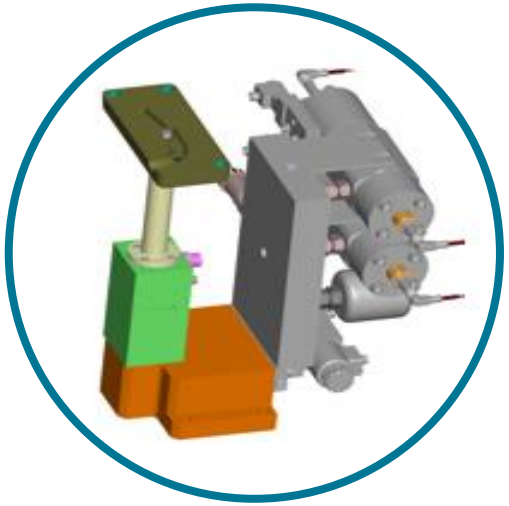
MAGIT
Powermodule

Integrated fluid channels directly in the casting process

From plastic to aluminium
MAGIT is material-independent technology transfer for innoavtive and efficient die-cast parts



MAGIT
mold module

Magnesium and Aluminium Gas-Injection-Technology

Technologie in Kunststoff GmbH

Everything under one roof

Technologie in Kunststoff

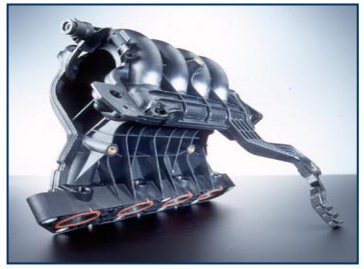
- Component development
- Process engineering services
- Mold conception

MAGIT

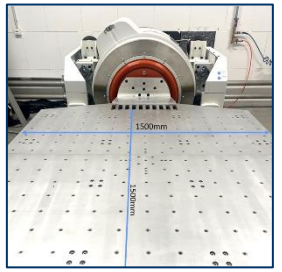
- Gas injection technology in Al-Mg-Zn-die castings
- Plant and process engineering

TiK Testing & Validation

- Accredited test laboratory
- Enviromental simulation
- Component testing according to customer spec

