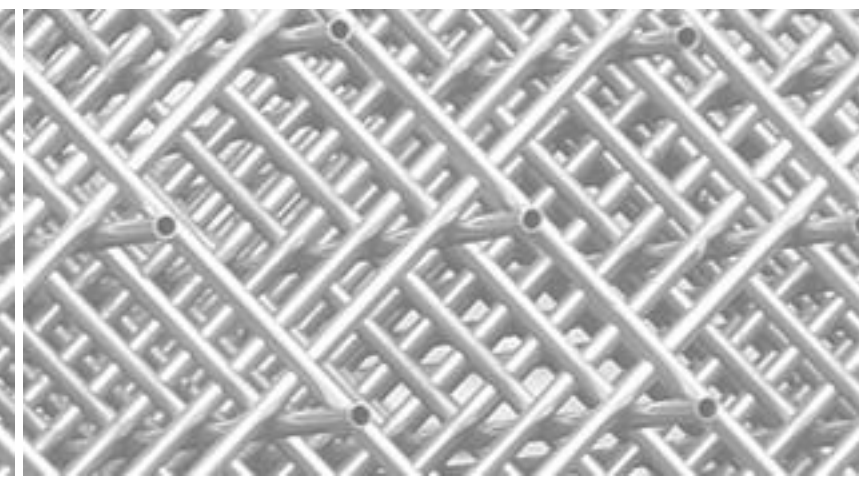
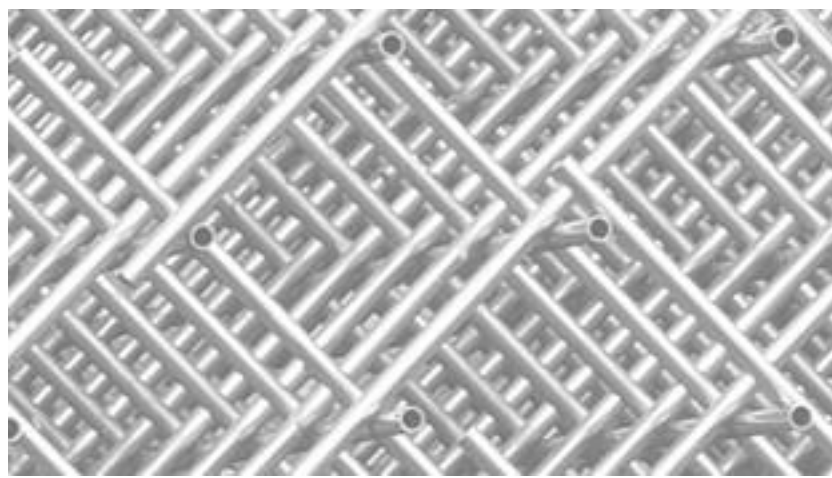


