



1 Overall view MS facility with periphery at Fraunhofer IFAM Dresden

2 Interior view with small crucible and rotating cooling wheel

3 Different crucible capacities for high flexibility

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## RAPID SOLIDIFICATION (RS) OF METAL ALLOYS – PLANAR FLOW CASTING (PFC)

### Process

In the melt spinning (MS) or planar flow casting (PFC) process a molten metal passes a nozzle and immediately touches the water cooled rotating Cu wheel. Ultrafine grained or amorphous material of metals and alloys can be manufactured by a rapid solidification (RS) device. Such ribbons or flakes have thicknesses of less than 100 µm.

### Melt Spinner

- Cooling wheel
  - Cu alloy
  - Ø 300 mm x 80 mm
  - 3,000 min<sup>-1</sup>
- Inductive heating (40 kHz)
  - 2 crucibles (10 – 20 cm<sup>3</sup>; up to 1,000 cm<sup>3</sup>)
  - up to 1,700 °C

- Atmosphere air, gas and vacuum in the recipient
- ribbon width up to 20 mm

### Application potential (examples)

- Advanced alloys of aluminium and magnesium
- Catalizer materials
- Braze materials
- Thermoelectric materials
- Materials for hydrogen storage

### Service offer

- Application-oriented development of rapidly solidified alloys
- Characterisation and analysis of material properties
- Utilisation of RS materials for demonstration and prototypes