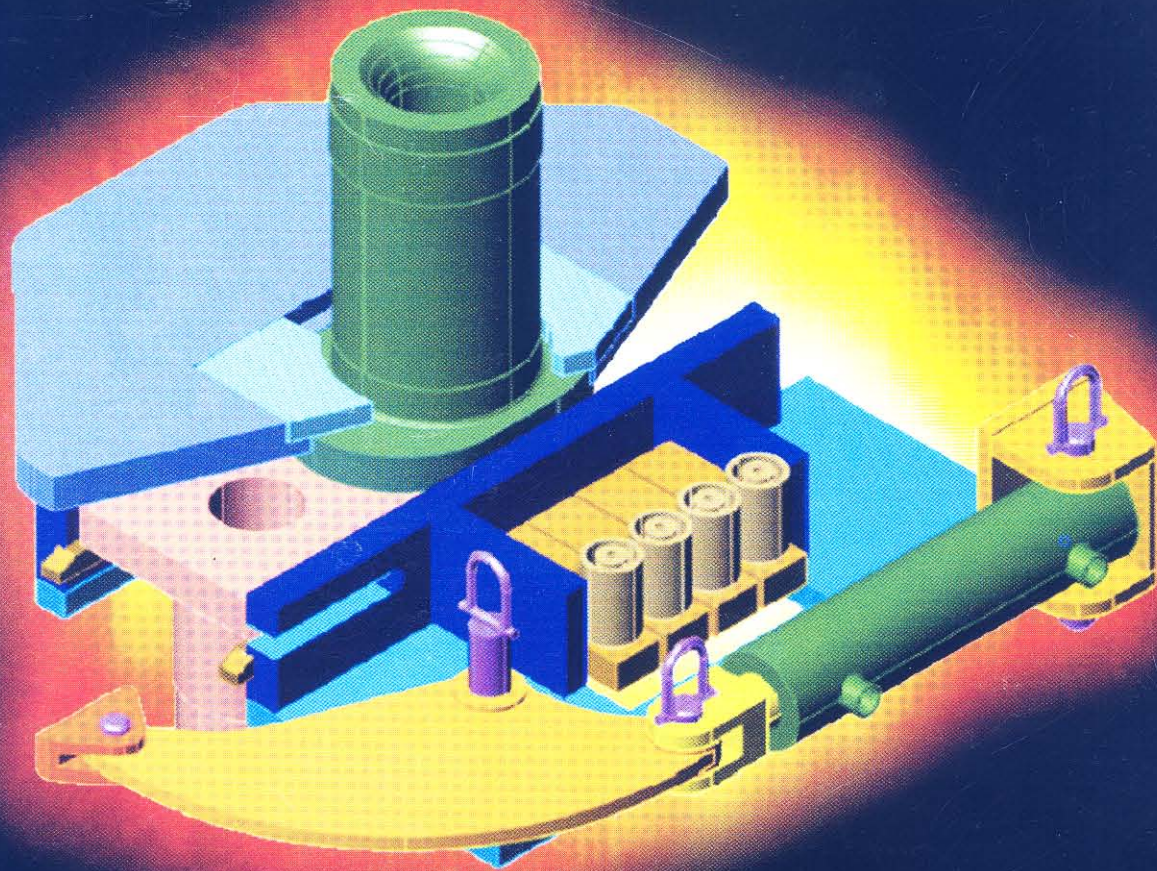




ISO 9001 : 2000/ FM 71747

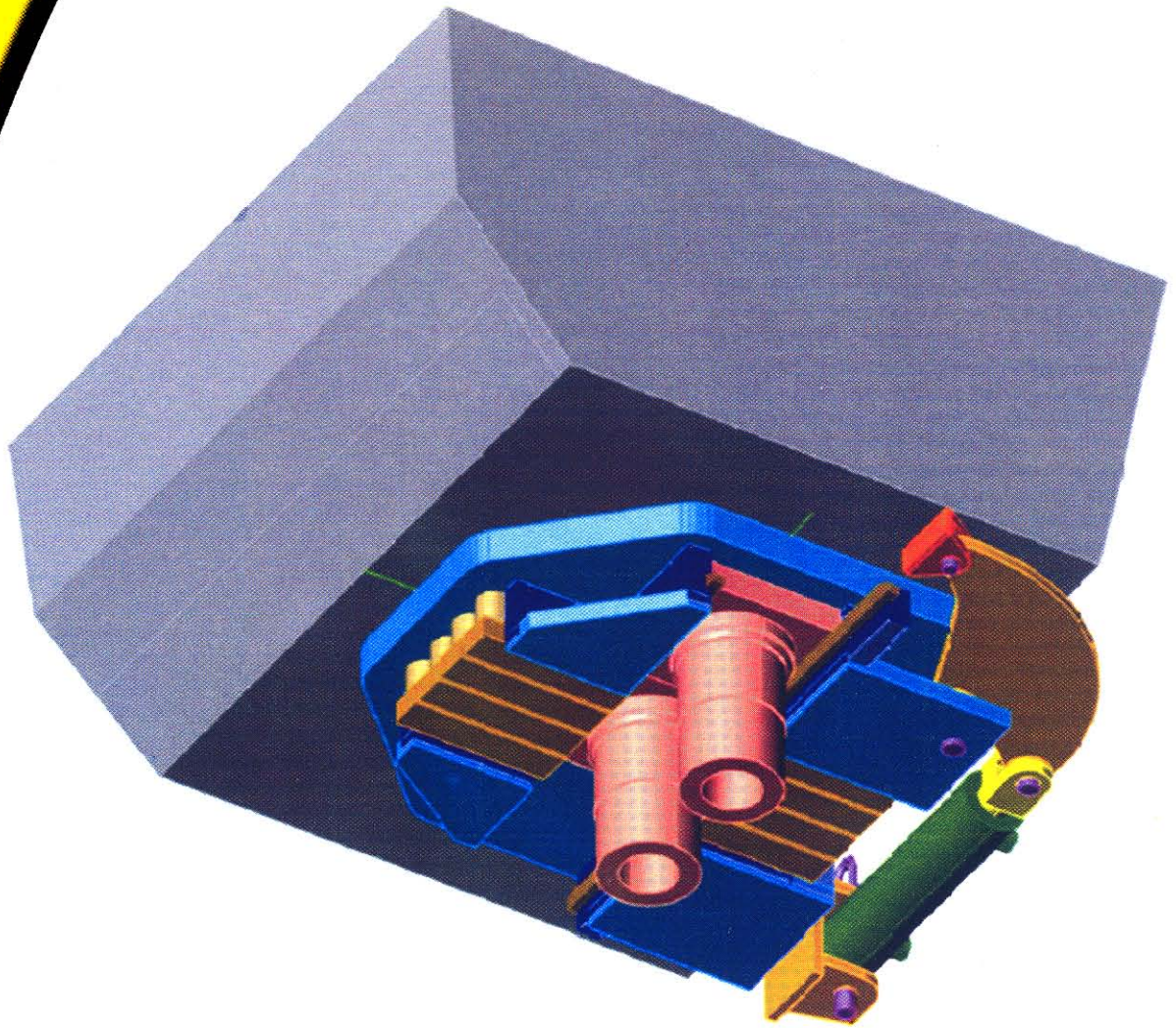
IFGL REFRACTORIES LTD



**TUBE CHANGER MECHANISM
FOR SLAB CASTER**

IFGL TUBE CHANGER MECHANISM

IFGL TUBE CHANGER MECHANISM



Engineered with decades of experience, IFGL Tube Changer* for Continuous Casting Slab Machines is a unique solution for hot tube change (SES) to prolong tundish sequence, without cast interruption.

IFGL-Alcar have long experience in flow control devices and the latest system offered combines the benefits of years of R&D. ***It is simple, user friendly, very safe and stable in operation.***