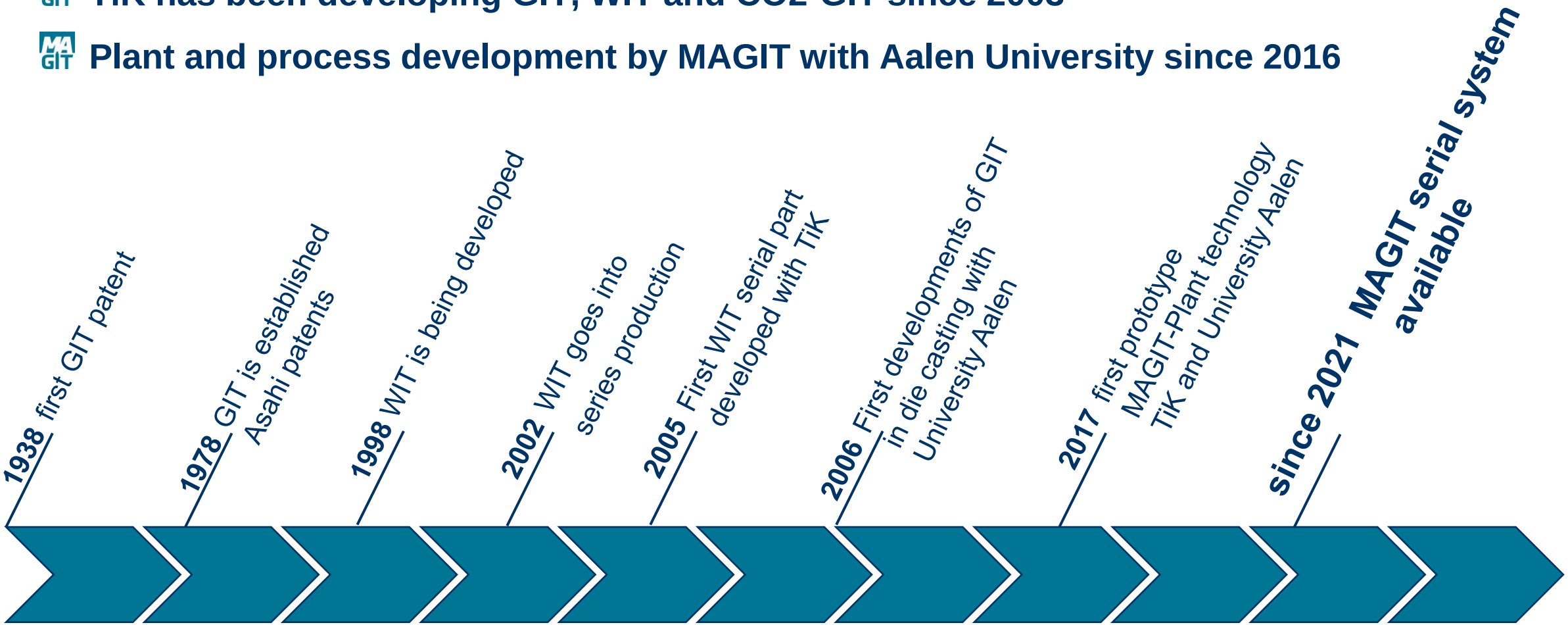







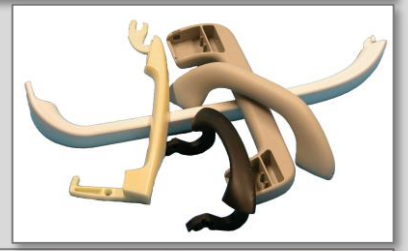
History of gas inejction technology (GIT) since 1938

- **First trials of GIT in die casting at Aalen University in 2006**
- **TiK has been developing GIT, WIT and CO2-GIT since 2003**
- **Plant and process development by MAGIT with Aalen University since 2016**