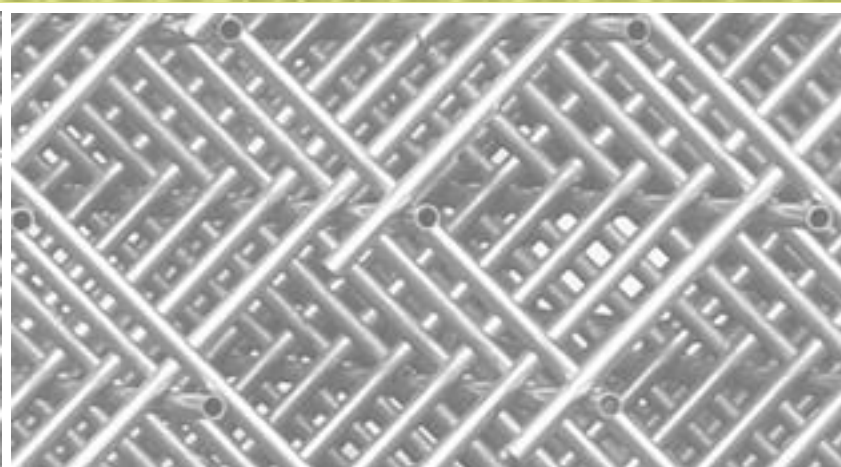
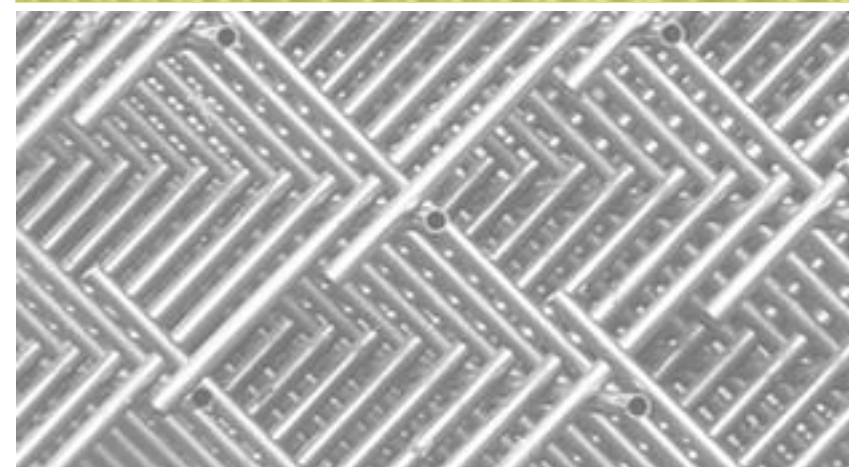
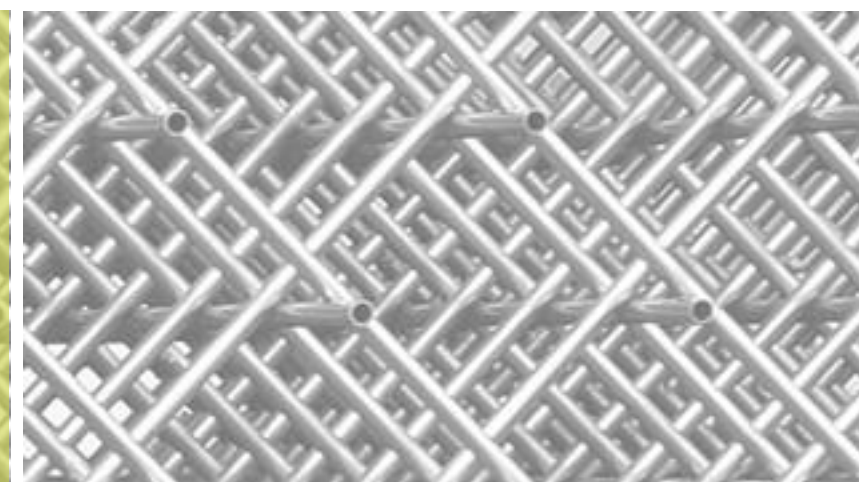
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OPEN CALL

Pilot Lines: Low Pressure Die Casting & Green Sand Casting

ÖGI - Österreichisches Gießerei-Institut
Austrian Foundry Research Institute



European
Commission

Horizon 2020
European Union funding
for Research & Innovation

Austrian actors in casting and research activities



AUSTRIAN FOUNDRY RESEARCH INSTITUTE (ÖGI)

Executive Board (22 representatives from Industry and University)

Chairman: Peter Maiwald

General Managers:

