



Presentation

Division Aluminum foundry



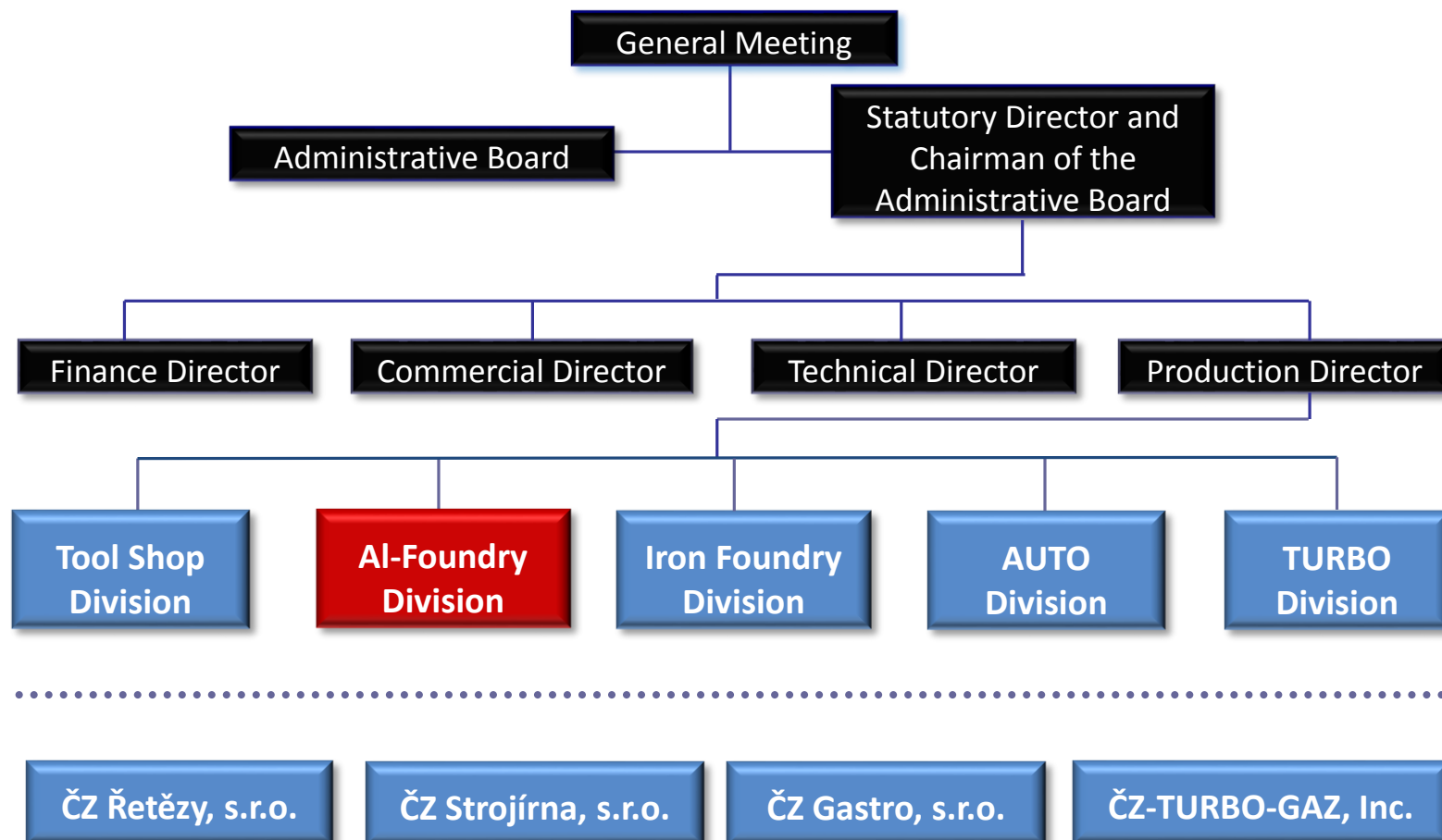
History of ČZ a.s.

- 1919** Founded under the name Jihočeská zbrojovka
- 1923** Original production – small arms
- 1930** Production of bicycles
- 1931** Production of chains
- 1934** Production of tools
- 1935** Production of motorcycles
- 1954** Production of castings
- 1981** Production of turbochargers
- 1988** Production of gearboxes for Škoda-VW passenger cars
- 1993** Privatisation of the company – ČZ Strakonice, a.s.
- 1995** Joint Venture ČZ-TURBO-GAZ, Inc. in Russia
- 1999** Production of forklift trucks DESTA
- 2004** Takeover by principal shareholder ČZ a.s.





