

METALLURGY PRODUCTS

ABB Ability™ Optimold Monitor

Fiber-optic mold temperature measurement for slab casting

ABB AB

Metallurgy Products

Terminalvägen 24

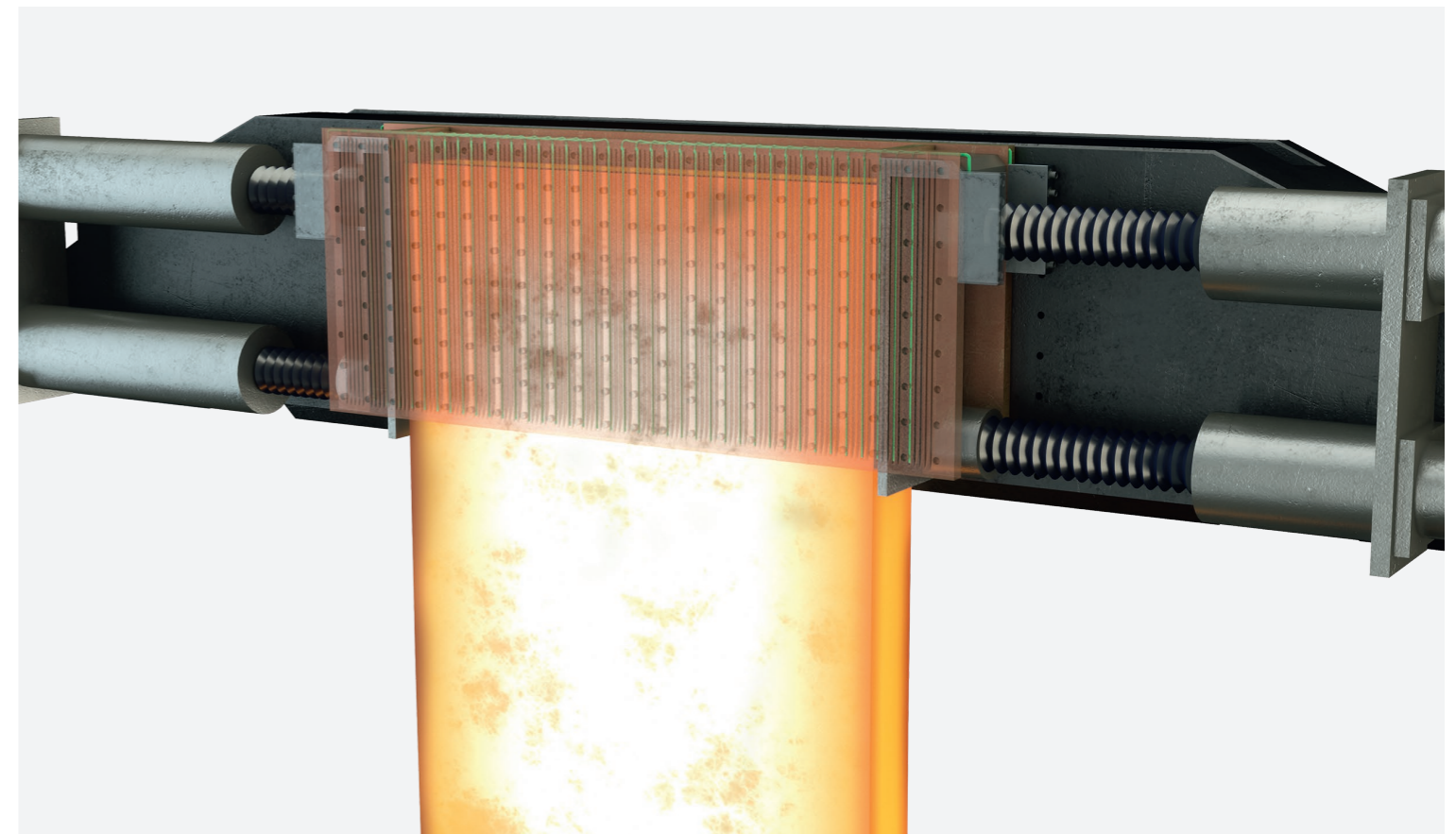
SE-721 59 Västerås, Sweden

Phone: +46 21 32 50 00

Fax: +46 21 14 83 27

For contact details, please visit our website:

www.abb.com/metals



- In-depth, real-time data on a wide range of mold parameters gives greater process insight and opportunities for performance improvement than existing technologies.
- Unparalleled spatial resolution with over 4000 fiber-optic measuring points per mold.

The ABB Ability™ Optimold Monitor’s 4000 fiber-optic measuring points offer greater process insight than ever before and, when combined with an electromagnetic stirring/braking device, ABB Ability™ Optimold Control can contribute to greater process optimization within the slab casting process.

For over 75 years we have been committed to providing electromagnetic stirring and braking technologies that help our customers increase quality and productivity and reduce operating costs. ABB Ability™ Optimold Monitor is the latest development in mold temperature measurement, using advanced fiber-optic sensing technology to obtain a more in-depth understanding of events in the near-meniscus area crucial to yield and steel quality. Active control of the fluid flow based on indirect temperature measurement is now within reach.

Enhanced mold temperature measurement
ABB Ability™ Optimold Monitor provides enhanced mold plate temperature monitoring in slab casting, including real-time mold status. The device can measure local thermal and flow events, as well as detecting stickers and cracks, enabling a new level of flexibility and scalability to mold monitoring and goes further than existing conventional and fiber-optic temperature measurement technologies.

