Control your flow, boost your steel

The tundish is an essential component of the continuous casting system in steelmaking. It is located between the ladle and the casting molds, and lets through molten steel with a well defined flow-rate. Due to the process layout, tundish refractory linings are designed to withstand thermal shock, prevent thermal loss, prevent oxidation, and resist erosion and corrosion. The previous characteristics have to match with the target of very low contamination of the liquid steel with unwanted impurities, indeed the final properties of components are directly related to the degree of purity of the steel. As reference, see the graph on right, we can consider the outstanding increase of a typical ball bearing fatigue life obtained by improving steel cleanliness.

It is evident that the ever-increasing demands for high quality determinate more and more strict “cleanliness” requirements. In this scenery non-metallic inclusions are a significant problem in cast steels that can lead to excessive casting repairs or, at worst, to reject castings.

The erosion of refractories is a very common source of large exogenous inclusions which are typically solid and related to the materials of the ladle and tundish themselves. The erosion of linings generally occurs when turbulent flow is present, especially in combination with re-oxidation, high pouring temperatures, and chemical reactions.

Any steelmaking or transfer operations involving turbulent mixing of slag and metal, especially during transfer between vessels, produces slag particles suspended in the steel. By reducing turbulences, the steel quality can effectively be enhanced, keeping an high profitability level.
Flow control refractories

Flow optimization can be achieved through the shaping of inside tundish configuration, using flow control devices such as:

- TURBULENCE INHIBITORS
- IMPACT PADS
- DAMS
- WEIRS
- REFRACTORY INSERTS

The refractory inserts minimize the causes of the tundish refractory lining erosion as well as transportation of overlying slag and non-metallic inclusions into the mold. In any case the application of similar methods on different geometries must be preceded by thorough examination of hydrodynamics in the tundish bath to prevent adverse effects. For this reason our research efforts are devoted to the improvement of the specific tundish characteristics in respect to both cost and quality.

EXCELLENT EROSION RESISTANCE

NO THERMAL SHOCK-INDUCED CRACKS
Our shapes can keep structural integrity even after thermal shocks due to several prolonged casting sequences

NO BROKEN SHAPES DURING SHIPPING
We package our items on steel racks, thus allowing a correct transport and preventing any break both during shipping and steel plant warehouse handling. In this way there are no discarded items.

NO PACKAGE TO DISPOSE
As for the majority of our products, we take care of package recover and reuse.
Inerting tundish lid

It is well known that air is the most common source of re-oxidation. This process can occur in several ways, the most common are the following:

- Shuffling effect on the free surfaces
- Leakages on the junctions
- Pollution during the transients of start and stop

Actually this means that air is a downgrading element and its presence must be avoided, if possible, during the process or at least have to be taken under control.

The lid is the element that for its own nature creates a separation from the inner part of the tundish and the external. It is the first protection system toward the liquid steel and it could be optimized to prevent re-oxidation effects.

COMIN offers the possibility to embed inside the lid a specific Argon Inerting System (AIS) that in 1-2 minutes performs the inerting of the tundish with Argon gas, preventing in that way the presence of the oxygen.

The combination of the AIS with the specific design and structural optimizations lead to very high efficiency for this product.

QUALITY IMPROVEMENT THANKS TO THE ARGON INERTING SYSTEM (AIS)

METALLIC STRUCTURES DESIGNED FOR SELF-COMPENSATION OF HEAT-INDUCED DEFORMATIONS

SERVICE LIFE INCREASED UP TO 4 TIMES

WIDE RANGE OF CUSTOMIZATION
Integration among the cover and the other tundish components.
Continuous casting tundish

### Standard grades

<table>
<thead>
<tr>
<th>Component</th>
<th>Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lid</td>
<td>Com Cast Series 5</td>
</tr>
<tr>
<td>Impact plate/Delta box</td>
<td>Com Cast Series Z 2</td>
</tr>
<tr>
<td>Weir</td>
<td>Com Cast Series 7</td>
</tr>
<tr>
<td>Dams</td>
<td>Com Cast Series 8</td>
</tr>
<tr>
<td>Wear lining</td>
<td>Com Cast Series 7 H-M</td>
</tr>
<tr>
<td>Baffle</td>
<td>Com Cast Series 8</td>
</tr>
<tr>
<td>Permanent lining</td>
<td>Com Cast Series 7</td>
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<tr>
<td>Insulating layer</td>
<td>Com Cast Series 7 H-M</td>
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<tr>
<td>Well block</td>
<td>Com Cast Series 8</td>
</tr>
<tr>
<td>BAFFLE</td>
<td>Com Cast Series 7</td>
</tr>
<tr>
<td>WELL BLOCK</td>
<td>Com Cast Series 9</td>
</tr>
</tbody>
</table>

Other grades are available on the basis of the specific needs, with a broad possibility of customization.