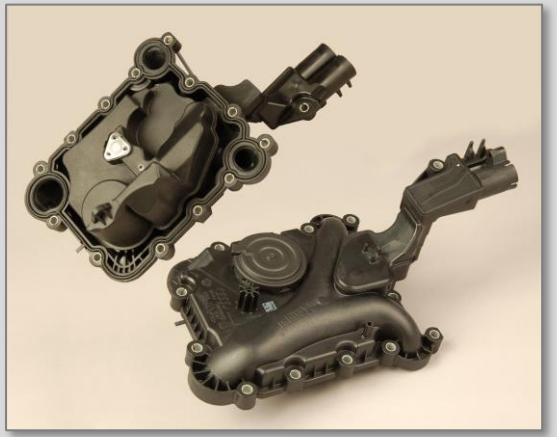


Application examples of gas injection technology

GIT in injection moulding

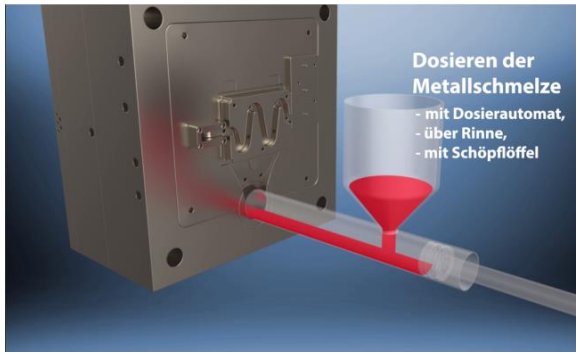


WIT in injection moulding

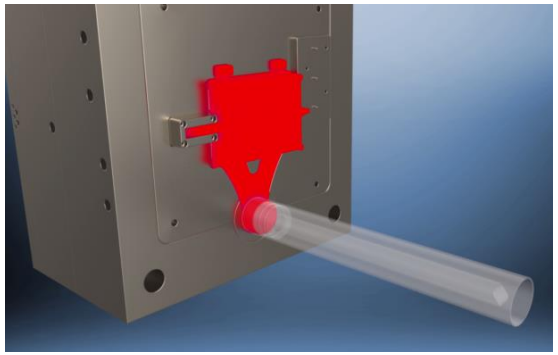


MAGIT in Al-Mg-Zn die castings

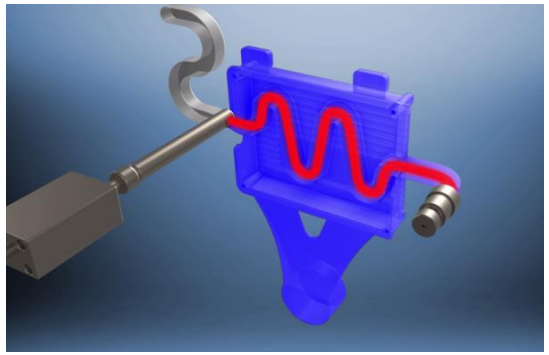
Functional principle of gas injection (general)



