

DASMET

R&D Technologies and Services Private Limited

LAB SCALE DIRECT CHILL (DC) CASTING UNIT



*R&D Laboratory Scale
Machine replicating the
Industrial Direct Chill
Casting technology for
producing commercial
aluminium ingots*

Regd. Office: 70/New, Sant Ravi das Ward – 70, Opp. Mahakaushal Fuel,
Chandandih, Tatibandh, Raipur – 492099 Chattisgarh, INDIA.



www.dasmet.com



sales@dasmet.com

LAB SCALE DIRECT CHILL (DC) CASTING UNIT

Direct chill casting is the most commonly used technology for production of the commercial aluminum billets, bars and slabs. This technology mainly consists of a hot top, water cooled mould, water spray arrangement and a starter block or dummy bar. The liquid metal through the tundish flows to the hot top and then reaches to the starter block passing the mould. As soon as the liquid metal fills the mould, water at a high flow rate passes internally through the mould and sprayed continuously at the bottom of the mould directing towards billet. The starter bar is then moved vertically downward direction at a fix rate. The water directly strikes the solidified outer shell and cools down the molten metal inside the solid outer shell. The water flow rate, metal flow rate, descending speed etc., all these parameters can be synchronized in a manner to achieve successful casting.

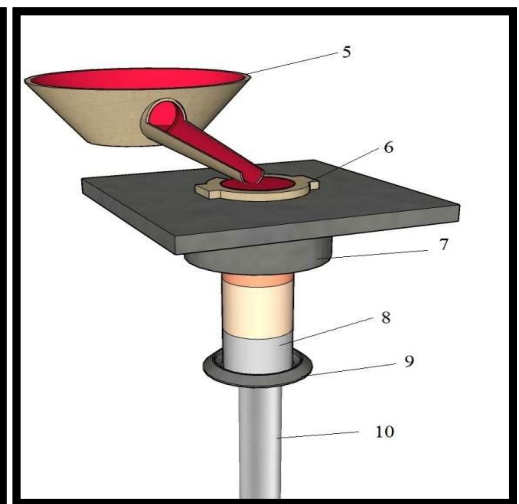
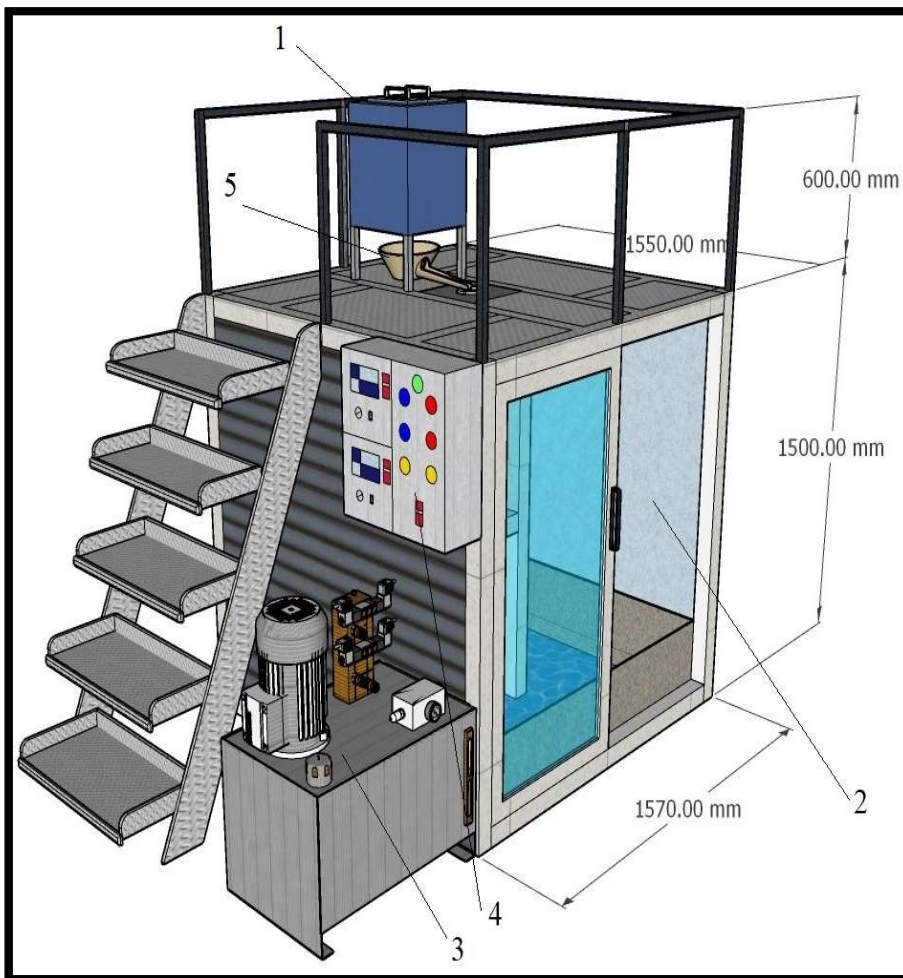
ADVANTAGES OF DC CASTING

