



Saveway®

Water leakage detection

Drying condition

Lining temperature

Lining wear

Refractory monitoring on **electric arc furnaces**

Increased safety and efficiency for your equipment



What **you** can achieve with our **technology**

- Early detection and localisation of leaks ✓*
- Avoid physical explosions ✓*
- Maximum safety for your operating staff and equipment ✓*
- Avoid hydration of lining material in larger scale ✓*
- Minimize maintenance cost ✓*
- Maximum service life of refractory material without any risk ✓*
- Maximize equipment availability and minimize loss of production ✓*

Saveway GmbH & Co. KG has specialized in measurement and safety technologies since 1992. At our German headquarter in Thuringia, we produce diagnostic systems for refractory linings and other components for melting, holding, and treatment equipment.

Based on our long term experience we develop customized solutions even for very specific applications.

Our **service guarantee**

At Saveway we take pride in continuous service to our customers. Our company is backed by worldwide sales and service partners that are available with expert advice and qualified after-sales service support.

our **services**

24 hour support of your equipment through online connection

We see what you see. This makes it easy to advise you with any furnace readings that are being shown on your system

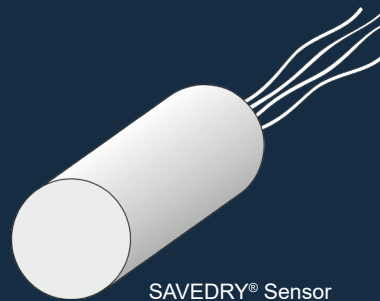
On-site training for your employees

to ensure optimal use of measurement technology

In-house training courses to deepen the knowledge for users of our products



Leakage Monitoring & Drying Condition



SAVEDRY® Sensor

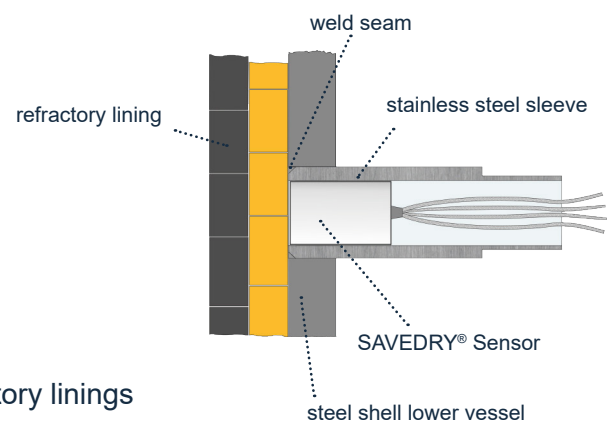
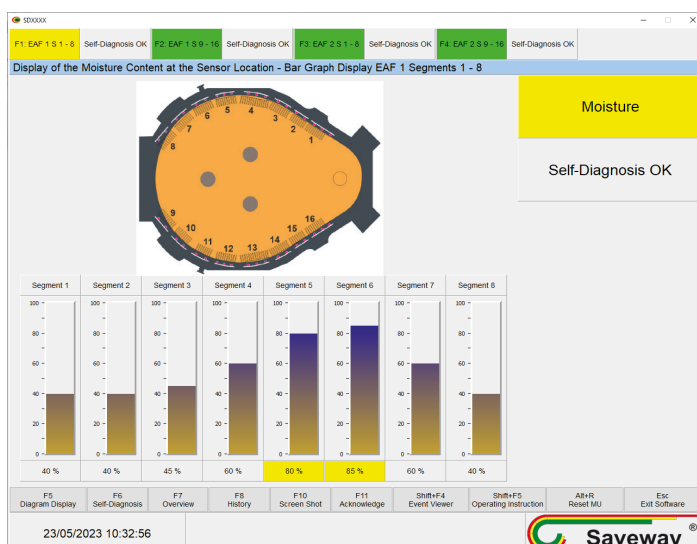
Operating principle

- Materials such as salts and oxides separate in water and become free moving ions
- Ions are conductive
- The higher the water content in the sensor, the higher the electrical conductivity
- The sensors measure the conductivity and the system determines the content of moisture
- The sensors are installed in holes drilled in the furnace shell, where they are in contact with refractory material
- Depending on the accessibility of the sensors, they can be replaced during production stop or at the relining station (Provided the installation site is easy to access)