With over 4000 measuring points per complete mold, ABB Ability™ Optimold Monitor’s spatial resolution is more than 20 times better than conventional temperature measurement systems. The number, length and placement of every Fiber Braggs Grating (FBG) fiber-optic sensing point along each individual optic fiber can be tailored to specific process needs.

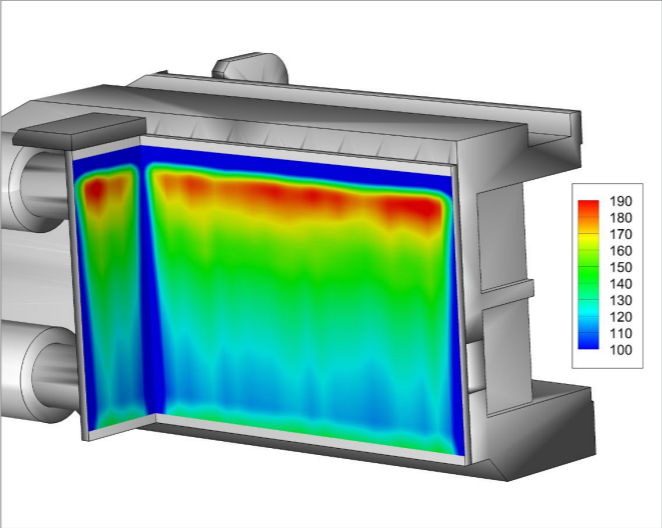
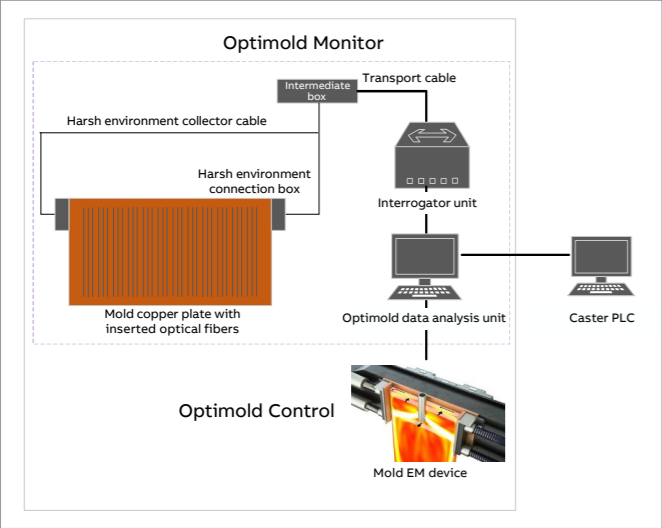
Robust, reliable and practical
Designed for reliable performance in harsh environments, ABB Ability™ Optimold Monitor is a small, lightweight device with a robust system and hardware. It’s mold plates are densely filled with sensors for particularly accurate results. The system is immune to electromagnetic interference and is intrinsically safe due to the absence of electrical voltage. The resilient cable connectors make it possible to connect and disconnect the system between castings, minimizing downtime, thereby enhancing the flexibility and plant availability.

Complete system for measuring and monitoring
Using ABB Ability™ Optimold Monitor software, data from the fiber-optic sensors is processed and visualized as a heat distribution image of the mold copper plate, allowing the operator to focus on areas of interest. Factors such as real-time meniscus profile and flow speed and other heat-related features such as mold cooling, plate condition, taper control and submerged entry nozzle (SEN) clogging are monitored and measured, providing more detailed process insight than existing mold temperature measurement technologies. Current and historical temperature gradient data can be analyzed allowing for early sticker detection, crack warnings and fewer caster disturbances and help improve process performance.

Process optimization with ABB Ability™ Optimold Control
When combined with an electromagnetic stirring/braking device such as the FC Mold, ABB Ability™ Optimold Monitor can deliver important insights that can be used to increase control of molten steel flows and significantly reduce inclusion defects for all casting conditions. The device’s high resolution mold temperature measurement data is used to calculate the meniscus level profile at any given moment. Meniscus speed, symmetry and steel flow stability can be fine-tuned as required and even managed online to achieve a more desirable flow pattern. With the help of ABB Ability™ Optimold Control the next level of real-time process control and optimization can finally be realized.

01 System overview

02 Mold temperature distribution measured and visualized by the Optimold Monitor.



Your challenges
Increase insight into casting conditions in the near-meniscus area in order to further optimize the continuous casting process.



Our solution
High definition, fiber-optic, mold plate temperature measurement technology with unparalleled spatial resolution. In-depth, real-time data on a wide range of mold parameters gives a greater level of process insight and opportunities for improving performance in comparison with existing technologies.



- Features**
- Precise temperature measurements
 - Unprecedented spatial resolution with over 4000 fiber-optic measuring points per mold
 - Quick and easy access to data
 - Small, lightweight and robust system
 - Minimum maintenance required



- Benefits**
- Unrivalled process insight
 - Real-time meniscus profile
 - Meniscus flow speed and symmetry
 - Early sticker detection
 - Crack warnings
 - Mold plate condition monitoring
 - Better taper control to reduce narrow side defects
 - Enhanced process control and optimization when used together with an EM device such as the FC Mold.