Peter Schumacher, Gerhard Schindelbacher



MONTANUNIVERSITÄT LEOBEN – UNIVERSITY OF LEOBEN

Chair of Casting Research

Head: Peter Schumacher



Association PROGUSS AUSTRIA

Individual and Industry members

Publisher of the Austrian journal GIESSEREIRUNDSCHAU

Chairman: Dieter Nemetz

General Manager: Adolf Kerbl

Chief Editor: Dietburg Angerer

DIE METALLTECHNISCHE INDUSTRIE
Österreichs stärkste Branche

Trade Association

METAL TECHNOLOGY AUSTRIA / 17 different Branches

Chairman: Christian Knill

General Managers: Thomas-Bernd Krafft and Adolf Kerbl

Association of the Austrian Foundry Industry

Chairman: Peter Maiwald

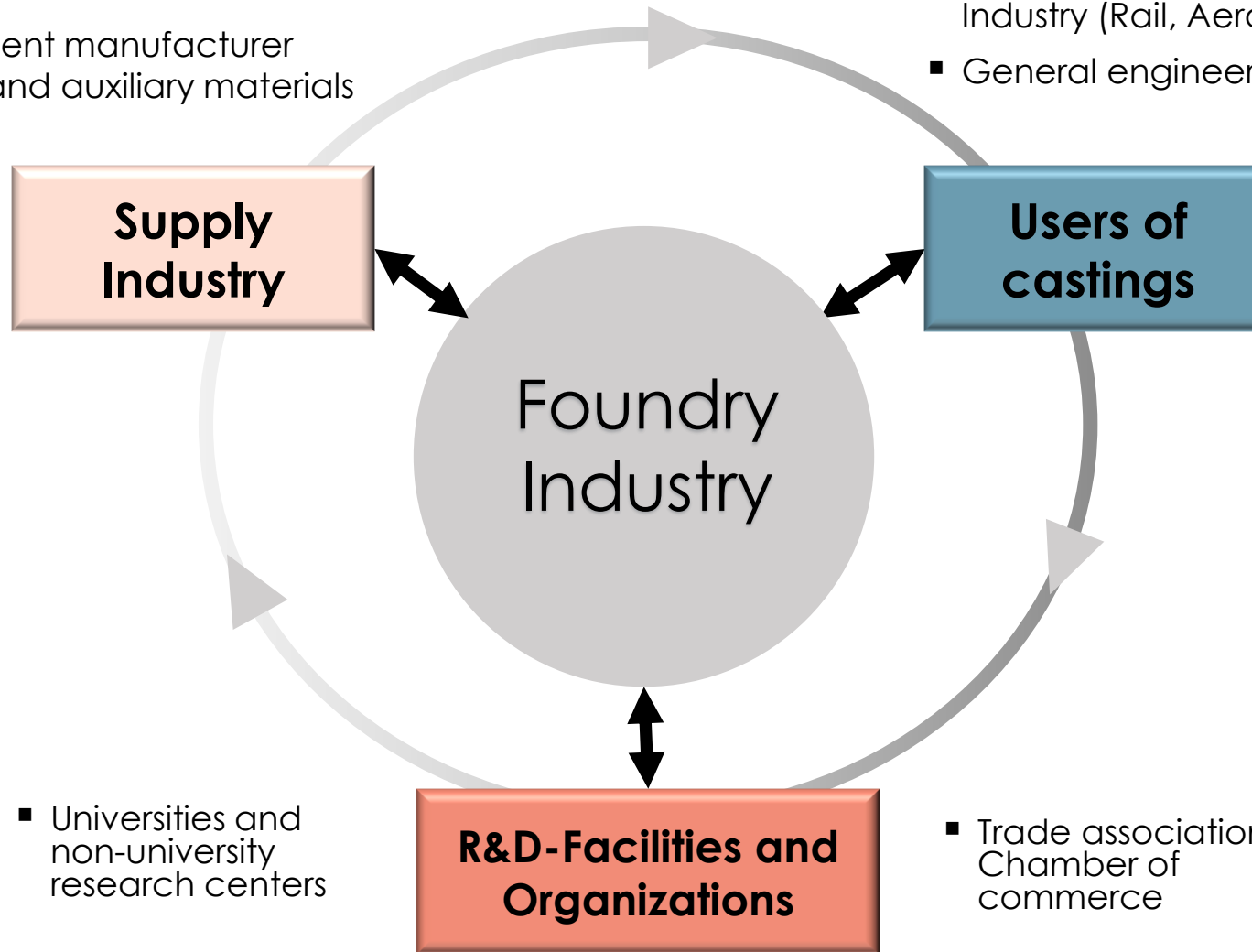
General Information

- ÖGI is a joint research Institute of the Austrian foundry industry, established 1954, 45 employees
- Research facilities and competence in the whole field of casting technology is unique in Austria and ÖGI is one of the leading non university R&D–centers in Europe
- Accredited for 30 material test procedures according to EN ISO/IEC 17025
- Fully equipped pilot foundry for all casting processes and all cast alloys
- ÖGI is member of a technology network in Austria - ACR-Austrian Cooperative Research (second largest non university research organization in Austria, 650 employees)
- Close co-operation with the Montanuniversität Leoben, Casting Research Institute. This connects teaching and fundamental R&D with applied R&D and technical services