Organization chart



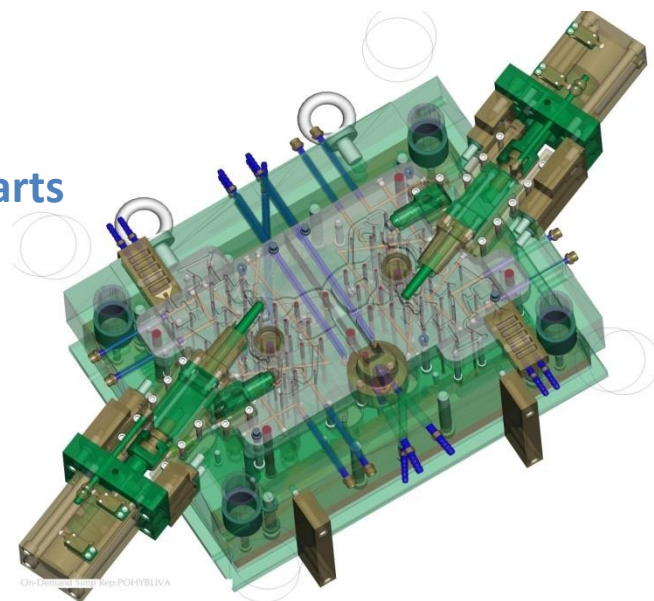


Complexity in production of parts

- ✓ Proposal of design solution of parts in cooperation with customer
- ✓ Development, production and trial process of moulds
- ✓ Casting of parts
- ✓ Finishing and machining of parts
- ✓ Leak test, marking and subassembly of parts
- ✓ Packaging and transport



Example of machining at ČZ plant

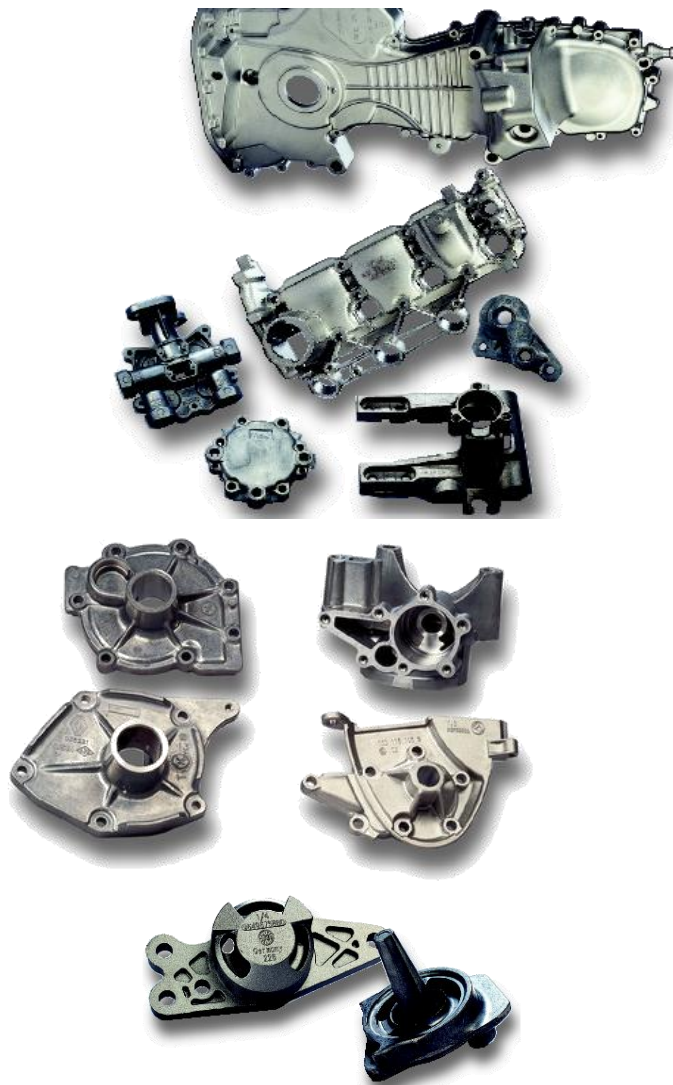


Example of a mould produced by ČZ a.s.



