

X-Pact® Vision

Operation and visualization



X-Pact® Vision

Taking a fresh look at the production process

Requirements of the new industrial era

Inspired by today's steadily increasing digitization and automation, we upgraded our operation and visualization approach, terming it X-Pact® Vision. This new creation sets future standards in the visualization of challenging process interactions. Even more: it places the human operator at the center.

Specifically, we redefine plant operation in response to the needs of modern, highly automated systems.

Included here is X-Pact® Vision that provides access to process information from any location. You can use mobile devices for intuitive, reliable, and timesaving evaluations of manufacturing results. That means optimized processes.

Also ideal for revamps, our solution is easy to integrate into any plant configuration.

Innovative X-Pact® Vision HMI

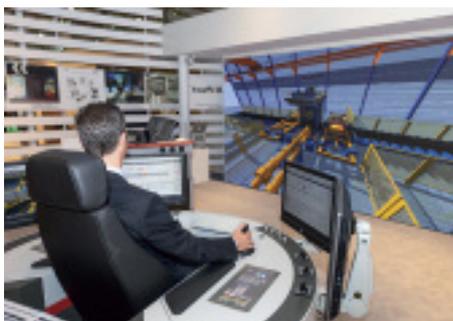
Monitoring the highly complex production processes in metallurgical and rolling plants demands the utmost skills of the operator. He must have access to all information relevant to his task so that he can decide and react swiftly and correctly – even in critical situations.

This is where our innovative X-Pact® Vision HMI (human machine interface) comes in. As the link between plant and operator, X-Pact® Vision HMI provides a production-based representation of the process including all the relevant information.

The operator is center stage

Understandable, clear-cut, and intuitive – the new HMI makes it vastly easier for the operator to track everything that's happening in the production process. The visualization interface engineered by SMS group makes use of the human ability to perceive and process information.

It guides the operator through the process chains. Plus there are configurable detailed stages devised to support the intelligent navigation through the screen masks.



X-Pact® Vision Control Station as the command center

The ergonomically designed control station is simultaneously command center, workplace, and primary information exchange point. It's modular, scalable, and equally suitable for revamps. Furthermore, we use standard elements to ensure top stability and easy maintenance.

All the attributes and functions integrated in X-Pact® Vision build on proven technologies. As a plant owner, you benefit from a secure, reliable operating system. So, whatever your wants and needs, SMS group delivers the right solution for you – every time.



X-Pact® Vision HMI

Operation made easy

Your requirements

You – and your staff – will appreciate not only the modern look, but also the ergonomic aspects of the design. Working with the operating interfaces reduces both the physical and mental strain on your personnel. It's vital that the system flags up anomalies unmistakably to reduce the potential for human error.

Our solution

Outstanding here are straightforward structures and clean screen layouts designed to give your operating personnel a clear picture of production. The information is logically structured in groups and presented in pared-back form so operators see only what they need. That creates transparency and guidance.

Not only that, this user-friendliness of our HMI approach boosts efficiency, and ultimately also your operators' motivation. Intuitive navigation, configurability, and context-based operator guidance add the finishing touches.

Highlights

Support from touchscreens and handheld terminals elevates you to the next generation of control. To make handling and learning even easier, your operating personnel can access various functions under “Operator Management”.

Take for instance the **Storyboard**. Here, operators can save sequences of process diagrams under a freely definable name. There is also the option of adding notes to the diagrams. This assistance system is especially helpful for training as well as for unusual operating sequences.

Multiview offers a miniaturized display of up to four process screens. This means: the operator can freely choose which views he wants to see.

Using the **Multiscreen** solution doubles the visualization area to cover two adjacent monitors operated with a single mouse and keyboard.



Early training with Plug & Work tests

SMS group utilizes its test fields to test and optimize the automation system for every product under near-reality conditions – long before installation at your facility. Here, we use a simulation model that maps your entire mechanics, drive technology, and process.

