



Target: Quicker availability

The solution for your dosing furnace: Completely dry installation with INSURAL precast shapes and high insulating backing materials. Huge energy savings, no sintering, low density index of the melt immediately, easy cleaning.

A market analysis among our customers showed clearly, that there is a strong need for optimisation in terms of cleaning and avoidance of corundum growth. To solve these problems, extended trials with different INSURAL recipes have been made.

Foseco now offers a completely dry installation with INSURAL precast shapes which provides a number of benefits:

- Installation in the foundry is possible
- No sintering process needed
- The desired density index of the melt can be achieved much quicker
- The growth of corundum is reduced to a minimum
- Easy cleaning
- Huge energy savings

To the precast shapes belongs a launder, which holds the molten metal and two roof plates, two heating element plates and six tubes for the heating elements. All elements will be assembled without plaster or glue. The installation can be done by untrained operators within 65 - 70 working hours (depending on circumstances). There is no need for special tools.

The area of the heating elements with separated plates and tubes is not sensible for cracks anymore. The changing of heating elements is simplified.

The INSURAL precast shapes are installed together with a high insulating backing material. High insulating plates get installed on the inside of the steel shell. The gap between the plates and the INSURAL piece is filled with a high insulating bulk material. The heating is separated with plates.

As no plaster is in use, parts of the backing materials can be reused in the following installation.

After the installation, the furnace can be switched on and is ready to use after achieving the desired working temperature.

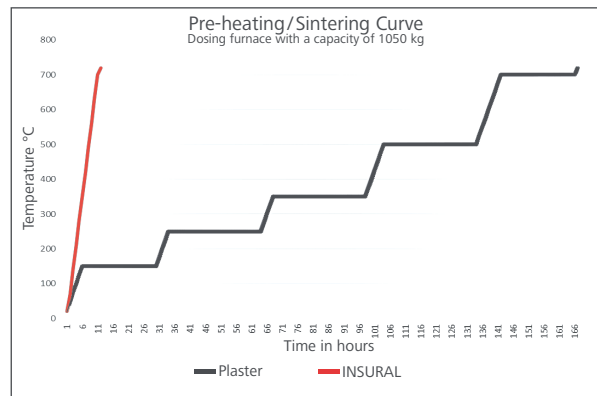


Diagram 1. Pre-heating/ Sintering Curve

The diagram shows clearly the huge time saving only in this step.

Depending on the quality requirements, the density index of the melt plays an important role.

Due to the dry installation, the required density index can be achieved a lot quicker than general.

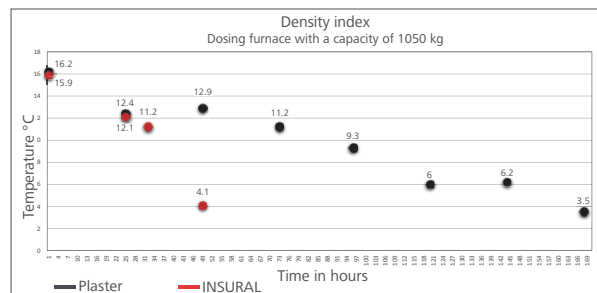


Diagram 2. Density index trend

The use of the INSURAL material provides a minimised corundum build up and easy cleaning due to its non wetting ability.



Figure 2. Furnace conditions after 3.5 years

An alloy change in the furnace is possible at any time. The only need is a cleaning process with only one flushing batch.

As INSURAL has a good insulating property, it is the basic material for the concept.

The case study shows that a dosing furnace with a capacity of 650 kg can be heated up to 720 °C within 11 hours.

The measurements of the power consumption shows the reduced energy need (up to 17 %).

The heating element stays on the lowest level for 98 % of the time (positive for low corundum growth). This fact also reduces the energy consumption in the stand-by stage (on weekends etc).

