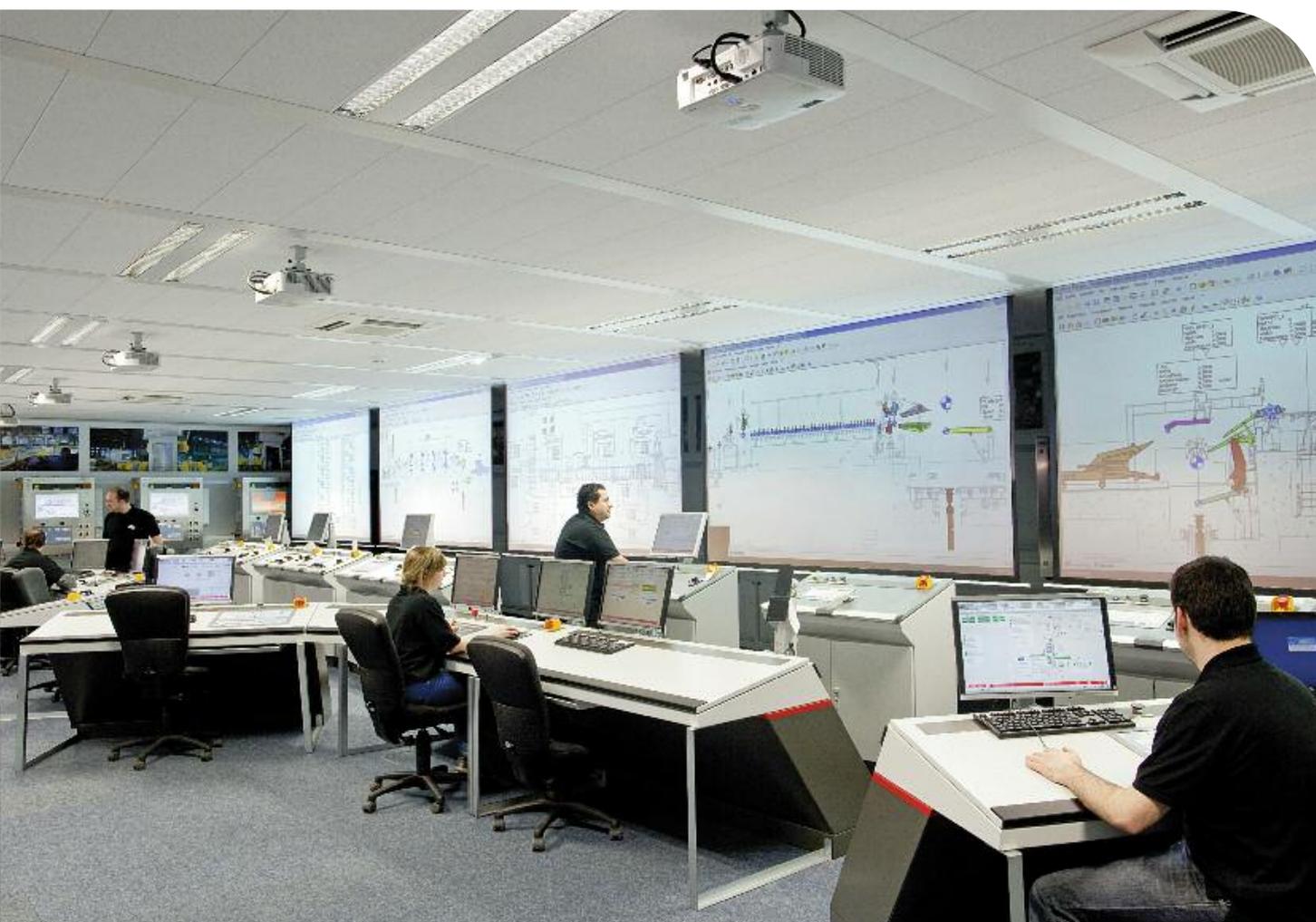


Ahead of the times
with **PLUG & WORK**



Saving time – A competitive edge

YOUR BENEFITS FROM PLUG & WORK

The sooner a new or revamped plant goes on stream and reaches the planned output capacity, the faster the investments of the plant owners will pay off.