History of Division Al - Foundry

- The history of casting production in ČZ a.s. is stretched up to the foundation of the company in 1919. The individual Al - Foundry was founded in the year 1954.
- Due to the long-term tradition, the foundry production was subsequently serving different sectors of the automotive industry, as an example the production of castings for engine parts or its components.
- Currently, Division Al Foundry has 129 highly qualified employees with a long-term work experience. Average monthly casting power is 150 tons of castings





Machinery Equipment

■ Die – casting machines

- ✓ 1 x CLH 400 t
- ✓ 1 x DAK 500S
- ✓ 6 x CLH 630 t
 - 3x fully automatic incl. trimming
 - 1x half-automatic (spray robot)
- ✓ 1 x DAK 880
 - fully automatic incl. trimming
- ✓ 1 x B84 Evolution
 - fully automatic incl. trimming and blasting
- ✓ 1 x CLD 1600 t
 - fully automatic incl. trimming

■ Low pressure casting machine:

- ✓ 3 x BPS 650 SX – producer LPM Italy

■ Trimming presses: range 10t – 40t

- ✓ SOL 10
- ✓ SOL 26
- ✓ CNOS 16
- ✓ LHS 15B
- ✓ Technopres
- ✓ Robopres
- ✓ Diesse Presse
- ✓ Diefenbacher

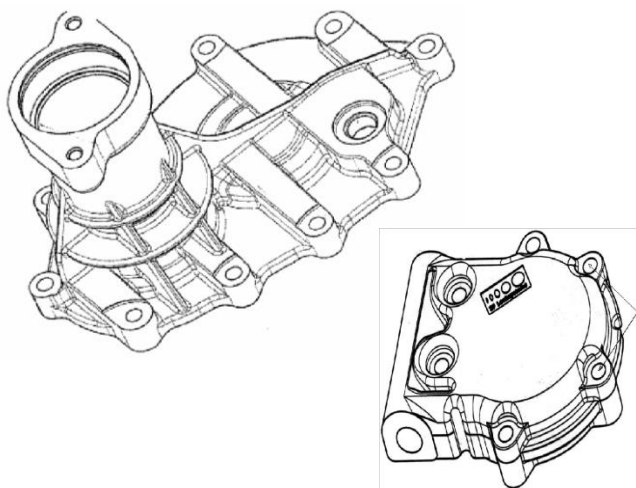




High-pressure die casting

High-pressure die castings made of Al alloys

- Weight of castings 0,1 - 10 kg
- Applied alloys
 - ✓ EN AC 46000 – AlSi9Cu3(Fe)
 - ✓ EN AC 47100 – AlSi12Cu1(Fe)
 - ✓ EN AC 43400 – AlSi10Mg(Fe)

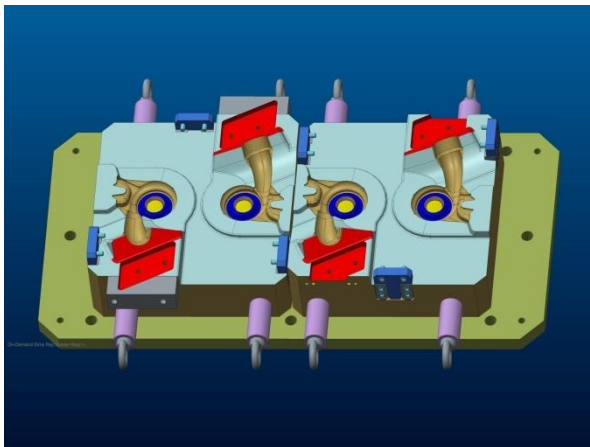




Low-pressure die casting

Low-pressure die casting made of Al alloys

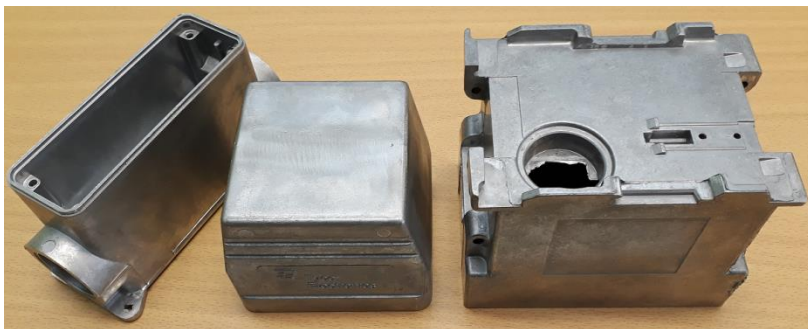
- Including heat treatment T4 and T6 in a continuous hardening unit
- Sand cores produced within ČZ a.s. by Croning method or ensuring external production method Cold-Box
- Applied alloys
 - ✓ EN AC 45400 - AlSi5Cu3
 - ✓ Other alloys according to the customer requirements





