



## **INNOVATION PARTNER**

**Research Centre for Science and Industry**



**The Light Metals Centre (LMC) is an independent research facility with a focus on the light metals industry. The LMC facilitates research and small-scale commercial production for clients from Universities, Science Institutes and Industry. The LMC also initiates research projects and encourages cooperation between knowledge centres and industry. The LMC has a wide range of specialised research and production machines available.**

**HIP & CIP**

The LMC is the only Research facility in the Netherlands who both have a Hot Isostatic Press (HIP) and a Cold Isostatic Press (CIP) available for research and productions activities. With both HIP and CIP it is possible to produce homogenous products from metal powders or ceramics. The high pressure, high temperature HIP Unit makes it also possible to produce MMC like products and compact castings after production. The LMC Units are suitable for research, development and small-scale series production.

**HIP Unit (Hot Isostatic Press)**

Max. Pressure: 2,000 bar  
 Max. Temp: 1,450°C  
 Content: 5.5 litres (ø 152mm x 305mm)

**CIP Unit (Cold Isostatic Press)**

Max. Pressure: 2,000 bar  
 Max. Temp: 50°C  
 Content: 18 litres (ø 200mm x 600mm)

**Applications HIP & CIP include:**

- Compaction of Castings (aerospace components)
- Production of MMC components
- Production of Powder Metallurgy components
- Compaction of ceramic or metal powders and sintering



**Heat Treatment**

In order to make metals stronger, the LMC has three heat treatment furnaces available for aluminium and steel products with related water and oil quench facilities.

**Gemko Furnace (front-load)**

Max. Temperature: 1,150 ° C  
 Dimensions D x H x B: 70 cm x 40 cm x 40 cm

**Degussa Furnace (top-load)**

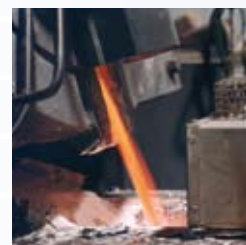
Max. temperature 1,000 ° C  
 Dimensions (Ø x Height): 40 cm x 57 cm



**Test Foundry**

The LMC owns a small foundry where a wide range of aluminium alloys can be produced in small batches. The test foundry is equipped with an induction melting furnace with a capacity of 300 Kg material and a vertical caster able to produce a wide number of billet sizes.

The installation is of interest for small production series of alloys and special research projects.



### Meltspinning

The LMC has direct access to 4 Meltspinning installations in a variety of sizes. Ranging from a laboratory vacuum unit for the production of very special alloys (output from 50 to 100 grams), a small production unit for batches up to 20 Kg to a commercial production unit (Output 300 Kg)

During the meltspinning process the liquid metal hits a rotating copper wheel. The forced cooling (more than 1,000,000 ° C per second), "freezes" the liquid material and creates alloys with an exceptionally homogeneous and fine microstructure and specifications.

The meltspinning technology makes it possible to develop new alloys and materials with better specifications,



both in Aluminium as well as Magnesium or other metals. The LMC facilitates research and alloying for meltspinning to industrial and scientific customers.



### Materials Research

The LMC has an extensive Metallurgy laboratory where all kind of material analyses can be performed on clients request. In addition, fatigue testing can be done.

- Microstructure analysis
- Porosity Inspection
- Spectro analysis
- Rotating Bend fatigue bench
- Brinell hardness measurements
- Ultrasonic Inspection
- Chemical analysis
- Pull-Pull \ Push-Pull fatigue bench



### Materials processing

The LMC has the following aluminium/magnesium presses available:

#### Extrusion press (1,600 tons)

Max. Temp.: 700°C. Container: Ø 28 cm x length 35 cm

#### Extrusion press ( 100 tons)

Max. Temp.: 450°C. Container: Ø 3 cm x length 10 cm

**Forging press (700 tons)** Daylight: 150 cm

**Conform Press** Wheel: Ø 30 cm

#### Hydrostatic Press (4,000 tons)

Container: Ø 20 cm x 85 cm length



### Training

The LMC provides training for employees from the light metal industry. The courses are given in a special training room at the LMC. Courses include:

- Training in cooperation with the Aluminium Centre

- Basic training Alloying & Safety
- Additional operators training
- Internships for students of Universities and Academic Institutes



**The Light Metals Centre offers wide range of machinery:**

- **HIP & CIP Unit (2,000 bar)**
- **Test Foundry (capacity 300 Kg)**
- **Meltspinning facility (capacity 300 Kg)**
- **Research Lab for Metallurgy Research**
- **Heat Treatment furnaces**
- **Fatigue Test Bench**
- **Forging, Conform and Hydrostatic Extrusion Press**



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