But where to find unused potential to speed up the installation, commissioning and run-up phases?

Today's largely pre-assembled plant components and intelligent modular designs already exhaust most of the options for saving time on mechanical engineering during installation.

However, SMS Siemag has developed a concept which nevertheless ensures significant time savings: **Plug & Work**. Instead of starting the test series for the electrical and automation systems and the operator training courses only upon completion and installation of the mechanical equipment, Plug & Work means to bring forward these activities and carry them out simultaneously to the construction work.

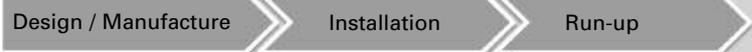
SMS Siemag has established several test fields in which the complete automation system is set up prior to commissioning and is tested and pre-optimized by means of realistic simulations.

Simultaneously, the training of the customer teams gets started at the original control pulpits, control cabinets and process computers and using the original software. In this way, by the time of commissioning a functionally reliable automation system and fully trained plant operators and maintenance teams are ready for their tasks.

THE BENEFITS OF PLUG & WORK

- Fault-free equipment
- Short commissioning times
- Reliable and quick run-up
- High product quality and good plant availability from the very beginning
- Well-trained operating personnel right from the start of production
- Early return on investment (ROI)

Mechanical equipment



Electrical and automation systems

Conventional concept



Sequence with Plug & Work



Automation of a hot rolling mill in the test field.



Setup of the automation system with process visualization.



Customer training on the original control pulpits in the test field.

The basis of our simulation models: **INTERDISCIPLINARY KNOW-HOW** from more than 100 years

Realistic real-time plant simulations are the core of Plug & Work. In order to develop and set up such simulations, mathematical models alone are not enough. In-depth technological and empirical knowledge of the processes to be introduced into the simulations is just as important.

Based on more than 100 years of experience in mechanics and process engineering, we have a very precise knowledge of the behavior of processes and of the actuating variables that need to be used for achieving certain product properties. This complex interaction is integrated into our simulation system and reflected by the Plug & Work concept.

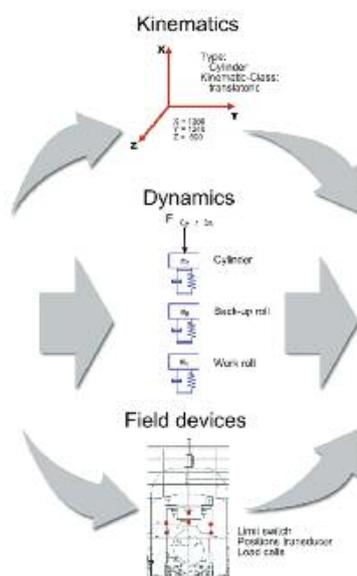
For Plug & Work, the entire automation system of the plant to be tested is installed in the test field and connected to the simulation system. The testing process begins with separate module tests in which the involved hardware and software components are subjected to isolated function checks.

However, instead of the usual procedure of concluding the preliminary tests at this point and then continuing the tests only after the delivery and completion of the overall plant, the preliminary tests are followed by integration tests in which the fault-free interaction of the modules as an overall plant is examined. In this way, we make use of the precious time – for the benefit of our customers.

For the simulation system itself, the customer-specific plant including all kinematic and dynamic parameters of plant behavior and the sensors is processed and implemented. The result: For the operator, it feels like working on the actual plant; all operating modes and processes are simulated in real time and visualized accordingly. He can control production virtually but also learn maintenance sequences. This hands-on approach enables us to tune the automation system already beforehand to faultless sequences and proper operativeness.



Processing of the data for the simulation.





Inspection of the process data.



