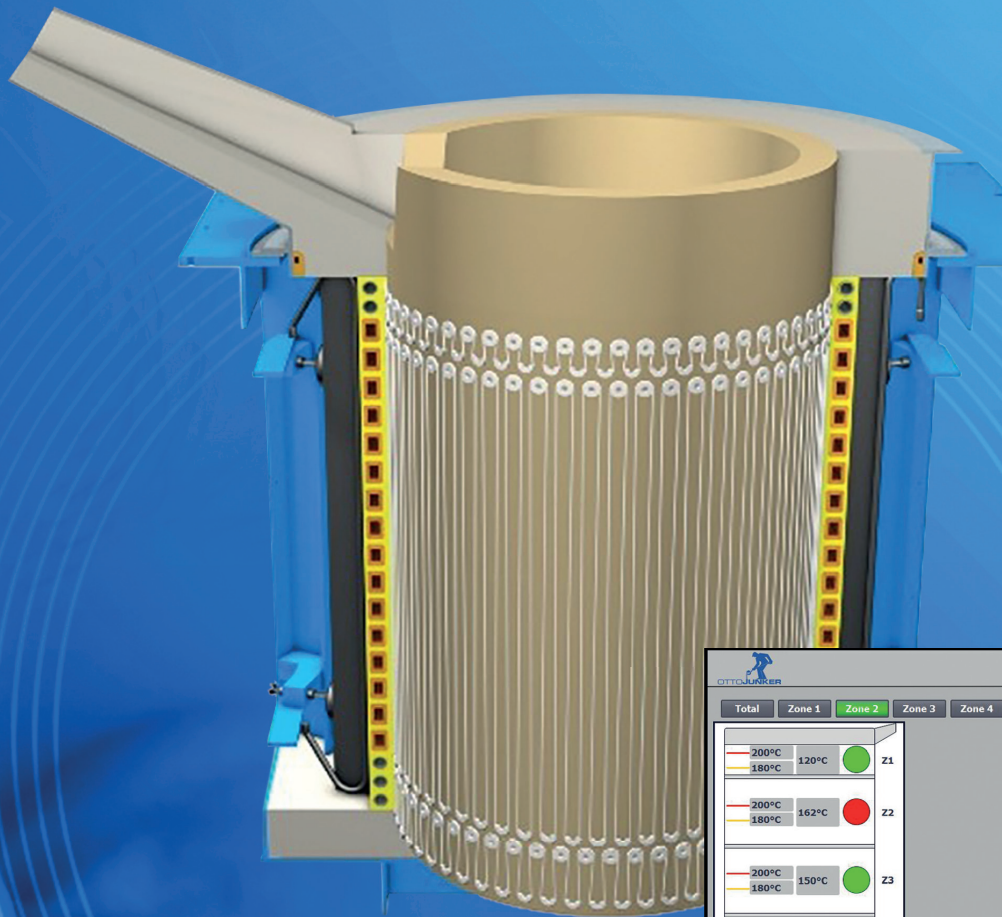
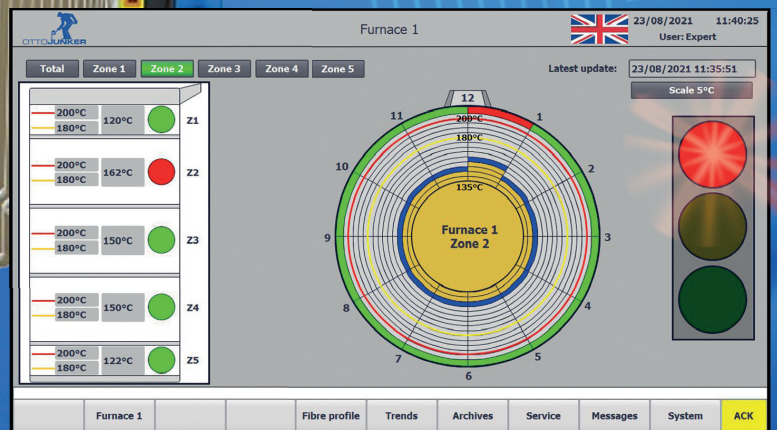


OCP+ OPTICAL COIL PROTECTION PLUS



Visualisation of temperature
distribution on the inner face of the
coil of a coreless induction furnace



**HIGH SAFETY THANKS TO EASY DETECTION OF IMMINENT WEAR AND
CRUCIBLE DAMAGE**

OCP+

Optical Coil Protection Plus

Like its predecessor – OCP+ is a patented system for measuring local temperature distributions on the inner face of coils installed in coreless induction furnaces. It reliably identifies wear and crucible damage such as erosions, cracks and metal fins.

This system also provides reliable monitoring of the sintering process in addition to normal melting and holding operations. OCP+ can be installed in most any coreless induction furnace.

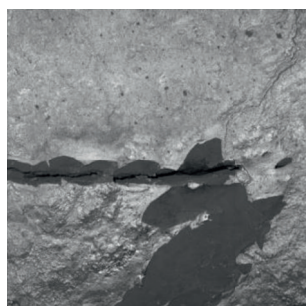
OCP+ is characterized by improved and simple visualization. Every operator has a simple overview at any time. The system is intuitive to use after a short training period.

The system measures, monitors, automatically turns off at preset limit values, supports and thus meets the expectations of modern crucible monitoring.

What crucible defects can the OCP+ system detect?



Build-up



Crucible tear-off



Metal fins



Formation of caverns

Benefits

■ Increased safety for people and equipment

Safety is improved by early detection of crucible damage and prevention of coil damage and breakthroughs of molten metal.

