

ask the expert...

NEW "TITAN™" CROSSFEEDER TECHNOLOGY



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Alan Sale*, global manager, billet casting process for Pyrotek Inc. responds to customers' questions centred on the manufacturing, use and plant test results of a new crossfeeder design for billet casting tables.

The ideal crossfeeder design is strong and hard, exhibits low thermal expansion, low thermal conductivity and specific heat and has very good resistance to molten aluminium attack.

Presently, the available materials for this specific aluminium production application show a trade-off between thermal conductivity and material life.

To minimise metal heat losses at the cast start-up, some materials offer low density but to the detriment of strong mechanical properties and long material life. Conversely, an alternative approach is to use a denser material that exhibits longer life and strong mechanical properties. In this case, the metal casting temperature, especially at the cast start-up, has to be raised to compensate for the material's high coefficient of thermal conductivity, which acts as a heat sink.

Pyrotek has developed a unique crossfeeder composite material design called TITAN, comprising a thin, strong, dense and hard hot-face reinforced skin backed-up by a material exhibiting a low thermal conductivity. This combination

fulfills all ideal cross-feeder properties and with no compromise between low thermal conductivity and long material life.

Test results on TITAN Crossfeeder performance obtained from two different customer's plants using different crossfeeder geometries clearly demonstrate the uniqueness of this technology compared to current materials and also the association between casting metal temperature and final billet quality.

Q: What is the TITAN Crossfeeder and why is it unique?

A: The TITAN Crossfeeder utilizes a true composite refractory featuring a hard hot face backed with a unique insulating body.

Q: What is the function of the TITAN Crossfeeder?

A: The TITAN crossfeeder reduces molten metal heat loss during the cast start and run stages.

It also reduces heat transfer into the steel table and offers reduced maintenance between drops and in the mould room.

Q: What are the benefits offered by TITAN Crossfeeders?

A: It is a better insulating material, reducing cast start defects due to temperature loss and offering overall improved performance in production operations.

It gives uniform temperature distribution across the table and requires less refractory and mould table maintenance.

An average 1% gain in pit yield is obtained due to reduction of cast start defects.

Lower maintenance is required, including between drop and between casting



campaigns. Overall refractory life is extended.

Greater energy savings are realised due to the possibility of reducing furnace temperature.

In terms of design advantages, all geometry shapes and designs are available and it is possible to eliminate joints.

In summary:

The TITAN Crossfeeder has been proven to be a cost-effective process solution, adding value in operation. The key benefits can be summarised as:

- Reduced cast start defects due to temperature loss
- Reduced between-drop maintenance
- Reduced overall refractory maintenance
- Longer refractory life
- Unlimited geometric designs
- Multiple mould position modules are available

**Alan Sale is a global product manager, billet casting process for Pyrotek Inc. based in Spokane Valley, Washington, USA. Alan is a Pyrotek specialist with over 20 years experience in billet casting, including 10 years with Wagstaff Engineering. His emphasis is on casting table consumables, their design, application, maintenance and related customer operating practices. He holds a Bachelor of Science degree in engineering.*