FASTEC
Software for Production

We digitalize factories

Success in digital production thanks to MES

User Report

Eisengiesserei Baumgarte GmbH

Initial Situation

Eisengiesserei Baumgarte is one of the largest German foundries with three moulding plants and a wide range of references in very different industries. For many decades, the company has stood for sophisticated, modern casting technology, highest quality and future-oriented technology. The iron foundry has committed itself to maintaining its lead in the future. A pivotal step into this direction was the implementation of the MES FASTEC 4 PRO.

"With an MES system, we can achieve more transparency, an improved flow of information as well as smoother processes in our company."

Volker Spruch
Head of Technical Controlling,
Eisengiesserei Baumgarte GmbH

TRADITION. PERFEKTION. INNOVATION.
EISENGIESSEREI BAUMGARTE

Transparency in Future-Oriented Technologies

Smooth Communication Between MES and ERP System

At Eisengiesserei Baumgarte, 230 employees are currently working on state-of-the-art production facilities on a production area of 20,000 m². Around 30,000 tons of castings are cast and processed here annually.

"Thanks to FASTEC 4 PRO, we have access to immediately usable data in real time. This means that we can carry out audits at any time within 5 minutes."

Eckhard Winter
Manager
Eisengiesserei Baumgarte GmbH

Everything From a Single Source Thanks to the MES System

The introduction of an MES was an important step towards sustainability, performance and the future for the company Eisengiesserei Baumgarte.

Volker Spruch, Head of Technical Controlling at Eisengiesserei Baumgarte and MES project manager, explains: "With an MES, we can react more efficiently to changing market conditions and implement the increasing customer requirements for our castings while maintaining the same high quality. With the MES we always have up-to-date performances and therefore cost data."

At the end of 2010, the go-ahead was given for the implementation of the MES solution FASTEC 4 PRO. The module Machine Data Acquisition (MDA) was implemented in two core shooters as a pilot installation. Thanks to the clearly defined requirements for the MES, this module was put into practice quickly and easily.

30,000
Tons of Cast Parts/Year

As early as spring 2011, 6 months after the pilot installation, the system was expanded to include the remaining 12 machines in the core shop.

In August of the same year, the three molding plants at Eisengiesserei Baumgarte followed suit. Two of the molding lines were connected "conventionally" via FASTEC I/O modules, another one was connected via a special web interface based on XML.

Implementation on 12 Machines After Just 6 Months

MES With XML Interface for Perfect Post-Calculation

Reasons for downtimes can be selected directly at the core shooting system by touch.

The next step of the project was to implement an interface to the existing ERP system so that the ERP and MES systems could communicate with each other – especially the order transfer from ERP was important here. Baumgarte uses the ERP system GUSS info from the sd software GmbH, which has been custom-built for foundries and the metalworking industry.

In contrast to the core shooters already implemented, the molding lines can produce various orders in one molding box. In order to be able to transfer these orders from the ERP system into FASTEC 4 PRO, a complex and sophisticated interface solution based on XML was implemented. In this case, all orders for the molding plant are combined and a so-called higher-level order is formed from them. The target time of this higher-level order is determined from the slowest target time of the sub-orders, the target quantities in turn result from the sum of the target quantities of the sub-orders. This higher-level order can then be registered and deregistered directly at the MES just like the regular orders.

Special Monitoring View on the Molding Lines

To visualize the entire process, a special monitoring view was created for the production terminals on the molding lines. Here, the department manager can see the higher-level order with the data relevant as well as all suborders with target quantity, OK and NOK quantity, part number etc. at a glance.

After completion of the higher-level order, when the specified target quantity has been reached and the machine operator has reported the order back as "Finished" in FASTEC 4 PRO, the order is reported back to the ERP system. In the process, a data record for the ERP system is generated for each MES data record. In the case of order, shift, worker and day changes, these are classified into blocks, whereby states, times, counter readings etc. are summarized and contained in each of these blocks in total.

Thanks to this detailed data transfer, an exact post-calculation of the orders is possible directly in the ERP system: Machine and set-up times, downtimes as well as good and reject quantities are precisely recorded in FASTEC 4 PRO and made available to the ERP system accordingly.

Work Error-Free – Thanks to the MES System With Document Display

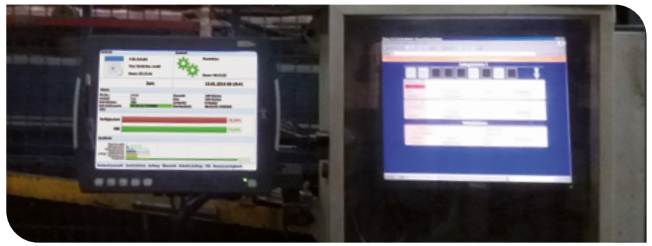
At Eisengiesserei Baumgarte, those in charge were impressed by the possibilities of the interface solution originally implemented for the molding systems, so that it was decided and implemented to connect all machines via the SD interface. "Thanks to our special SD interface between FASTEC 4 PRO and our ERP system, it is now possible for us to recalculate orders in detail," says Volker Spruch.

An exception with regard to the ERP connection are the six machining centers. To save operators unnecessary input, additional digital signals are transmitted from the machine controls of the machining center to the MES system. These signals provide article coding for the system, which is used to access all master data, including set-up and processing times. The operators therefore only enter the reasons for the downtime.