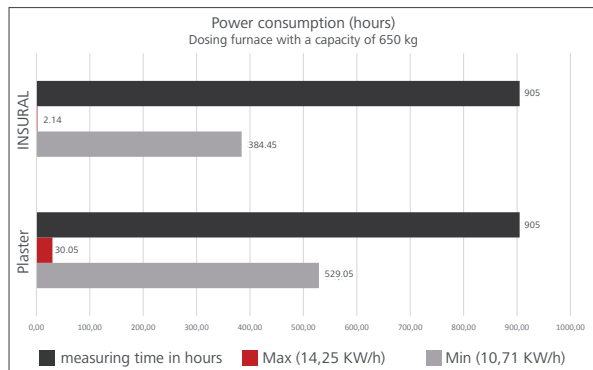


Diagram 3. Power consumption

Another case study with a dosing furnace with a capacity of 1050 kg shows an energy saving of approximately 80 kW/h per day. This high value is obviously caused by the high melt temperature of 780 °C.

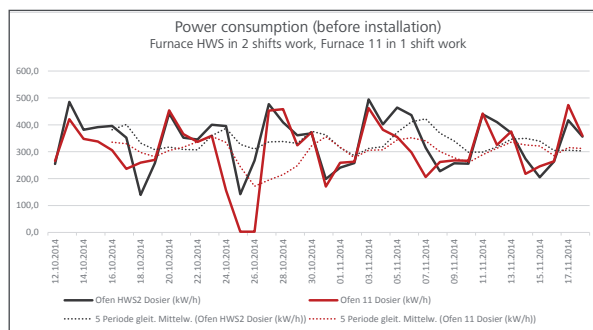


Diagram 4. Power consumption before installation

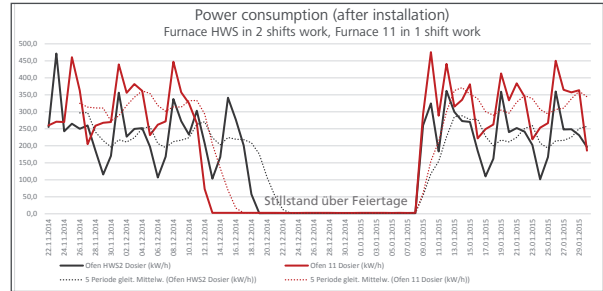


Diagram 5. Power consumption after installation

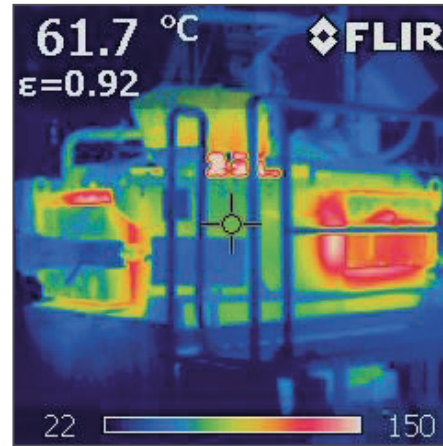


Figure 3. Thermal picture conventional lining

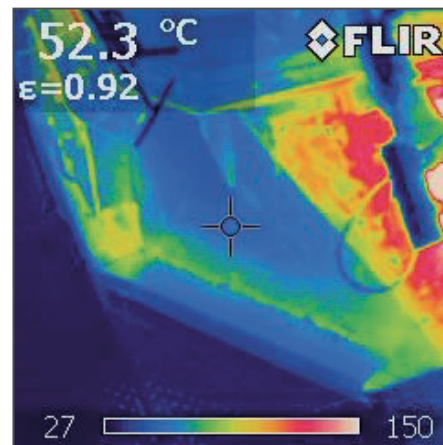


Figure 4. Thermal picture INSURAL lining

Summary

The installation with INSURAL precast shapes provides a number of benefits:

- Quick installation on site possible
- No need for sintering
- No hydrogen pick-up
- Minimised corundum growth
- High energy saving
- Easy cleaning

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Foseco International Limited

P.O. Box 5516
Tamworth
Staffordshire
England B78 3XQ
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