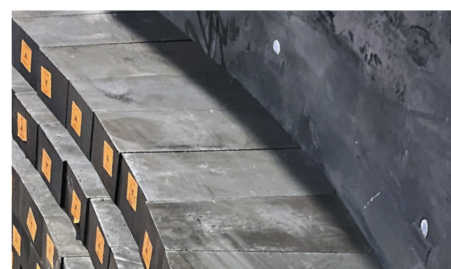


System features

- Reliable detection of cooling water leakages
- Localization of moisture problems
- Reliable display of drying condition
- Continuous measurement of moisture content in refractory linings



Display SAVEDRY® System



SAVEDRY® Sensor Type 4 in the lower vessel

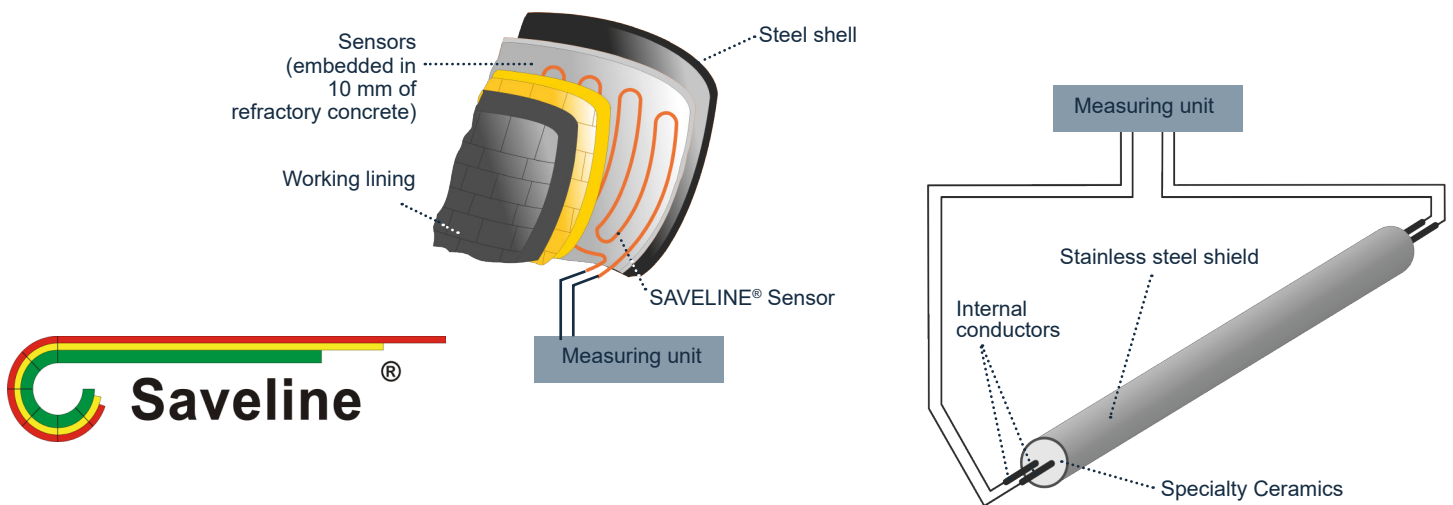


SAVEDRY® Sensor Type 4 View from the inside and outside

robust Lining Temperature Measurement & Wear Monitoring

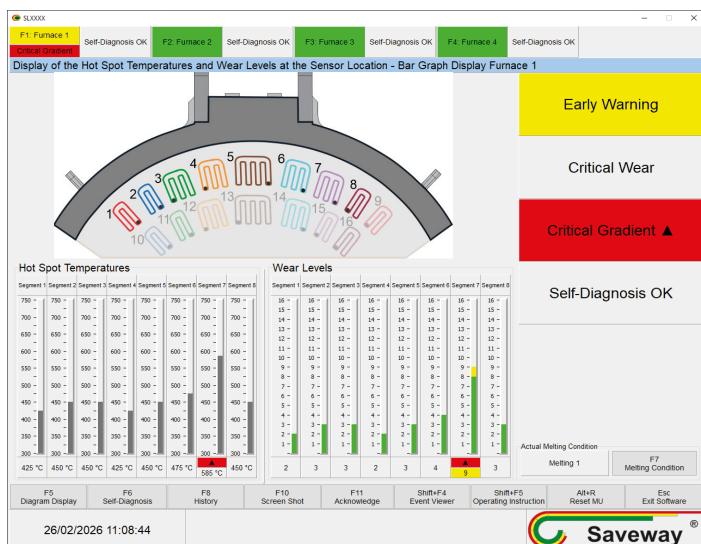
Operating principle

- The system uses linear sensors to measure the temperature
- Temperature rise will decrease electrical resistance of the ceramic filling
- Temperature measurement over the entire length, the highest temperature is always indicated
- Remaining wall thickness calculated from temperature and thermal conductivity of lining