The Tube Changer Mechanism is available with hydraulic and pneumatic drives. Sequence is actuated by a single switch and hence, it is simple and safe.

Pneumatic driven TCM-P1/TCM-P2 or Hydraulic TCM-H1 offers compact, reliable means of changing the submerged entry shroud (SES) combined with stopper control system.

* Marketing & manufacturing tie-up with Alcar International Ltd., UK

Design Features

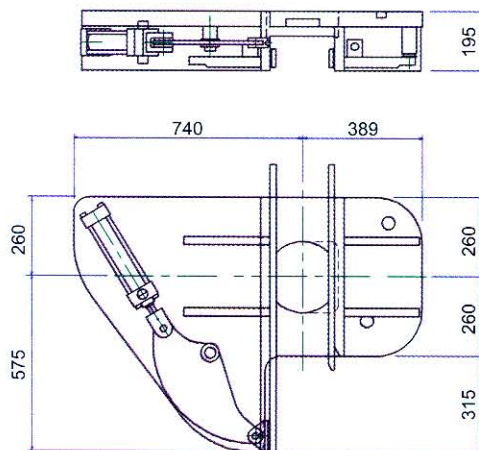
- Hydraulic / Pneumatic drive
- Blank Plate Support System
- Detachable drive unit
- Emergency shut-off facility
- Pushers – Coil Spring
- No need of cooling
- Sophisticated Gas delivery system through Mononozzle without chance of any blockage
- No need of additional clamping device for Mononozzle
- Tube Guides for perfect alignment