Casting samples 0,1 – 2kg

60x60mm – 150x150mm / multiplicity: from 2 to 8





Casting samples 2 – 5kg

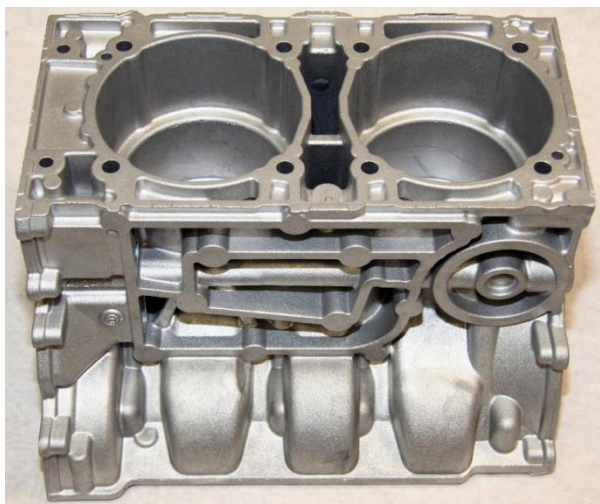
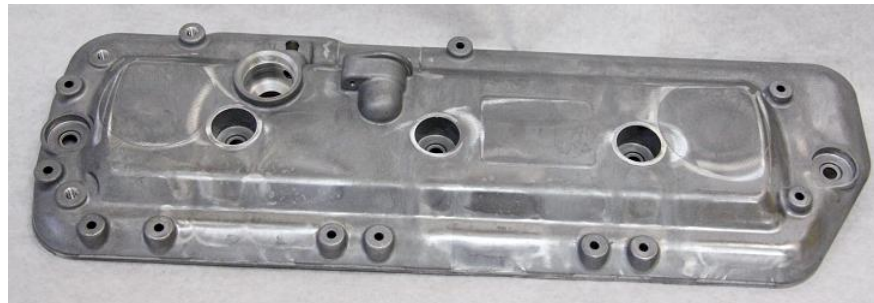
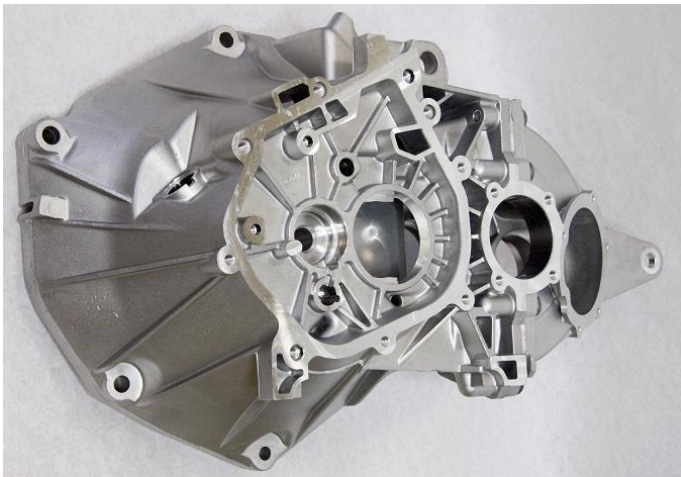
150x150mm – 200x200mm / multiplicity from 1 to 4





Casting samples 6 – 10kg

200x200mm – 500x500mm / single moulds





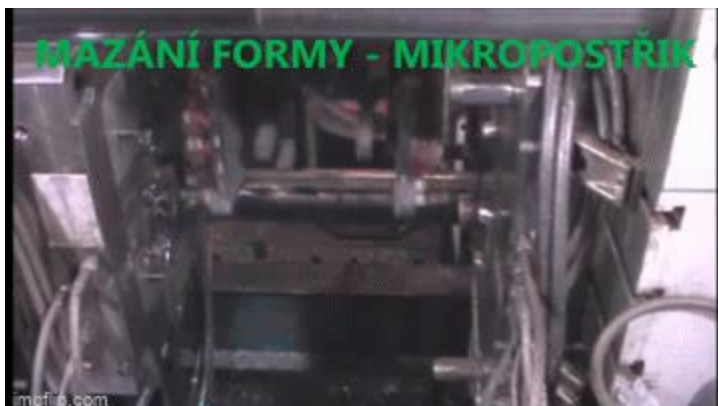
Melting – House Equipment

- **Gas-melting furnace STRIKO**
 - ✓ two chambers
 - ✓ output 1.000 kg/hr
 - ✓ volume 2.000 kg
 - ✓ for alloy EN AC 46000
- **Gas-melting furnace STRIKO**
 - ✓ two – chamber
 - ✓ output 750 kg/hr
 - ✓ volume 1.500 kg
 - ✓ for alloy EN AC 47100
- **Electric resistance furnace ELSKLO**
 - ✓ output 180 kg/hr + 2x290 kg/hr
 - ✓ volume 600 kg/hr + 2x1000 kg/hr
 - ✓ for low pressure casting alloys
- **Degassing equipment nitrogen-based**





