



## Magnesium vertical chill casting system MSG

The RAUCH Magnesium vertical chill casting system MSG enables a continuous casting of Magnesium alloys to strands.

### Realization

At the vertical chill casting of Magnesium alloys, the melt gets casted mostly into a circular mould, on whose cooled wall a cast skin develops. When the melt reaches a certain level inside the mould, the stiffened strand gets steady lowered down in fact of the same extent as the liquid metal flows. The cast skin is continuous cooled through a secondary cooling, so that the inner of the strand solidifies.



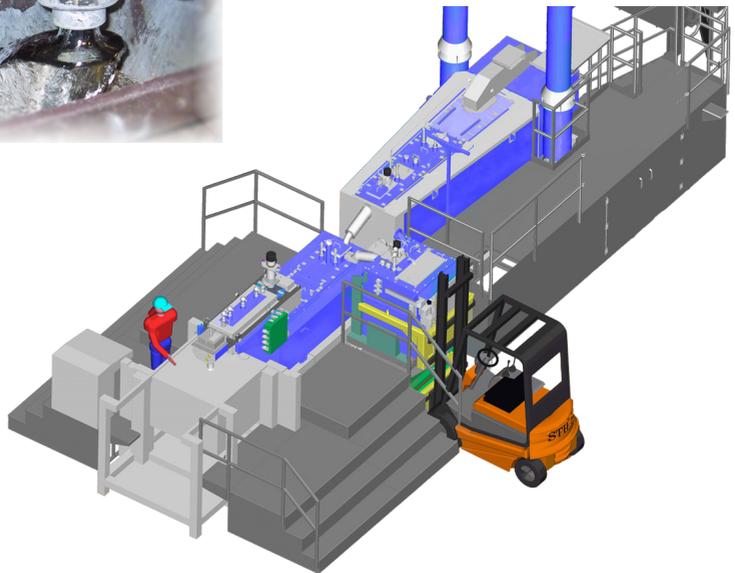
### Design

- Tundish with delivery pump and exact level control of the melt in the tundish: The melt forms a protective layer on top which avoids additional forming of oxides in the melt which flows beneath the top. The level in the tundish is controlled with an accuracy of  $\pm 0,5$  mm. This ensures a constant pressure at the outlet valve into the chill. Furthermore the control of the melt flow is easy to control.
- The casting unit is incorporated in the tundish with a valve and a plug, which avoids the forming of oxides. The valve and the outlet pipe are temperature controlled which results in lowest temperature losses between tundish and mould. The melt stream flows under the surface of the melt into the chill and has a uniform distribution over the whole cross section. All this is a prerequisite for a stable casting process and a uniform microstructure of the casted bolt. The valve system enables easy adjustment of the melt flow into the mould (casting speed, alloys, cooling efficiency, ...) and it can easily stop the flow of the melt without emptying the tundish for the removal of the casted bolt or for the maintenance of the chill (mould change).



## Advantages

- The solidification rate is on average 10 times higher as at the ingot casting in an iron mould without water cooling. Thus segregations can be avoided and a significant homogeneous structure can be reached.
- The through subsequently extrusion produced Magnesium parts can be heat treated and reach excellent mechanical properties.
- Drastically reduction of oxides in the bolt and better microstructure from the beginning of the bolt. X-ray, ultrasonic scans and micrographs verify the high quality of the final product by using a tundish and a casting unit.
- The reject (head- and endparts of the bolt) could be reduced to a minimum. Due to the perfect surface quality of the bolt the post processing by turning is at a minimum.



Magnesium Dosing Furnace MDO750B with Melt container MSB600 and casting furnace MGO500