System features

- Comprehensive temperature monitoring of refractory linings and equipment during furnace operation
- Calculation of remaining lining thickness
- Measuring the highest temperature in every area monitored by the sensor
- Localization of wear by placement of multiple sensors
- Reliable measurement in electrically conductive linings
- Measuring range of sensors: 200 °C - 1.250 °C



Layout of
SAVELINE® sensors
at the bottom of the
lower vessel

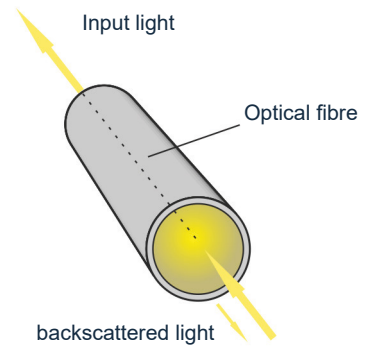


Installation Options
SAVELINE® Installation
on Spacer Bolts

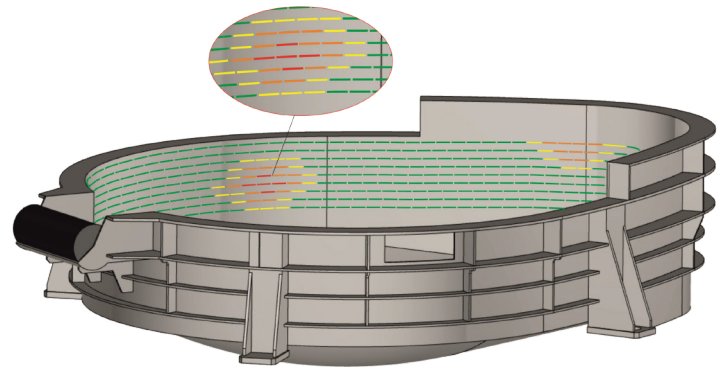
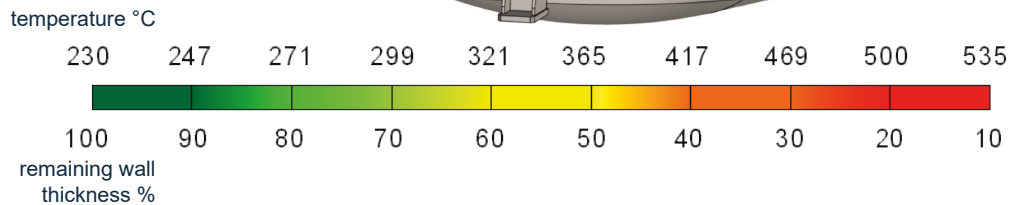
high-resolution Lining Temperature Measurement & Wear Monitoring

Operation principle

- Uses the Raman effect to determine the temperature
- Light will be transmitted through the optical fiber
- The backscattered light will be analyzed
- Temperature distribution over the fiber length is determined by the run time of the backscattered light



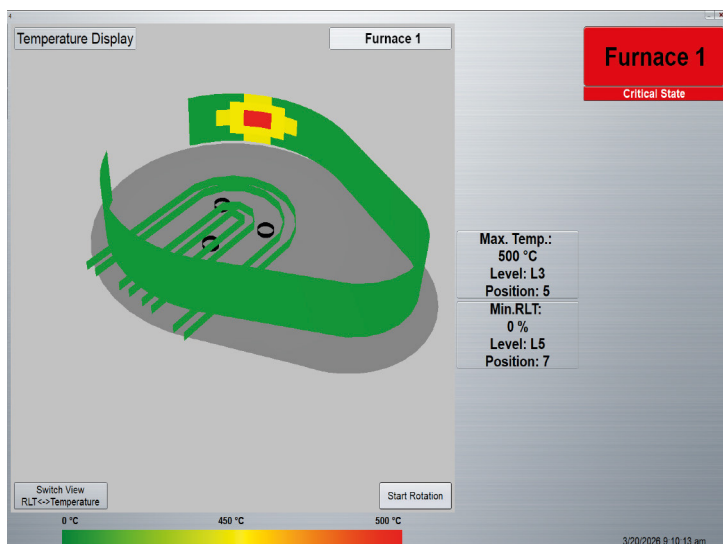
Determination of temperature by Raman effect