Customers/Contacts

- Foundry equipment manufacturer
- Supplier of raw and auxiliary materials



- Automotive and Transportation Industry (Rail, Aerospace)
- General engineering

- Universities and non-university research centers

- Trade association Chamber of commerce

Financial key figures 2019

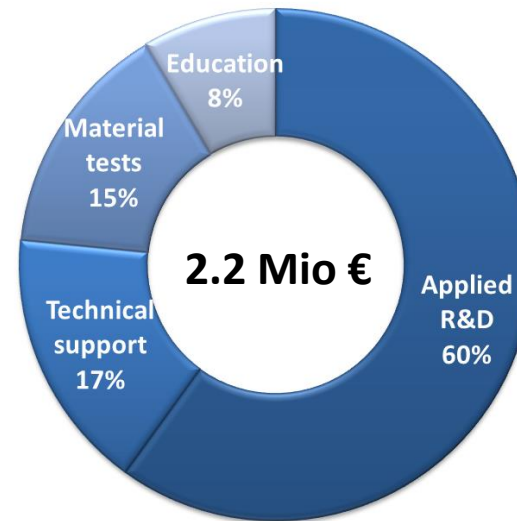
- Total turnover: 4.7 Mio. €

242 Customers
1034 Orders
16 Countries

Total turnover 2019



Invoices 2019 in fields of activity

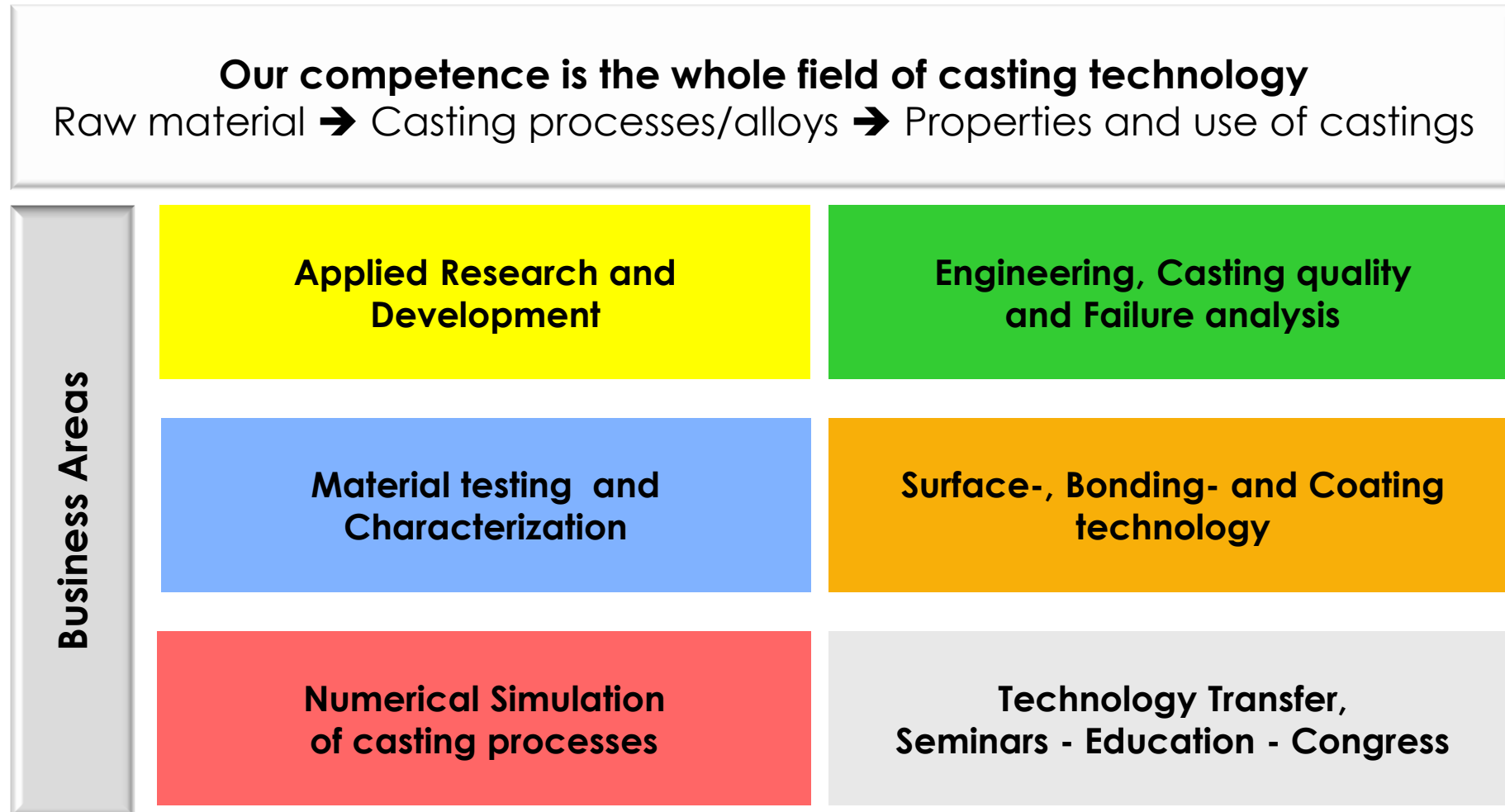


Invoices 2019 with members



- **Executive Board:** 22 representatives from Industry and university
- **Annual examination** by an external auditor

Field of competence/Business areas



R&D-Fields and current projects

R&D-Fields

Casting processes, metallurgy and moulding materials

Casting alloys, materials and properties

Simulation / Digitalization

Follow-up processes

Current projects

(Industry, national and EU funded)

- CONAN (HPDC)
- Inno-up cast iron
- In-Form 2020 (Mold material)
- SH-Binder (Fa. RHI)
- ULTRAGASSING/CERORSOM (EURECAT)
- LPDC (NEMAK)
- Die Coating I, II (BDG)