Technical Benefits

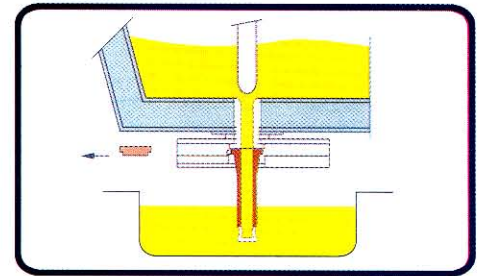
- SES (Tube) changer with Stopper Control
- Quick change of SES (Tube) without stopping the cast
- Tube change without raising the tundish
- Tube change in less than 2 seconds
- Tube change at above the minimum casting speed for most steel grades / slab sizes
- Increased safety by virtue of emergency shut-off facility (blank plate)
- Argon direct injection in the upper part of the mononozzle significantly decreases alumina clogging, unlike other systems
- Argon injection onto sliding surface of mononozzle inhibits air ingress
- Longer sequence without the need to use large complex pouring tubes
- Less tundish movement on the floor or with the crane

Commercial Benefits

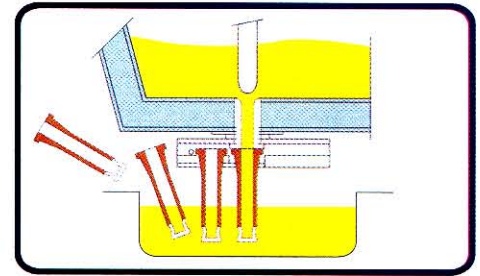
- Increase in the number of heats per tundish and per sequence length
- More heats per day due to less downtime
- Increased caster productivity by less slab down-grades
- Less accumulation of skull
- Labour and energy saving due to less tundish requirement
- Reduced overall refractory cost due to longer tundish sequence life
- Reduced operating cost due to high reliability and very less spares



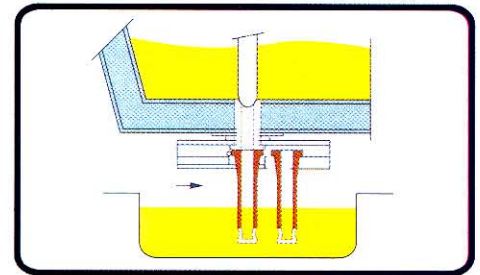
Typical Hydraulic TCM-H1



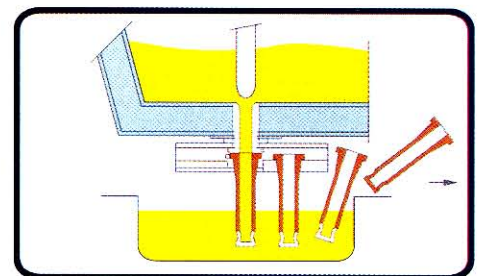
Safety Blank Plate temporarily removed from TCM, ready for placing new Tube.



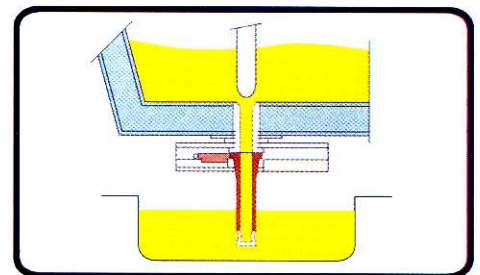
Using special manipulator, new Tube is lowered into the mould and placed onto the TCM machine guides.



The stopper is closed, the new Tube fired into position and the stopper re-opened. The stopper shut time is usually less than 2 seconds, thus minimising metal level fluctuation within the mould.



Casting continues during Tube change without raising the tundish. If the stopper fails to fully close, the tube will still change cleanly and can even change on full bore, although this is not recommended.



Safety Blank Plate replaced in TCM, ready for end of cast or emergency shut-off sequence.

Well Block

Tundish Well Block is not required for our system. We recommend use of mononozzles, rammed into the main tundish lining, making the installation more stable and safe. This reduces refractory cost, saves installation time and makes it more reliable during operation.

Mononozzle

Our Mononozzle is more sophisticated and offers much superior gas delivery system than that of other tundish nozzles offered by competing systems. In other nozzles gas delivery system is through single delivery hole having chances of blockages, in contrast our mononozzle offers gas delivery by a plenum system built into the body of nozzle with gas exiting the nozzle surface from fine slots. Even if blockage occurs at any one point, argon continues to flow through the remaining open slot area, thus offering more reliable protection against air ingress.

Sub-entry Shroud

Our Submerged entry tubes have excellent thermal shock resistance properties and sophisticated anti-clogging quality features offering long sequence performance. This ensures less number of tubes per sequence.

Complete engineering, training and technical support

We offer complete engineering, installation, commissioning and training of personnel at your site.



IFGL REFRACTORIES LTD.

3, Netaji Subhas Road,
Kolkata - 700 001, India

Tel : +91 33 2248 2411 Fax : +91 33 2243 0886/2248 0482 E-mail : ifgl@bajoria.in
Website : www.ifglref.com, www.bajoria.com

DEDICATED TO CLEAN STEEL