Active Worker Support Through Paperless Instructions

For easier and above all, paperless work, the MES module Document Display was additionally licensed at Baumgarte. "Since we already use Windream, a program for electronic document management, in our company, an interface between FASTEC 4 PRO and Windream was necessary," referred to the demands on FASTEC.

At Eisengiesserei Baumgarte, the coupling to Windream is implemented as follows: When the machine operator registers an order at the production terminal, a storage location in Windream is automatically transmitted with the order data, so that FASTEC 4 PRO can transfer the current files with the registered order ad hoc. Thus, all documents relevant to the employees are displayed directly on the terminal when the order is registered (work instructions, information on set-up, notes on processing, etc.). For Eisengiesserei Baumgarte, this approach means that up-to-date documents are always available directly at the required location or terminal. Another advantage is that this coupling avoids duplicate data storage.



At terminals that are suitable for industrial use and specially designed for harsh environments, employees can see directly at the molding lines how things are currently going in production.

"With the MES system, we have up-to-date performance and thus cost data at all times."

Eckhard Winter
Manager
Eisengiesserei Baumgarte GmbH

Interfaces Individually Expandable

Production at a Glance With MES System – Melting Furnace View

The largest energy consumers in a foundry are the medium-frequency induction furnaces. That is why it was important for Eisengiesserei Baumgarte to be able to identify savings potentials, especially in this area.

FASTEC implemented a special monitoring view for this purpose. The current status of the systems and the next orders to be processed are displayed to employees on a large screen directly at the furnace control station. The order data needed is transferred directly from the ERP system via the SD interface. In the melting furnace view, order number, article, customer, temperatures, materials, weight and molding plant fault or downtime can be seen at a glance. This enables the employees to appropriately prepare for the set-up, and to weigh and prepare the input material.

In addition, the department manager can change the order sequence directly on the production client, which by default depends on the transfer from the ERP system. To do this, the department manager simply marks the next two orders and in the melting furnace view, the sorting is immediately and automatically adjusted accordingly.

If unexpected gaps occur in the upcoming production process, an energy-reducing intervention can be carried out immediately.

The employees of the department are enthusiastic about the melting furnace view: “With this view, we can perfectly prepare subsequent orders. Thanks to the large monitor and the clearly displayed view, we have an eye on exactly the data we need. This enabled us to achieve energy savings of around seven percent in this area alone.”

7%

Customized Monitoring View

7 % Energy Savings Through Clear Visualization of Data

Equipped for the Future With MES

Step by step, all areas of production were integrated into the MES system. At the beginning of 2013, six machining centers and seven special core shooters were integrated into FASTEC 4 PRO. These BICOR machines can process three orders at the same time, as they have three different core boxes (pick-up stations) that run in a circle through the machine. Therefore, it is mandatory that three (different) orders are always processed.

The order sizes do not have to be the same, as an order change can also be made for one station only. The throughput time of the machines is the sum of the maximum processing times of the individual pick-up stations. In most cases, however, three articles to be processed are registered with different target times.

In 2014, a new machining center for processing pump housings was commissioned. "Thanks to the simple configuration of FASTEC 4 PRO, we can integrate new machines and plants into the system quickly and easily," summarizes Volker Spruch.

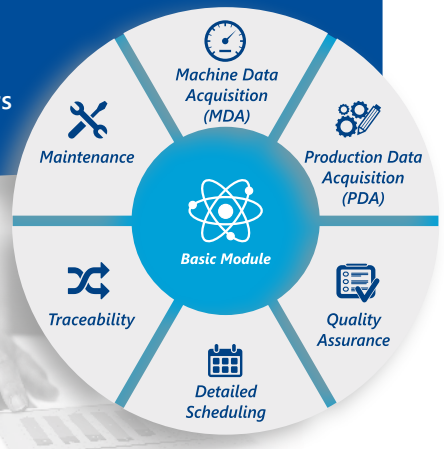
"The bottom line is that FASTEC 4 PRO provides us with immediately usable data in real time, which we can use to perform an audit at any time within 5 minutes. With the MES system, we are equipped for the future and can maintain our position in the highly competitive foundry market," concludes Eckhard Winter, one of the managing directors of Eisengiesserei Baumgarte.

Overview:

Industry: Metal Working Industry

MES solution FASTEC 4 PRO, in use since 2012.
Modules and interfaces used:

- MDA
- PDA
- Process Data Acquisition
- Document Display
- SD interface based on XML
- Core shooters
- Molding lines
- BICOR machines
- Machining centers



Simple Integration of Systems

Why Not Get to Know Us Personally?

Production companies must produce on time, in a traceable, flexible and customer-specific manner, while ensuring consistently high quality. Achieving these goals requires transparency through real-time information, good planning and quick and adequate reactions to deviations. Our Manufacturing Execution System (MES) FASTEC 4 PRO is the right tool for this purpose. With great success since 1995.

With FASTEC 4 PRO, you gain the necessary level of transparency in all areas of production in real time, enabling you to discover previously unused potential for increasing productivity and optimizing processes.
Thanks to targeted planning, you can also respond to short-term requirements from sales and efficiently design production processes – traceable and documented.

We would also like to give you a good advice personally!

Our sales department will be happy to provide you with further user reports and information material! Or else, make an appointment with our sales department for a presentation at your location, in our company or via web. Of course, you can also experience FASTEC 4 PRO live and on site with our customers.
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Additionally, we offer videos of our software and customer solutions in our YouTube channel:
www.youtube.com/FASTECGmbH

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