Casting process





Finishing Technology

- **Basic machining:**
 - ✓ 2 x screw-cutting
 - ✓ 2 x drill presses
- **Finishing**
 - ✓ **drum washer**
 - ✓ **tumbling**
 - tumbling equipment
Rösler
 - ✓ **blasting**
 - suspension blast machine SPH Disa
 - drum blast machine
PTB Disa
 - continuos blast machine
Rösler





Production Quality Support

- Chemical structure control – Spectrolab
- DICH Index control (melt gassiness)
- RTG x-ray television network Rich.Seifert 160 kV 4 mA
- 3D measuring Zeiss Contura G2
 - ✓ Carl Zeiss-software Calypso and Holos
 - ✓ possibility of a 3D model measurement



- Quality system support CAQ
- Palstat – software
- Applied standards of the automotive industry APQP, PPAP, VDA 2, G8D, FMEA, SPC



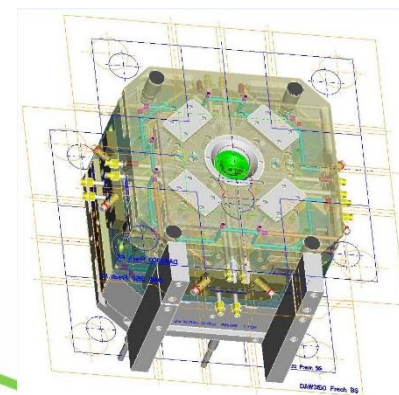
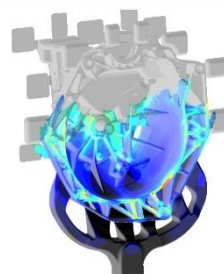
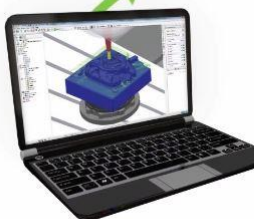
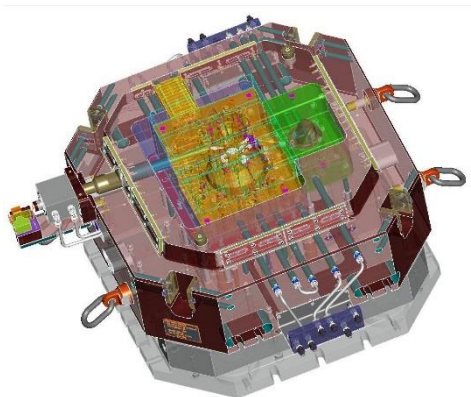
Software equipment

- Just send us a drawing or a 3D model of the casting in the following data format and everything else will be arranged by us!

CAD
✓ CATIA V5
✓ Creo
✓ VariCAD

VERZE
20
8.0

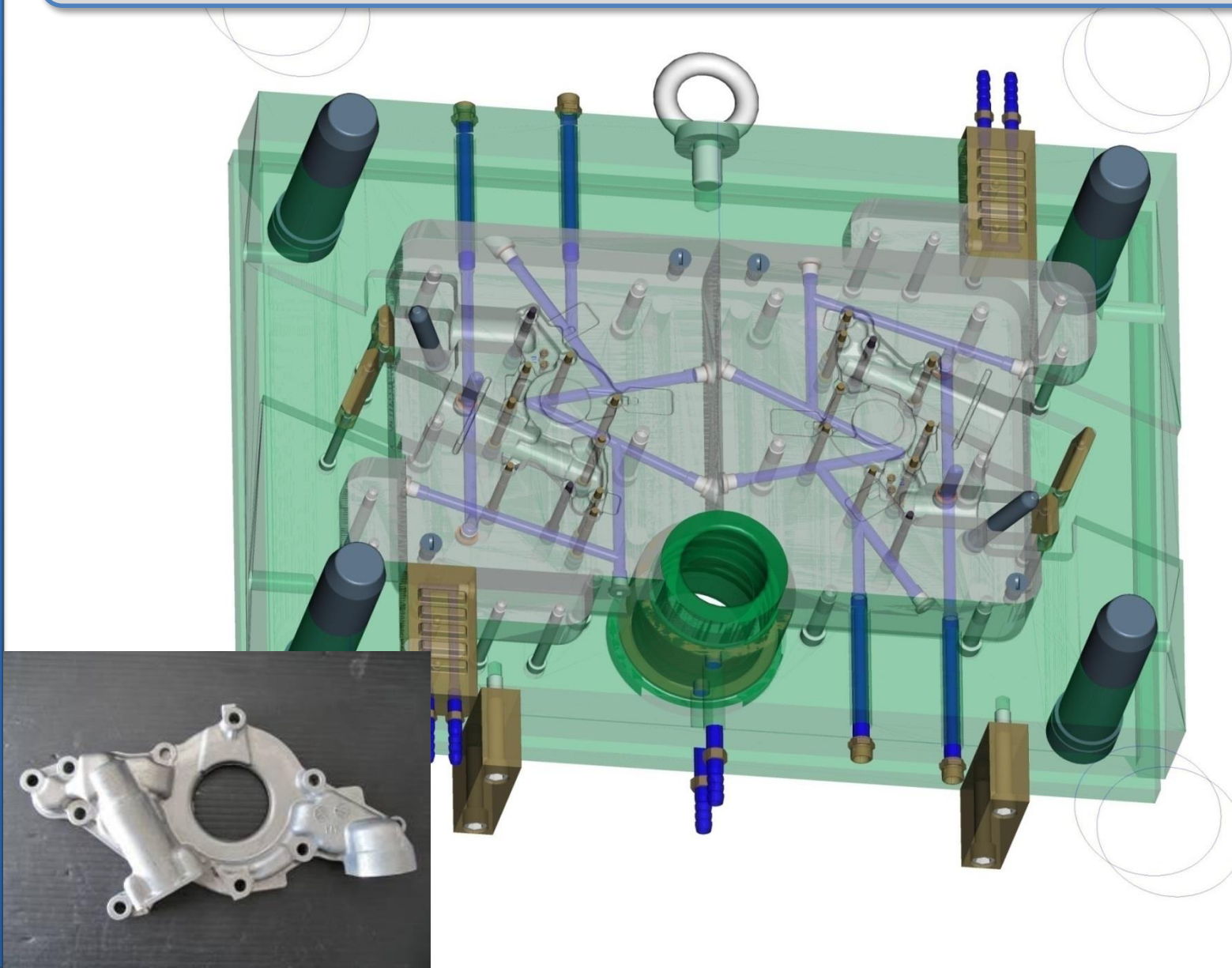
INTERFACE
Catpart, model, igs
prt, stp, igs
dxf, igs, dwb