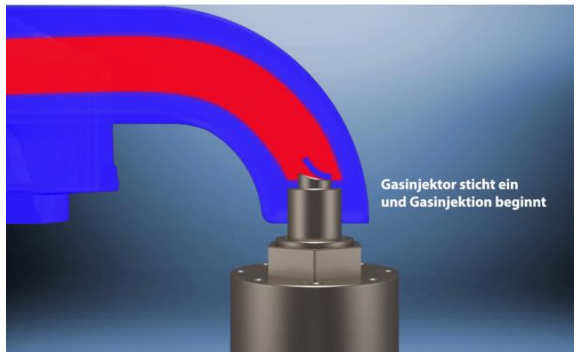
Melt dispensing



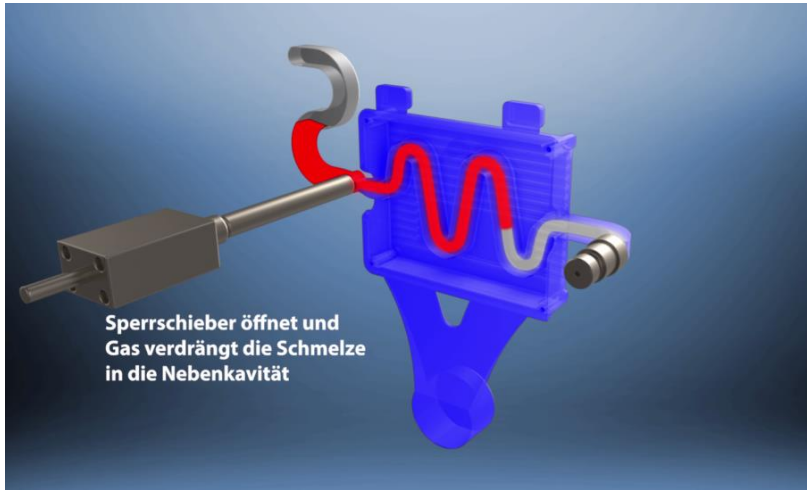
Filling the cavity



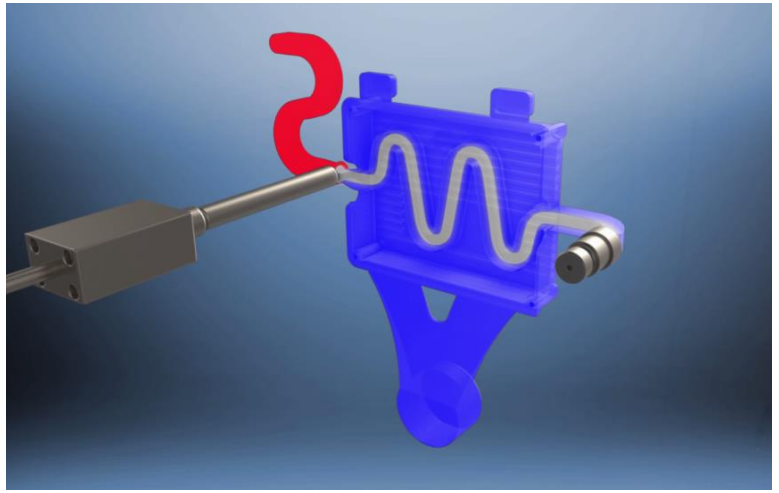
Pre-cooling the component



Injector punctures



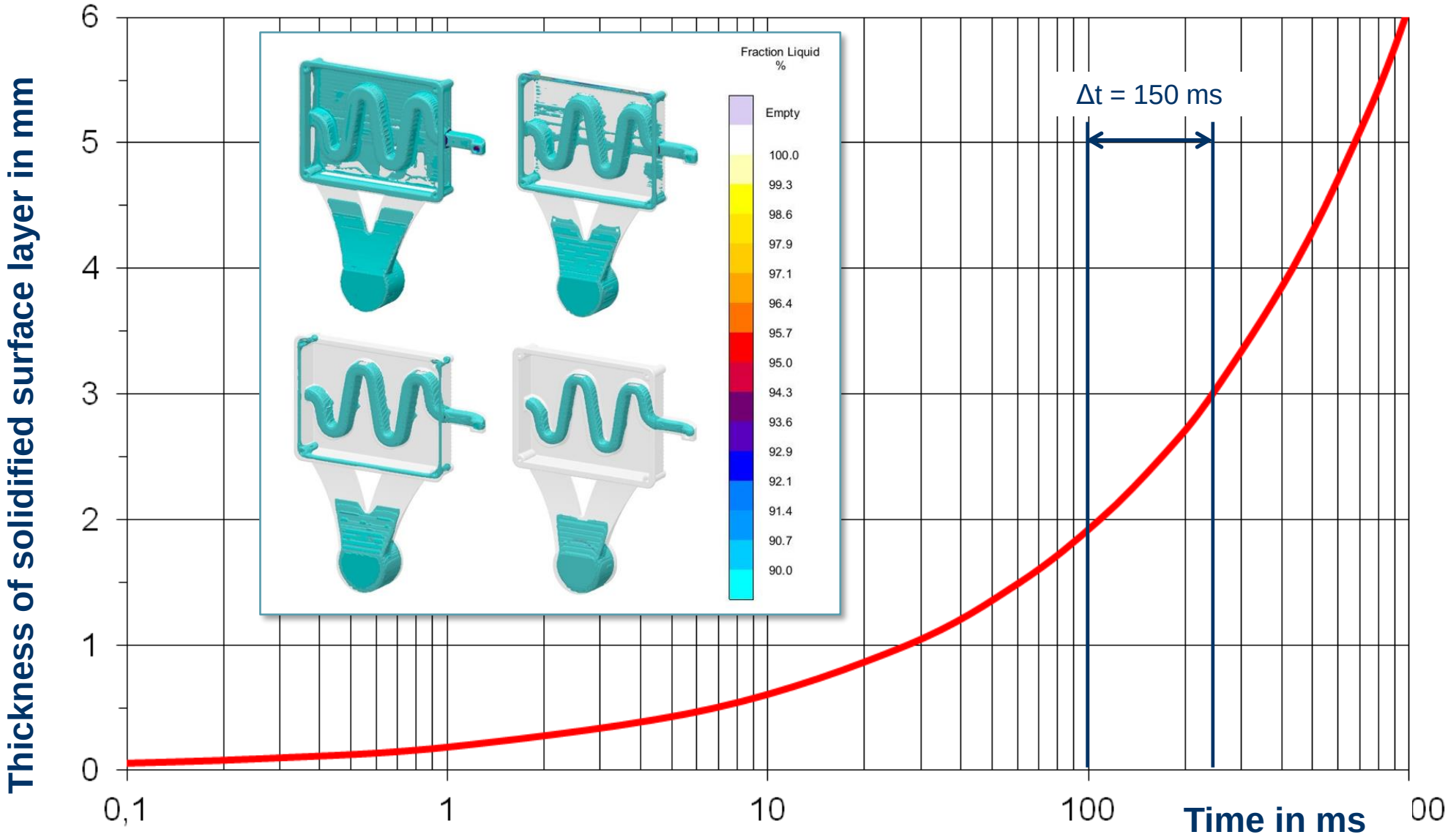
Shut-off pin opens and gas pushes melt into spill over cavity



