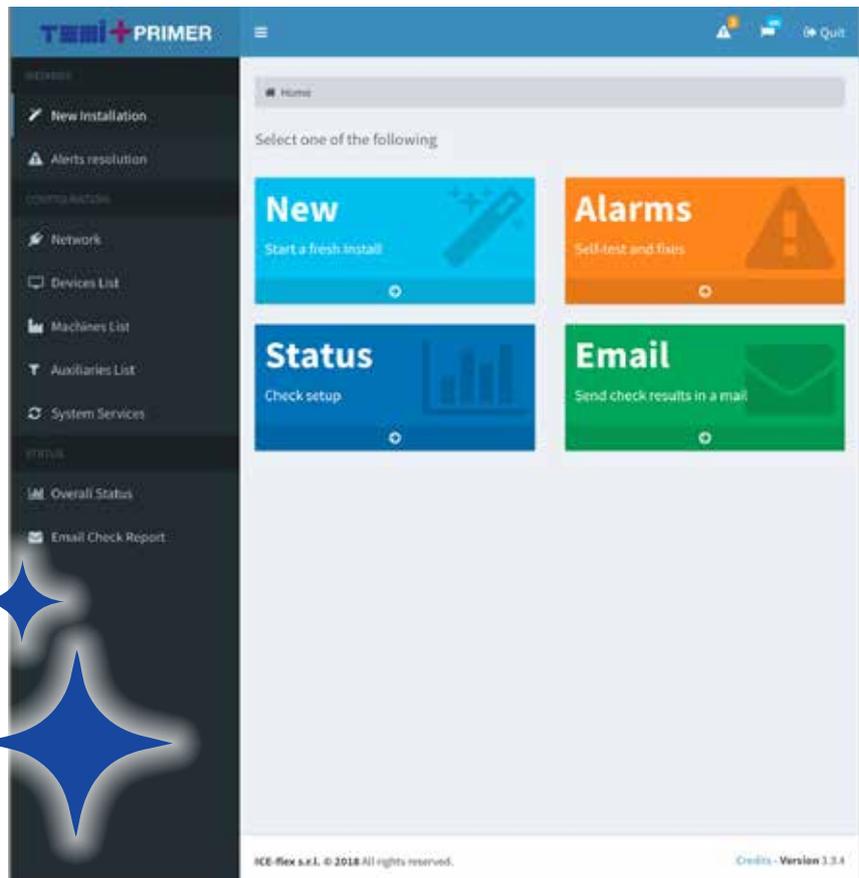
- » Troubleshooting, user support, monitoring and remote inspection
- » Round-the-clock access to the expert knowledge of WITTMANN BATTENFELD worldwide
- » Increased machine availability and more productivity through short response times
- » 70 % of all notified technical problems with injection molding machines are solved via remote access.

TEMI+ PRIMER makes installation easy

Differently from other Manufacturing Execution Systems TEMI+ is equipped with the TEMI+ PRIMER: a powerful system to perform installation and configuration in hours instead of days.

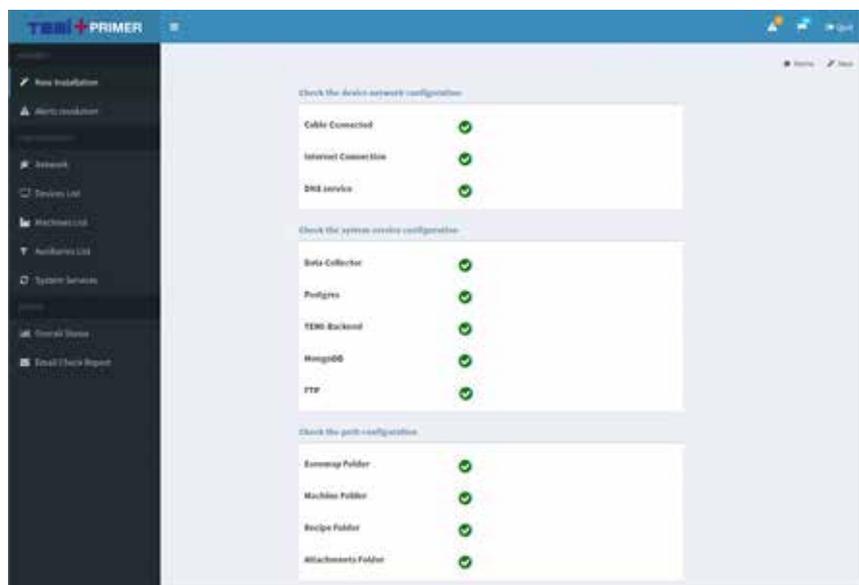
TEMI+ PRIMER can:

- » set on the server the customer network parameters
- » verify if the connections are working and implement a preliminary troubleshooting
- » insert and connect machines and auxiliaries with a wide variety of real machines' icons from our database.



TEMI+ PRIMER – troubleshooting

TEMI+ PRIMER could be a powerful tool used by customer support teams to connect, send e-mail logs and analyze the system status.





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