- Multi-Material-Components

- AMCC (COIN)
- Mikrostruktur 3D-AM (ACR/ZFE)
- KorroNet (ACR/ZFE)
- Lightme (Horizon2020)

- OPTISIM (submitted)
- Hiperbear (Fa. MIBA)

- CT-Real
- CLEEFE I, II

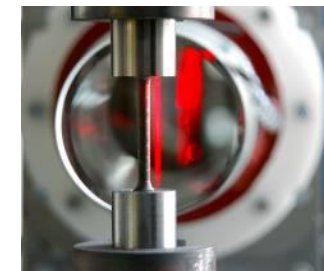
Funding agencies



Co-funded by the Horizon 2020
Framework Programme of the European Union



Laboratories Overview

- Pilot Foundry for Sand casting and Permanent Mould Processes
- Chemical Laboratory
- Physics Laboratory
- Mechanical Test Laboratory
- Mechanical Workshop
- Computed Tomography
- Metallographic Laboratory
- Test Laboratory for Moulding Materials



Accredited
Laboratory EN
ISO/IEC 17025

Equipment

	LPDC Pilot Line	GSC Pilot Line
Unit	KURTZ AK92 with GIMA-control 	Green Sand Casting 
Alloy	Al Si9Cu3(Fe) (VDS 226) Al Mg3	Al Si9Cu3(Fe) (VDS 226) AZ91 Al Mg3
Furnace	Electric	Electric (Al) & Induction (Mg)
Furnace capacity	up to 150 kg (Al)	up to 150 kg (Al) and 25 kg (Mg)
Nano particles	SiC and TiO ₂	SiC and TiO ₂
Melt cleaning	Rotary degassing	Rotary degassing (Al)
NP distribution	Ultrasonic treatment (Al) or electrical steering (Mg)	

