

SUCCESS STORY 87

EXOTHERMIC FEEDING SLEEVES IN FOUNDRY CASTING



Q

How can I safely measure the temperature profile of the drying/curing process of foundry feeding sleeves?

A

Situation and background

Feeding sleeves are used in our customer's process where molten steel is poured into the ingot mold. The function of the sleeve "funnel" is to keep the molten steel at a temperature that prevents localized solidification. Manufacture of the sleeve involves the drying and curing of vacuum formed refractory silica. The silica needs to be dried in a controlled fashion to reduce moisture, while eliminating the risk of igniting the aluminum powder contained in the product. Binders contained within the silica need to be cured to give the silica physical strength.

The winning solution

- The DataPac® EasyTrack®2 enabled process monitoring of the internal silica temperature and ambient conditions needed to control the conveyorized drying process.
- Mineral insulated needle probes were inserted to the required depths in the silica sleeves to optimize the drying process at the core - not only the surface.
- EasyTrack Insight software allowed measurement of peak temperature to optimize drying characteristics, while eliminating the risk of product explosion.
- The software verified the cure schedule, employing DataPac value and time at temperature calculations.

Savings made

- Process can be controlled accurately to reduce risks of explosion (ensures operator safety and avoids product or oven damage).
- Reduced product rejects due to poor drying and curing.
- Minimizes rejects at the casting stage due to feeding sleeve failure.

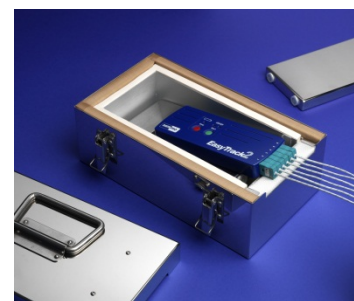
KEY FACTS

Customer's End Product
Exothermic feeding sleeves

Max Temperature Reached
140-180°C/284-356°F

Duration of Process
2 to 3 hours

PRODUCT AND BENEFITS



**DataPac EasyTrack2
TB5000-HT thermal barrier
Mineral insulated probes
EasyTrack Insight™ software**

- Cost effective solution
- Thermal barrier provides double the protection required
- Rugged PA0710 mineral insulated thermocouples inserted directly into product
- EasyTrack Insight software provides comprehensive cure analysis package