■ Improved process reliability

Our OCP+ is the only system to offer full-scale temperature monitoring already during the sintering process. Presence of moisture does not affect the measurements. Full functionality is ensured even for the melting of zinc alloys and galvanized scrap.

■ Increased equipment availability

Visualisation of the temperature in front of the induction coil helps detect local crucible wear, thus facilitating repairs of local defects and the scheduling of relines.

■ Low investment and operating costs

The OCP+ sensor cable is embedded in the permanent lining, eliminating additional costs when replacing the crucible. This results in significantly reduced maintenance costs overall, compared to other crucible monitoring systems.

*Example arrangement of the OCP+ sensor cable
on the inside of the coil of a coreless
induction furnace*



Special features

- One evaluation unit monitors up to three furnaces and is extendable at extra cost
- Diverse adjustable temperature warning and alarm setpoints
- Traffic light LED status indicator for warning and alarm conditions
- Playback function for review of chronological development of crucible defects
- OCP+ system can be installed in coreless furnaces of most any makes

Since OCP+ is a laser-optical temperature measurement system, it also works perfectly in strong electromagnetic fields. This clearly sets it apart from resistance measurement systems.



Example displays of various temperature measurements on the coil

The Optical Coil Protection Plus ...

... measures

- System for measuring the local temperature distribution in induction crucible furnaces

... supervises

- Monitoring of the temperature in front of the coil

... turns off

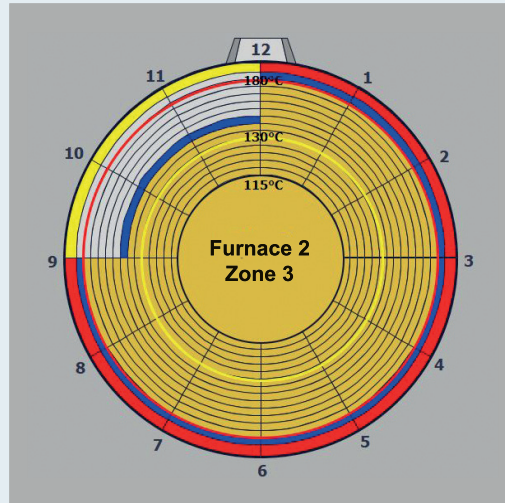
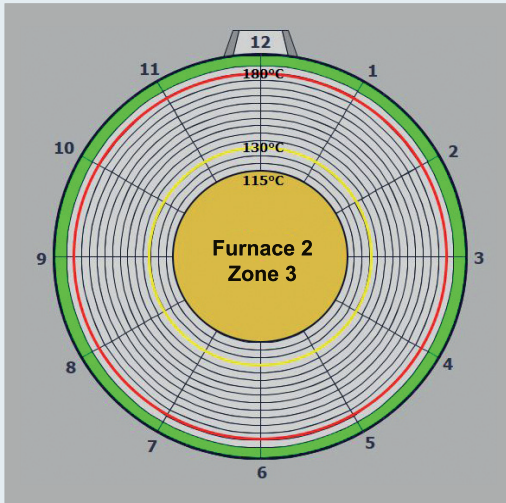
- System automatically turns off when preset limit values are exceeded

... supports

- easy integration in machine controls
- can be operated intuitively
- designed for use in harsh foundry environment
- Online customer support possible

Real-life examples

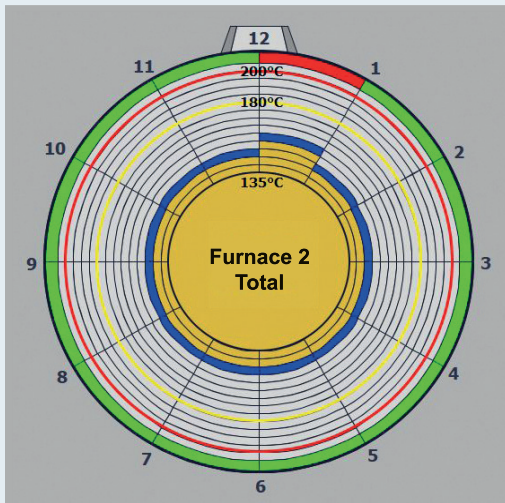
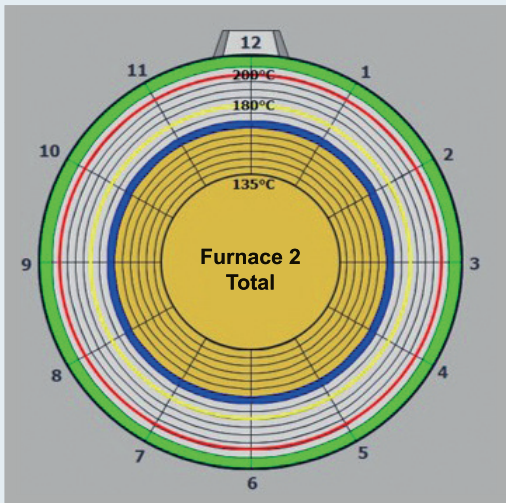
The following examples illustrate how the coil monitoring data are visualised in the OCP+ system.



Crucible tear-off

The graphs shown here illustrate the emergence of a pending circumferential crack.

(left: normal condition, right: crack, red line at high temperature at 12 to 9 o'clock positions)



Formation of caverns

The graphs shown here illustrate the formation of a cavern.

(left: normal condition, right: cavern, bulge at the 12 - 1 o'clock positions)

OCP+ helps you to identify faults at an early stage and to eliminate the causes economically. This guarantees high system availability, leads to operational and process reliability and lowers your costs! Short-term by fewer unpredictable malfunctions and long-term by saved maintenance costs!

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