Pilot Line: Green Sand Casting

Moulding shop and mould material preparation

- Mould material preparation unit for bentonite bounded moulding sand (Eirich-Mixer, 140 Liter)*)
- Equipment for hand- and machine moulding (Vibration press)
- Continuous rotary-mixer (Wöhr) for organic and inorganic binders
- Sand core shooter (Röper H5) with gassing device
- Sand blasting cabin
- Extensive pattern equipment for sample manufacturing

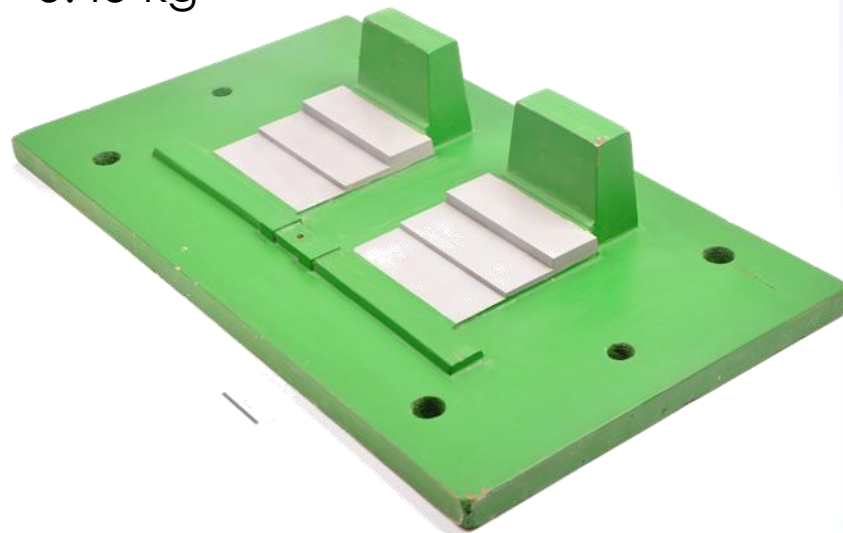
^{)} In Cooperation with Chair of Casting Research, University of Leoben



Pilot Line: Green Sand Casting

Al Model plate

Alloy: Al Si9Cu3 (Fe), Al Mg3
Model: Step plate Aluminium
Furnace: Induction furnace
Sand: bentonite-bonded greensand
NPs: --
Cover gas: --
Casting weight: 5.43 kg



Pilot Line: Green Sand Casting

Mg Model plate

Alloy: AZ91
Model: Step plate Magnesium
Furnace: Induction furnace

Sand:
greensand (building materials), phenolic resin (material binders) lustrous carbon (moulding material admixture), H₃BO₃ (boric acid), sulphur, coating (MOLCO 9600 A)

NPs: --
Cover gas: N₂+SF₆ (1.5%)
Casting weight: 2.78 kg



Pilot Line: Low Pressure Die Casting



- **LP Die Casting machine**
Kurtz AK92
- **Al-Melting Furnace 150 kg**
Morgan TND 200
- **GIMA casting control system**
- ND 500 bac electronic
- **Simatic S7-300 SPS** with data management system
- **Time- or Temperature-controlled cooling circuits**