11 workplaces for designing

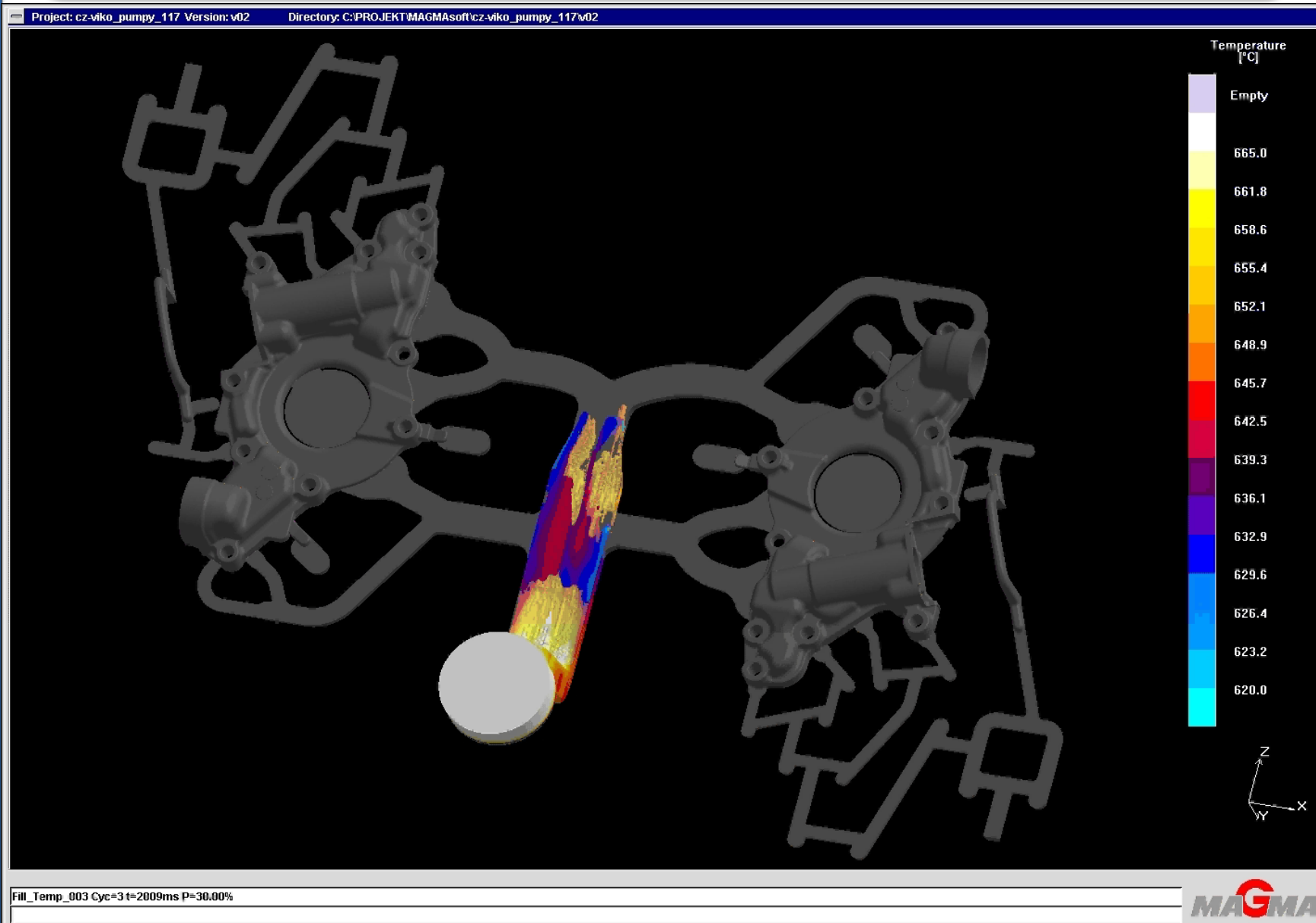


Sample of the mould



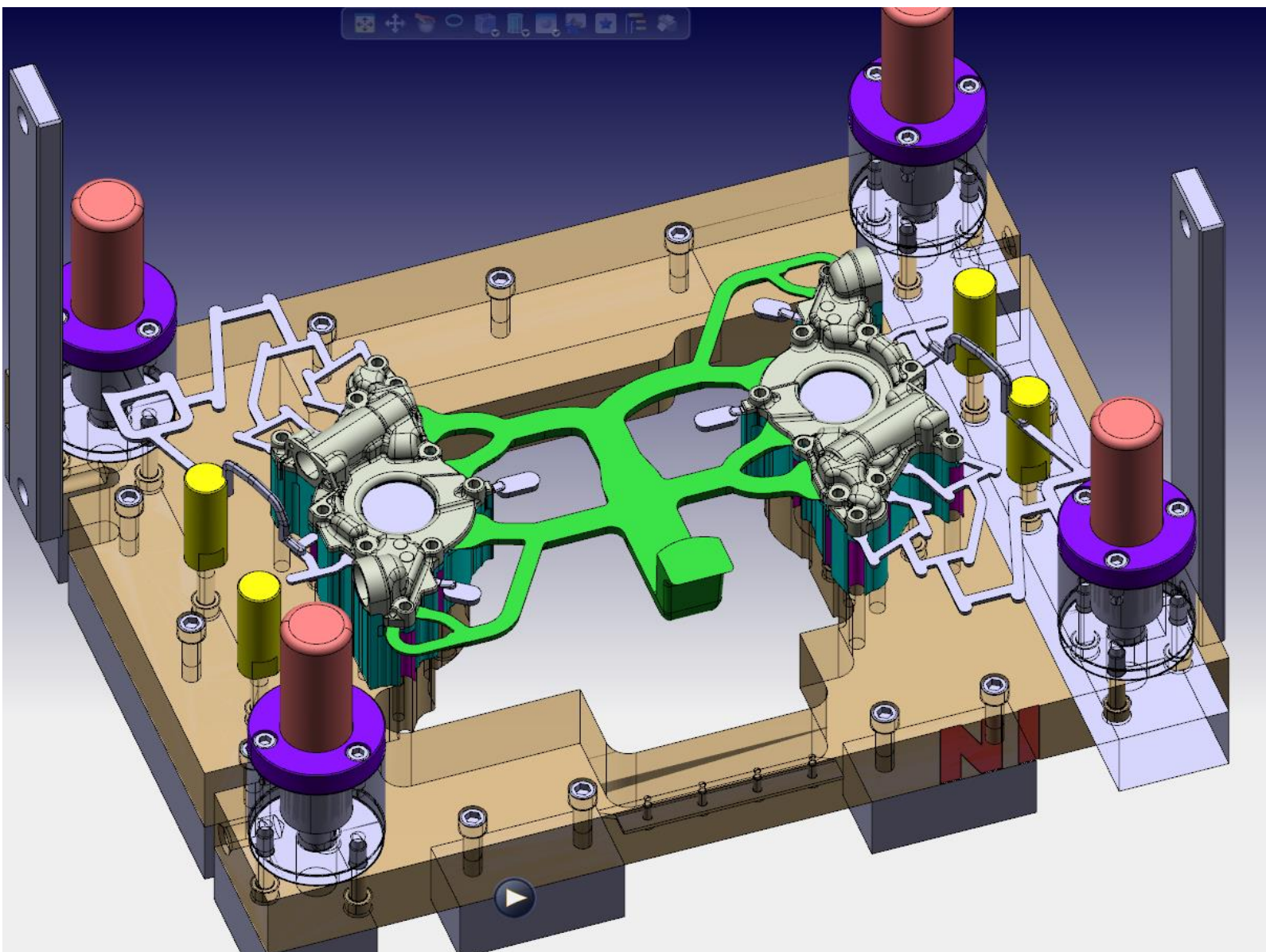


Casting simulation





Sample of trimming equipment





Certificates

- ČZ a.s., Division Aluminum foundry is certified according to:

- ✓ IATF 16949:2016
- ✓ ISO 14001:2004
- ✓ Safe Enterprise



- In case of customer's interest, the service of tools throughout their lifetime can be performed by ČZ a.s., division Toolshop.
- The mayor target of ČZ a.s., Division Aluminum foundry is the customer's satisfaction, permanent modernization and improvement of production technologies.

ZERTIFIKAT ♦ CERTIFICATE ♦ 認證證書 ♦ CERTIFICADO ♦ CERTIFICAT



Management Service

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH
certifies that

ČZ a.s.
Továrni 202
386 15 Strakonice
Czech Republic

has established and applies
a Quality Management System for

Production of
Aluminium Alloy Die-Casting Parts
(without Product Design as per Chapter 8.3).

An audit was performed and has furnished proof
that the requirements according to

IATF 16949
First Edition 2016-10-01

are fulfilled.

Issue date: 2017-12-15

Expiry date: 2020-12-14

Certificate Registration No.: 12 111 10814 TMS

IATF Certificate No.: 0281910

Product Compliance Management
Munich, 2017-12-15

Page 1 of 1



References

- ✓ Aisin Europe Manufacturing CZ
- ✓ Alupprogress CZ
- ✓ ALW Industry CZ
- ✓ Beneš a Lát CZ
- ✓ CCN SAS FR
- ✓ ČZ a.s. – Division TURBO
- ✓ DANA Inc. IT
- ✓ Inproma CZ
- ✓ John Deere FR
- ✓ Mitsubishi Electric Automotive CZ
- ✓ Kovelis Hedvikov CZ
- ✓ Motor Jikov Group CZ
- ✓ Mubea CZ
- ✓ PSP Pohony CZ
- ✓ Saviotechnics CZ
- ✓ TYCO electronics PL



Address

- Company headquarters:

ČZ a.s.

Praha 5, Sluneční náměstí č. p. 2540/5

PSČ: 158 00

IČO: 25181432

Company is registered in the Trade register kept by
District Court in Prague

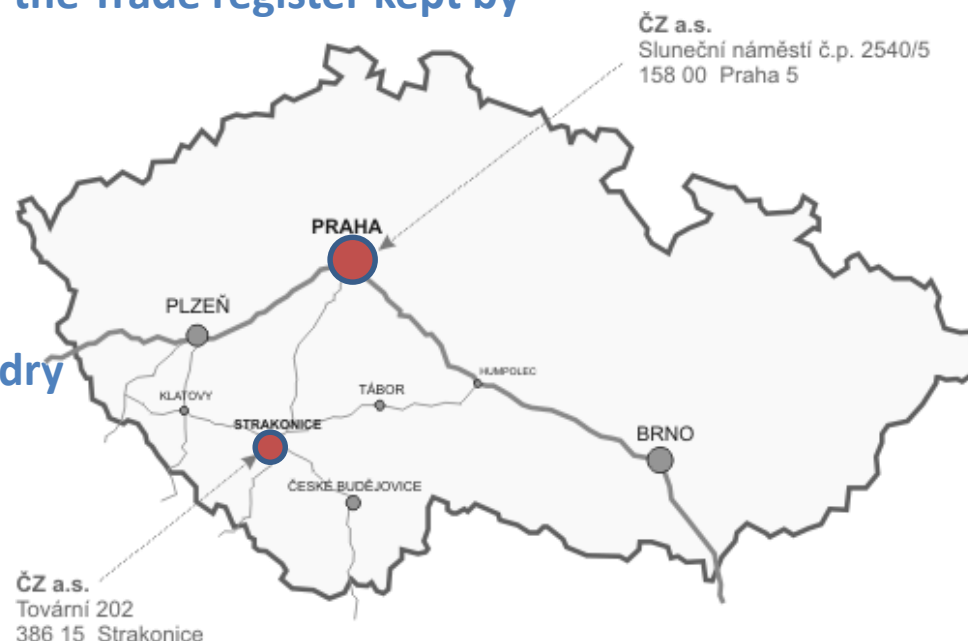
- Production Plant:

ČZ a.s.

Division Aluminum foundry

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CZ-386 15 Strakonice





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