Moreover, it's a great opportunity for our employees to train your future operators on the original control panels. That includes virtual production operation so your personnel gets to know the functions of the plant and how to use it in realistic operation situations. As a result, Plug & Work ensures a rapid runup of your plant.



Your benefits at a glance

- Clear view of production
- Easy-to-understand, intuitive operation
- Ergonomic design
- Modular structure, scalability
- Suitable for new plants and modernizations
- Fast, systematic troubleshooting
- Support from modern touchscreen and handheld terminals
- "Joy of use"



Application menu:
Pull-down menus to switch between different views

Process overview:
Data of immediate relevance to the process in combination with the unit and the material flow

Caster TCS Level 2 Cooling Water Hydraulics System

| | Heat ID | Ladle [t] | Tundish [t] | Grade | Cast Length [m] | Slab [m] | Tailout [m] | Rem. T |
|---------|---------|-----------|-------------|-------|-----------------|----------|-------------|--------|
| Current | 2351 H | 162,00 | 152,00 | 233 | 454 | 34 | 0 | 0 |
| Next | 2352 H | 162,00 | 152,00 | 233 | 454 | 34 | 0 | 0 |

Breadcrumb:
Simplified orientation by displaying the navigation hierarchy of the process diagram

← Caster Overview →

Key process parameters:
The process at a glance

Caster
Process Overview

Caster 2 - Activ [CA2]

Ladle 2 [t]
137,50

Tundish 2 [t]
35,40

Caster 2 - Activ [CA2]

Mode
Cast

Cast Length [m]
32,53

Slab [m]
10,90

Speed [m/min]
4,00

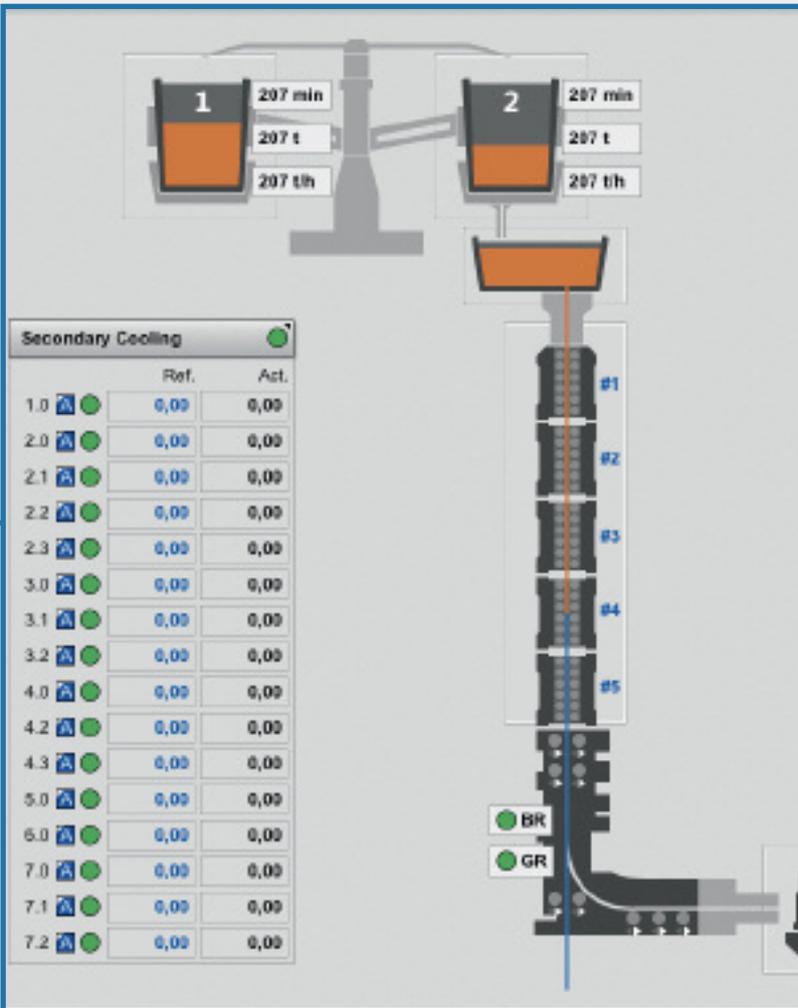
Tundish [°C]
110,00

Superheat [°C]
122,00

Remaining [hrs]
0:06:00

Next Heat [hrs]
1:12:00

Process information:
Production data from current production and notification about scheduled production