Pilot Line: Low Pressure Die Casting

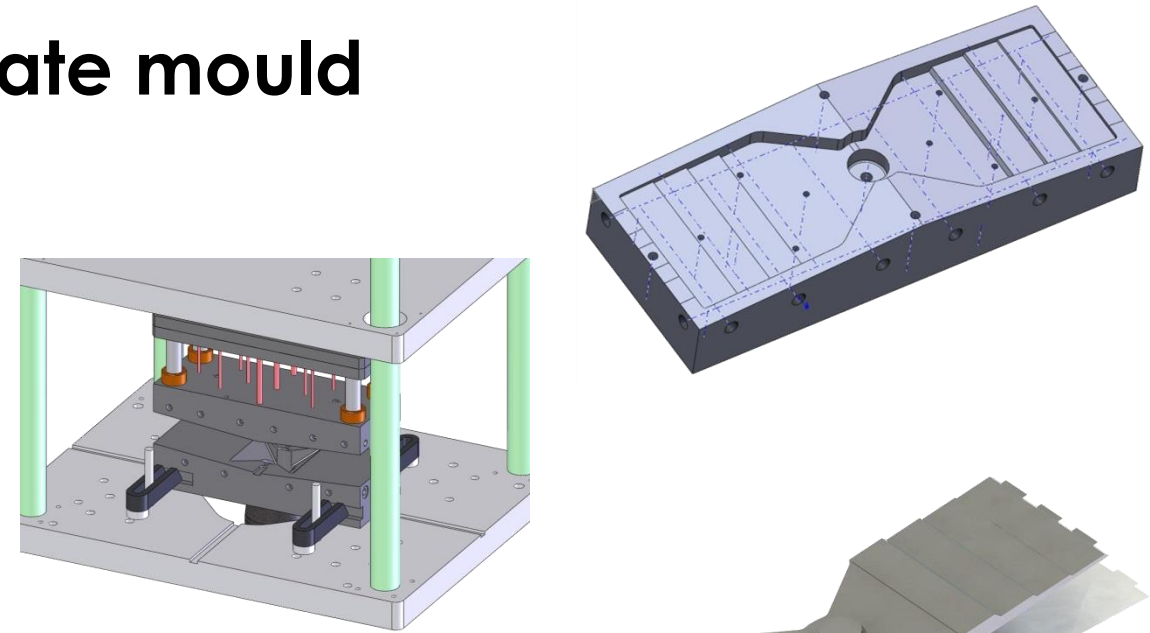
Double step plate mould

Concept:

- Wall thicknesses 4, 6, 10, 16 mm
- SDAS depending on the wall thickness
- Static and dynamic mechanical properties as a function of the solidification rate
- Solidification morphology
- Casting weight: 3.30 kg

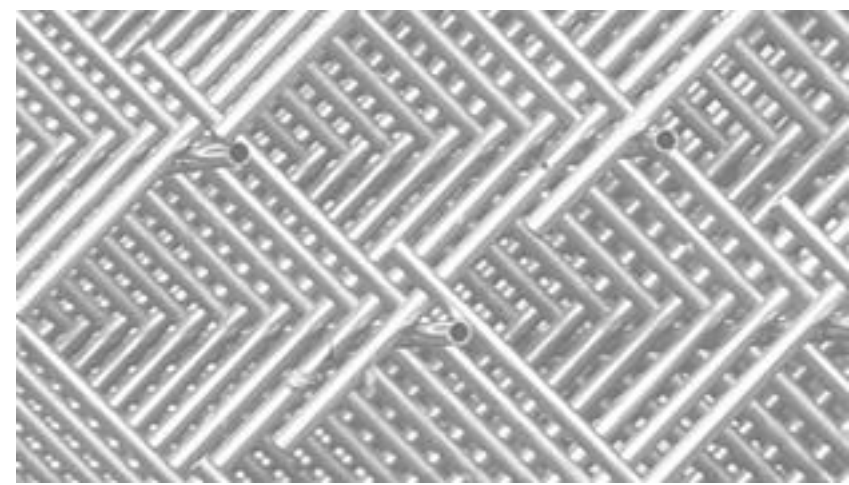
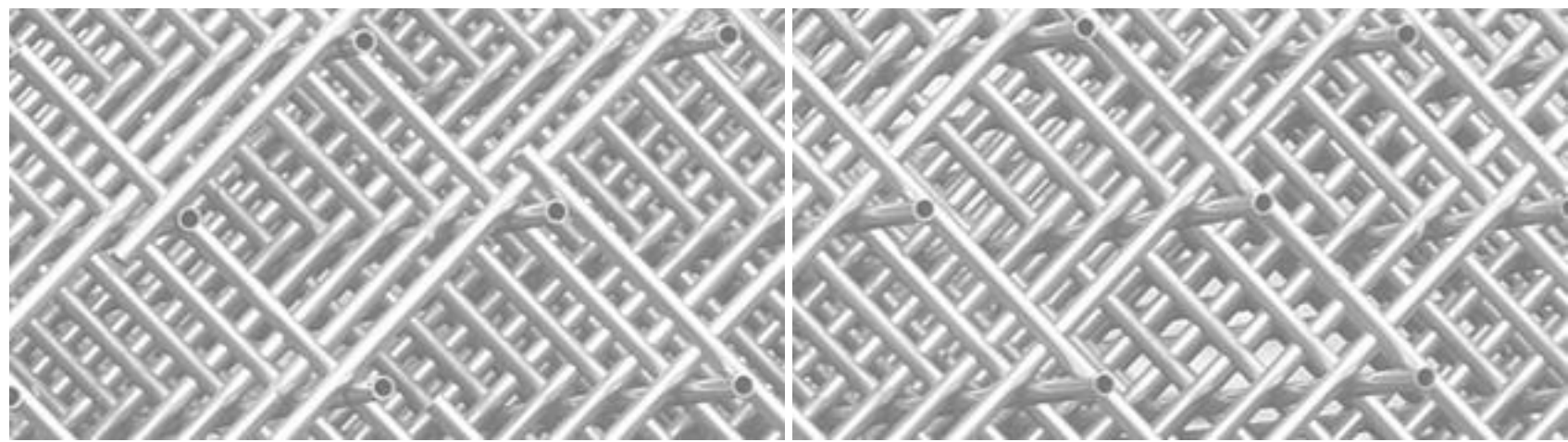
Mould:

- two-piece mould with central gate
- Ejector set
- 5° tilt for a smooth mould filling
- temperature-controlled

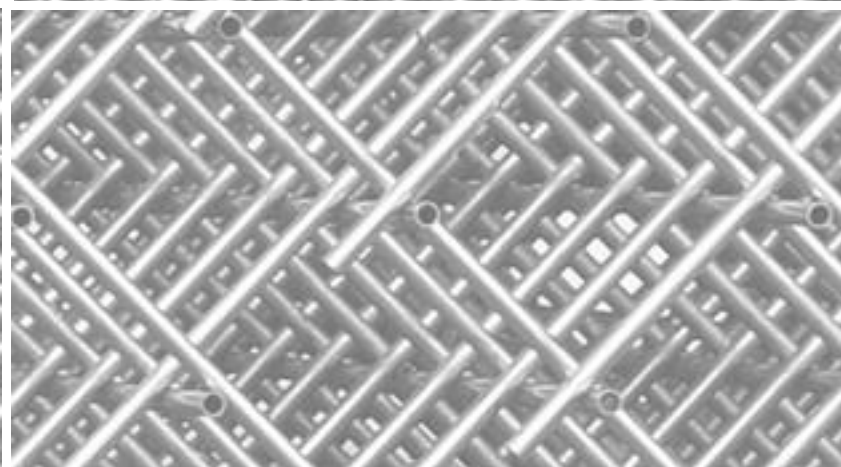
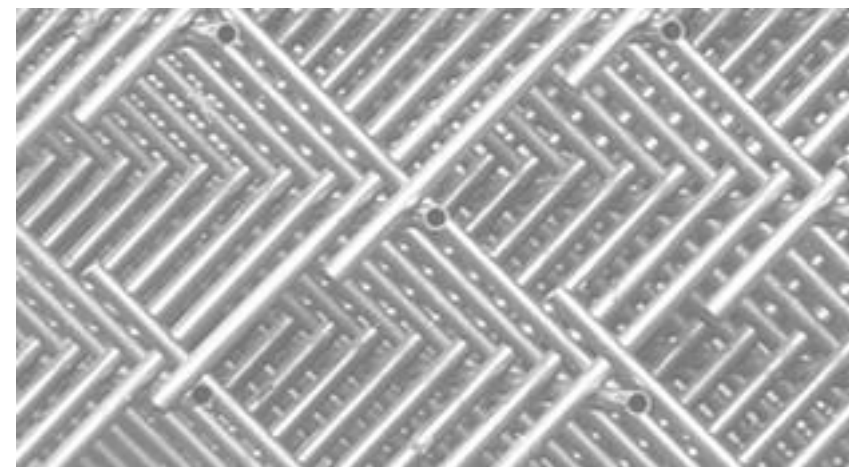




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Thank you for your attention



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European
Commission

Horizon 2020
European Union funding
for Research & Innovation