SMS group
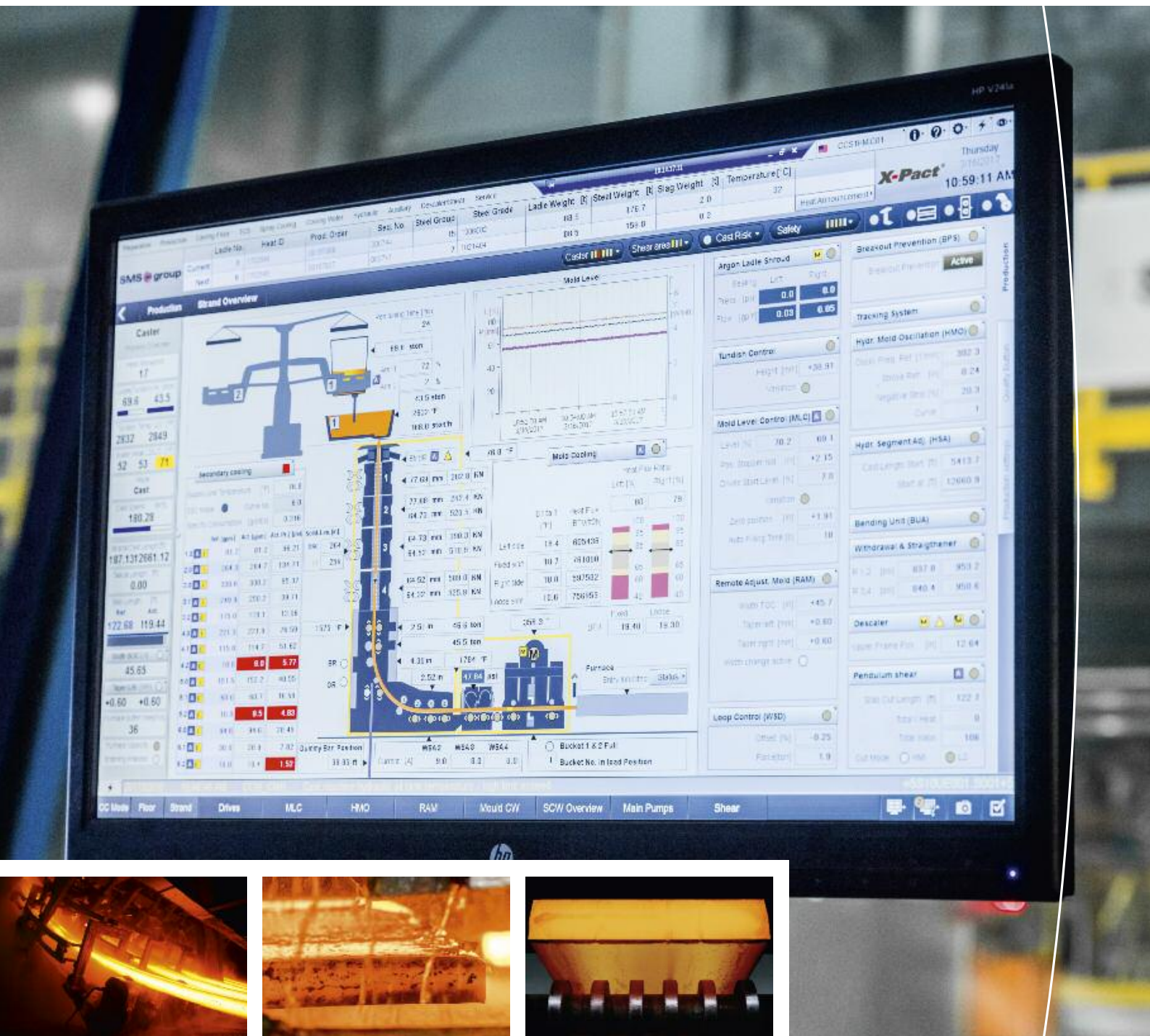
X-Pact® Cast Optimizer
Best optimization for the casting process

The challenge

For continuous casting machines the production scheduling varies between large sequences with hundreds of same slab dimensions and orders with different dimensions for each slab.