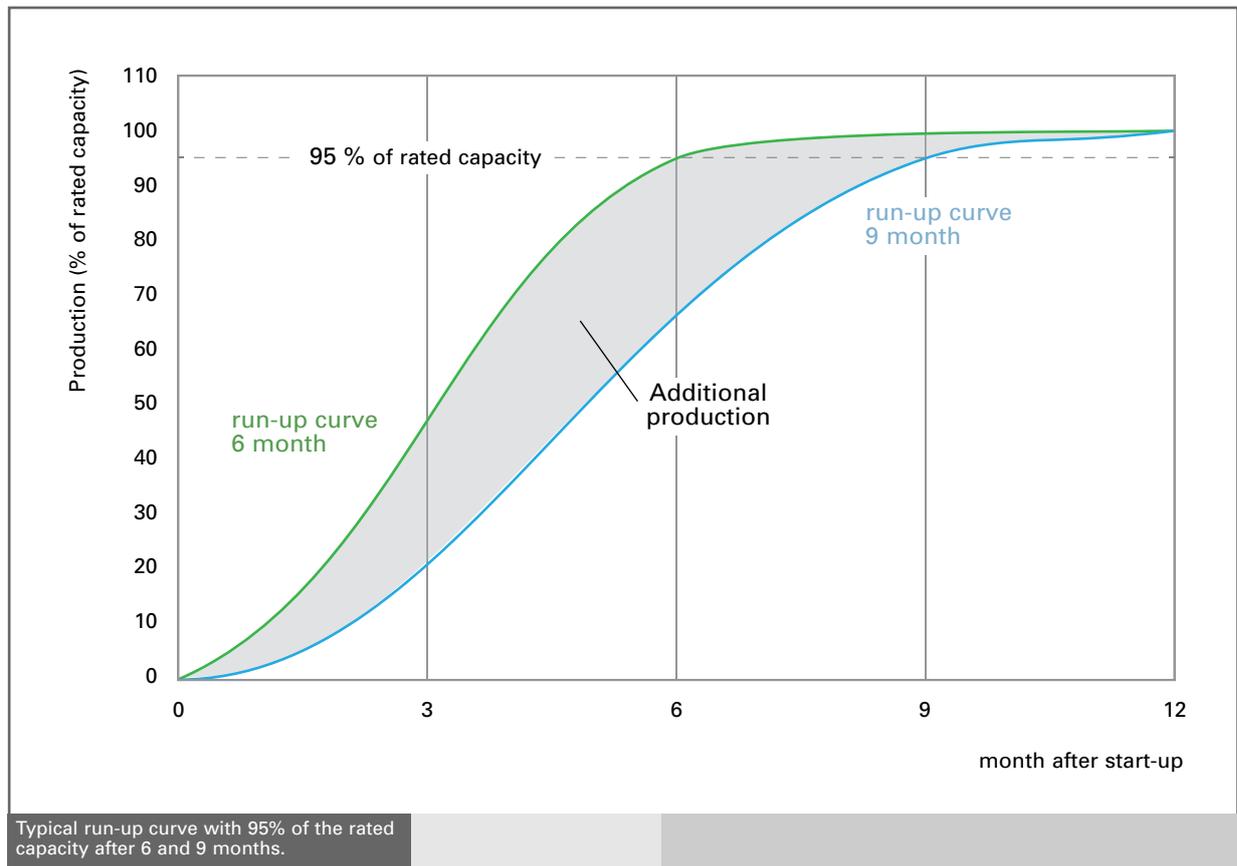
Plug & Work test of a complete heavy-plate rolling mill .

In every sense: **A QUICK RETURN ON INVESTMENT** for plant owners

Our customers all over the world have already successfully used the benefits offered by Plug & Work for more than 100 new plant and modernization projects. All our references are a clear proof: With Plug & Work, our customers attain the return on invest much earlier than when using conventional approaches.

A parallel approach to the realization steps such as that of the Plug & Work concept requires a comprehensive and experienced project management with a smooth internal and external coordination.

With modern corporate structures and the human resources required, SMS Siemag is well equipped for this purpose. With Plug & Work, we enable our customers to take up profitable production at an earlier point in time.





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MEETING your **EXPECTATIONS**