Message line:
Current malfunctions

Plant Overview Caster Overview Correction Data Hydraulic

Main navigation:
Buttons guide the user to the most important screens for each place of operation, adapt to the process view, and provide the user with additional information

System information:

Summary of the current screen, the place of operation, and the operator

Operator help and settings:

Make using the HMI easy

Process status indicator:

Status of subordinated systems and units as well as adjacent production facilities

Process details:

Further detailed information is compiled and can be organized in groups. The operator can switch between information using side tabs

Operator management:

Supports plant handling, e.g. with Storyboards and Multiview screens

The screenshot displays the X-Pact HMI interface. At the top, a status bar shows system components like 'OH HMI', 'DB Server', and 'TKY001HMI DC0101203'. Below this is a data table with columns for 'Time [min]', 'Speed [m/min]', 'Heat [°C]', 'Superheat [°C]', 'Cast Width [mm]', and 'AHeat No.', all showing '0'. The date and time 'Tuesday 12-04-2016 10:05:40 am' are also visible. The main interface is divided into several functional areas: 'Slag Detection' with manual/auto controls and various signal indicators; 'Quality Buttons' for issues like 'Hole in SEN' and 'Casting powder ok'; 'Mould Cooling' with a table for Right, Left, Loose, and Fixed cooling parameters; 'Withdrawal & Straightener' with MPa values; 'Loop Control' with offset and force settings; 'Tundish Level Control' with height and weight indicators; 'Argon' flow and pressure controls; 'Tunnel Furnace Buffer' with free length and width; and 'Hydraulic Mould Oscillation' with frequency and stroke settings. A vertical sidebar on the right allows switching between 'Casting', 'Ladw/Tr Change', and 'Tatout' views. The bottom of the screen features a navigation bar with icons for home, back, forward, search, and help.

X-Pact® Vision Control Station

A clear view of the production process

Your requirements

We all know the level of automation in metallurgical and rolling plants is increasing continuously. Yet human operators are still indispensable. All the necessary information for the operator comes together in the control station. Therefore, it's vital that the surroundings and control elements effectively support processes and activities. Whether normal production operation, shift changes, stoppages, customer meetings, or breaks – your control station must provide the ideal setting for all these activities.

Positioned centrally in the analysis/seating area of the control station and designed specially for teamwork is our **Data Analysis and Vision Desk – DAVID** for short. DAVID is packed full of the latest technology and functions as both a discussion table and a plant information center. It provides access to all the data you need for production analysis, performance evaluation, and shift handovers.



Our solution

What you get from SMS group is not only our innovative HMI, but also state-of-the-art solutions for the entire control station. All this adds up to an ideal all-round operation package. Fundamental here is dividing the control station into an operating area and an analysis/seating area. That's because perfect concentration without distractions is essential in the operating section.

Integrating new, mobile terminals, SMS group developed **Technical Operation Management – TOM** for short. It gives operators the option of making notes and recording irregularities in production on a tablet.

The analysis/seating area serves as a meeting point for colleagues, including supervisors, as well as for customers and visitors. This is where you can analyze and present production results without actively intervening in production.



Highlights

The focus here is on ergonomics and a clear view of the entire production scene. The operator can rely on support throughout his activities. All the desks are height-adjustable to guarantee the right working position.

Specifically for heavy plate plants, we designed a control desk that gives the operator an unobstructed, production-oriented view of the process.