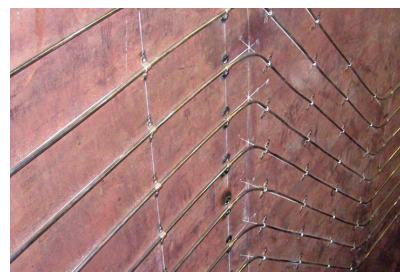
System features

- Continuous, comprehensive temperature measurement up to 500 °C
- Lateral resolution: 0,25 m
- Maximum 8 sensors with sensor lengths up to 2.000 m
- Up to 8.000 temperature values per sensor
- Insensitive to electric and magnetic fields
- Calculation of remaining lining thickness

Wear monitoring on the lower vessel



Display OPTISAVE System

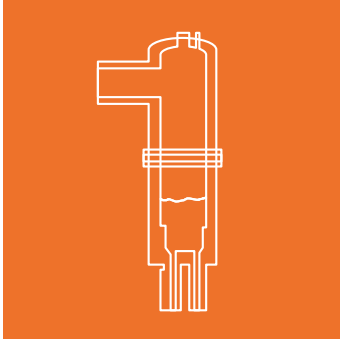


OPTISAVE installation inside lower vessel

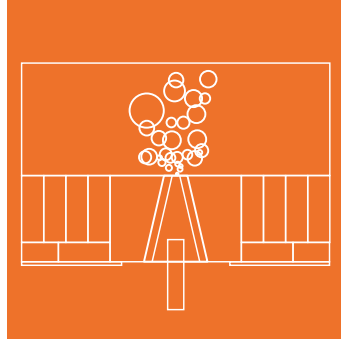


OPTISAVE sensor embedded in cooling block

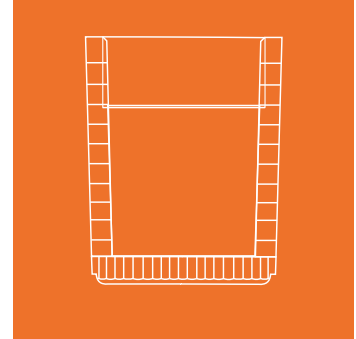
Other applications in the steel mill



RH degasser



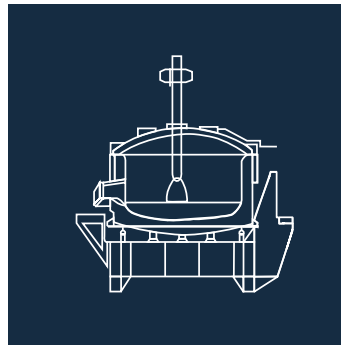
Porous plug



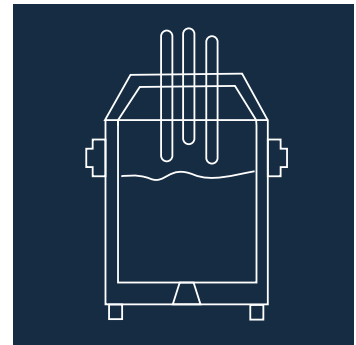
Ladle



Converter



DC-(Anode)



Ladle furnace

Our modular measuring systems can be used on a wide range of equipment in the steel mill sector. Practical examples are listed above.

In addition, the development of customer-specific applications for different areas of application is possible. The high flexibility of the technology and the extensive know-how of our experts allow us to develop a wide range of customer-specific solutions.

The close cooperation with customers as well as universities and professional associations is an important part of this process, enabling innovative ideas to be put into practice.

References

»Due to the positive cooperation [that had already existed since 2003], we turned to the company Saveway with the problem of ›detection of cooling water leakage at the electric arc furnace«. We installed the SAVEDRY® system in 2007 and developed it further together for our applications. Due to the close partnership with Saveway GmbH & Co. KG, we have achieved a high level of safety in the use of our melting systems.

We can rely on Saveway's measuring systems and the personal service of the Saveway team at all times.«

Dr. Hans-Peter Fauland (General Manager, Steelworks)
voestalpine BÖHLER Edelstahl GmbH & Co KG | Kapfenberg, Österreich



Other satisfied customers who have been able to increase the efficiency and safety of their equipment with our technology:



BGH Edelstahl GmbH
Deutsche Edelstahlwerke Specialty Steel GmbH & Co. KG
Carpenter Technology Corporation
VDM Metals International GmbH

Contact us

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