The automation systems have to deal with these situations. They have to be able to

- setup the mold for each slab
- track several ladles within one strand
- optimize the yield by optimizing slab length
- increase the yield by recommend the best casting speed
- handle interfaces with various partners
- report all relevant production events

The systems are the front-end concerning productivity and quality for the operators, the metallurgists and the maintenance stuff. All these have to find functions and a related user interface which fits with their needs. Thus, productivity and quality are maximized.

The SMS group solution

The SMS group offers a proven and stable system for tracking and production optimization. Beside assigning order data to production data, it offers several optimization models for cut length, width change and speed.
The system is mandatory for Industry 4.0. It can be easily connected with all process automation systems on the market.

Key features

- outstanding operator guidance – keep your process under control
- unbeatable cut length optimization for highest yield
- new dimension quality evaluation build-in – no extra system necessary
- first class nozzle supervision system ensures cooling
- best taper optimization algorithm for less breakouts
- comprehensive equipment management
- gapless product documentation

Modernization

The X-Pact® Cast Optimizer can be integrated into any casting machine.

Functions

Basic Package	Data Handler	Connects the systems with external systems using TCP/I P, OPC, Transfer-Tables or any other kind of communication protocol. Connections are created e.g. to the caster process control system, planning system, steel plant, slab yard and mill.
	Tracker	Material tracking from ladle arrival until slab leaves the machine. Calculates transition point/zone. Tracks transition point/zone and width/thickness changes. Determines the slab dimensions and creates marking numbers.
	Reporting	The system comes with several SMS standard production reports. The data can be exported to MS-Excel.
Order Data Package	Order Data Handler	Assigns the production data to the order data either received by a planning system or manually entered by an operator.
	Setup Manager	Serves to setup the caster process automation system based on steel grade. It forwards e.g. oscillation curve number, spray water pattern, min/max cast speeds to the process control systems.
	Length Opt	Calculates – depending on several strategies – the length of each slab and thus optimizes the yield.
	Width Opt	Optimizes position and length of upcoming width changes. Depending on the strategy, it creates long or short transition slabs. Creation of scrap pieces is also possible.
	Zone Opt	Optimizes slab lengths on mixed zones with grade changes. Depending on strategy, it increases/decreases slab lengths or adds additional (scrap-) slabs.
	Thickness Opt (CSP only)	Optimizes position and length of upcoming thickness changes. Depending on the strategy, it creates transitions on one or several slabs. Creation of scrap pieces is also possible.
Quality Package	Quality Evaluation	Uses all measured values (e.g. cast speed, water values, analysis) to create quality events and thus determines the quality of the final product. Rules can be set up with a rule editor. Results of quality rules can be used within other rules.
	Flux Opt	Compares the ratio of a narrow face heat flux with the average of the broad face heat fluxes. If the ratio is out of a range, the system increase/decreases the mold taper in small steps to optimize the heat flux ratio for the actual steel grade.
	Speed Opt	Proposes several cast speeds depending on: min/max for the actual steel grade, superheat, heat pacing, ladle weight and analysis. It is operators choice which speed setpoint is used.
	Powder Handler	Provides the tundish/mold powders to use. Enables the operator to choose the used tundish and mold powder type from a list. The amount of bags can be easily entered as well. The used powder will be stored (Heat ID, time stamp, cast length counter).
Other Packages	Nozzle Supervision	Detects leakages and clogging for each loop by comparing the current pressure/flow against a reference curve.
	Downtime Management	Records automatically downtimes. The assignment (plant units, reasons) can be freely defined and have to be assigned manually to each detected downtime. A report will give an overview of the major plant units causing the downtime.
	Equipment Management	Allows free definition of available caster-equipment. Thresholds can be set based on automatic created production values (e.g. number of heats, casting hours, cuts) for each equipment. Warning and alarms are created if the thresholds are violated. A report provides an overview of the status of each equipment.