Your benefits at a glance

- More efficiency due to a focus on ergonomics and personnel needs during all activities
- Central access to electronically available information
- Fast overview of the current situation and production data
- User-friendly even over long working times
- Customizable design
- Suitable for new plants and modernizations



X-Pact® Vision Mobile Operation

Process access from any location

Mobile X-Pact® Vision solutions give managers and metallurgists a new freedom. That's because they offer mobile access (via tablet/smartphone) to the process.

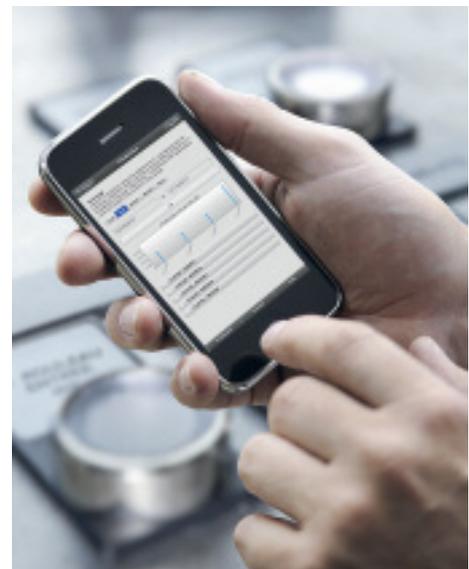
This is how **X-Pact® Vision web-based reporting** facilitates intuitive, secure, and time-saving evaluation. Security is guaranteed via in-house WLAN with access authorization.

Another brand-new software application for tablets is mobile assessment of e.g. slabs with our **X-Pact® Vision Product Inspector**. Operating personnel not only have the option of documenting slab quality at fixed points, they can also perform mobile checks at any suitable location in the plant. You can choose the SMS group Product Inspector as a separate solution, or as a feature integrated in your quality assurance system.



Your benefits at a glance

- Mobile access to information
- Process-linked reporting to tablet and smartphone
- Easy evaluation of process results
- Data security ensured by in-house WLAN with access authorization
- Time saving with easy process optimization
- Efficient quality management



X-Pact® Process Guidance System (PGS)

Process-oriented operation guidance

Our X-Pact® Process Guidance System represents a fresh benchmark in steelmaking plant automation.

The automation structure relies on a visualization entirely geared to operator support. To guide the operator through the complete process, we also devised a new, dynamic display format. Here, the user sees all the relevant process information, entry prompts, and screens at precisely the right times.

The experts in our interdisciplinary working groups radically redesigned the software architecture. Furthermore, they created uniform communication methods using a data cloud plus database connection. Equally important, they eliminated redundancies on various automation levels and organized functionalities in a modular structure.

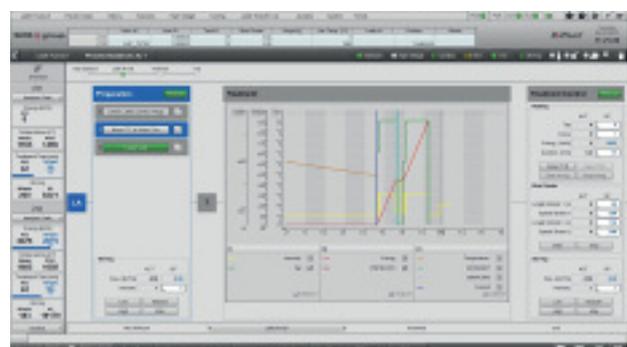


Now, with our X-Pact® Process Guidance System, we offer you custom automation solutions with a focus on ergonomics, transparency, and future-compatible technology.



Your benefits at a glance

- Process-oriented, ergonomic, and simple operation
- Modern communications via data cloud
- No redundancies in the automation levels
- Optional expansion with additional modules and applications
- High transparency and scalability
- Future-proof due to uniform system platforms and universal interfaces



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