- A small mould can cast large numbers of billets
- The billets can be removed easily as compared to permanent mould casting
- Top rejection due to shrinkage can be minimized
- Higher rate of production
- Low maintenance cost

FEATURES

- This is a lab scale system that can replicate the real industrial DC caster.
- Can produce high quality castings (billets and blooms) as per desired shape (mould change required).
- Versatility in casting parameters such as casting speed, billet length, cooling rate etc. can be easily adjustable to various range accordingly in a synchronized manner for successful casting.
- Casting of different non-ferrous alloys is possible according to interest (limited to melting temperature of 1000° C).
- Manual safety stopper plugs are provided to control melt flow and to stop any accidental leakage or bleeding of liquid melt.
- Provisions to add auxiliary equipments if further needed in future.
- Structural frame can easily sustain a load of 1000 kgs, that can accommodate 2-4 people working together.
- The storage tank made of SS sheet can store 2000 litres of water that can be recycled for frequent experiments.

LAB SCALE DIRECT CHILL (DC) CASTING UNIT



Legends

1. Aluminium Melting Furnace
2. Structural Unit
3. Mould Moving Unit
4. Control Panel
5. Launder
6. Hot-Top
7. Water-Cooled Mould
8. Dummy Block
9. Ceramic Disc
10. Hydraulic Jack

Accessories	Specifications (Designs as per the schematic)
Aluminium Melting Furnace	Max working Temp. 1000° C, heavy gauge MS body, highly durable, provision for bottom pouring, Equipped with digital controller, LCD indicator, Capacity – 10 kg aluminium melt
Crucible	10 kg Aluminium melt capacity, hole at the bottom center (Manual opening/closing system) with manual stopper plug, design as per the schematic given above
Lauder	Lauder with runner to carry the hot melt of aluminium to hot top, surface need to be coated frequently after usage
Water Cooled Mould	Mild steel mold with cylindrical cavity for billet casting, in-built water jacket and water spraying mechanism, detachable/interchangeable, manual alignment mechanism also provided
Hydraulic Mould Mover Unit	Travelling length (Stroke length) – 500 mm to cast 0.5 m ingot maximum, single acting cylinder, uni-directional speed controller (descending speed), with mechanically fitted dummy block at the top of ram, equipped with digital controller, LCD indicator
Water Storage Tank	Single sheet leakage proof Stainless steel tank, maximum capacity 2000 litres
Structural Frame	Fabricated with SS and MS heavy duty square pipes and MS diamond plate heavy gauge sheet, safety railings, all painted with rust proof paints

Important Note:

- 1. Need to be operated with safety and skills for avoiding any accidental damages, Safety PPE's (casting boots, suit and gloves etc.) are must while performing any experiment or operating the machine.*
- 2. If the need arises at a later stage, DASMET R&D Technologies and Services Private Limited may provide additional services such as technical consultancy on payment basis to improve the cast billet quality, minimize casting defects, optimization of parameters etc.*