Holding presssure phase and gas retention

Completed component with cooling channel

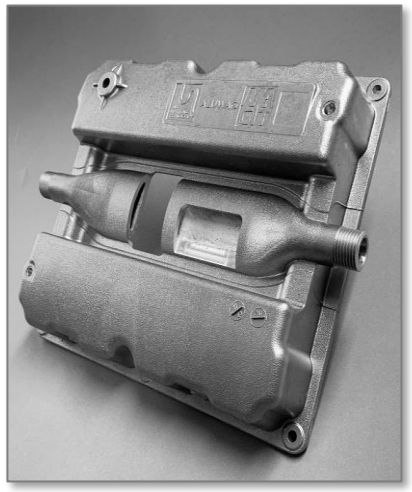
Process window for gas injection in Al-die-casting

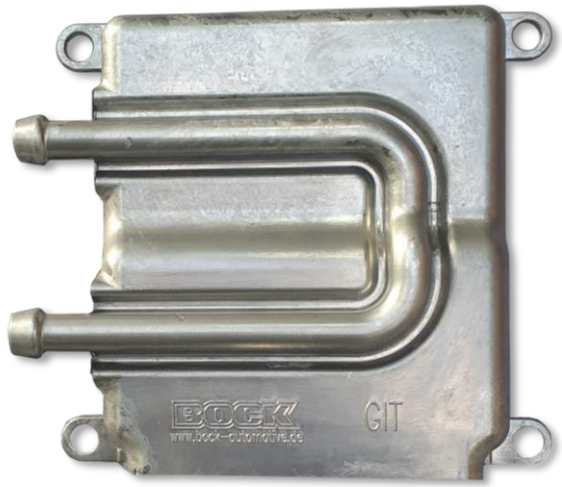


Practice and applications

Housing with integrated fluid channels

- No additional components such as insert pipes and cores
- Good heat dissipation, as no insulation layer due to adhesive or sealant
- No material mix, therefore easy to recycle
- Close contour cooling of the components

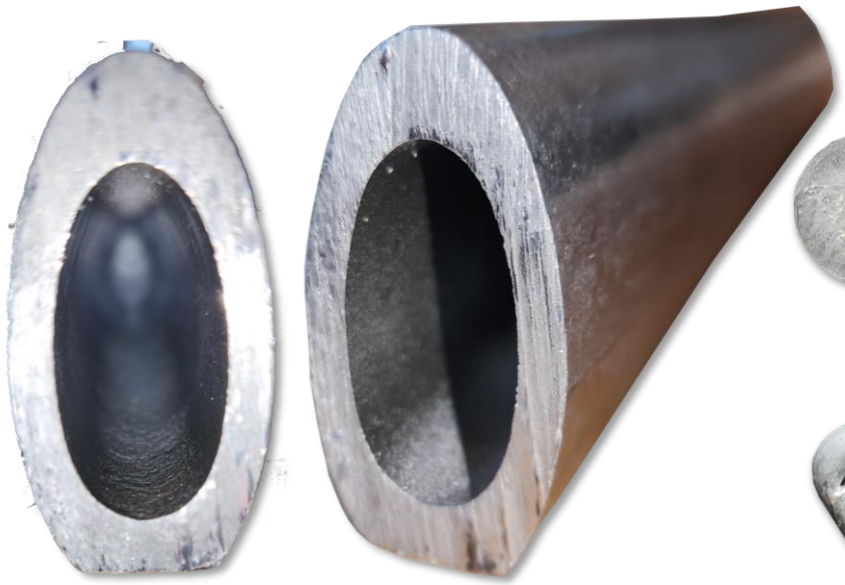




Practice and applications

Pipe-like fluid lines and structural components

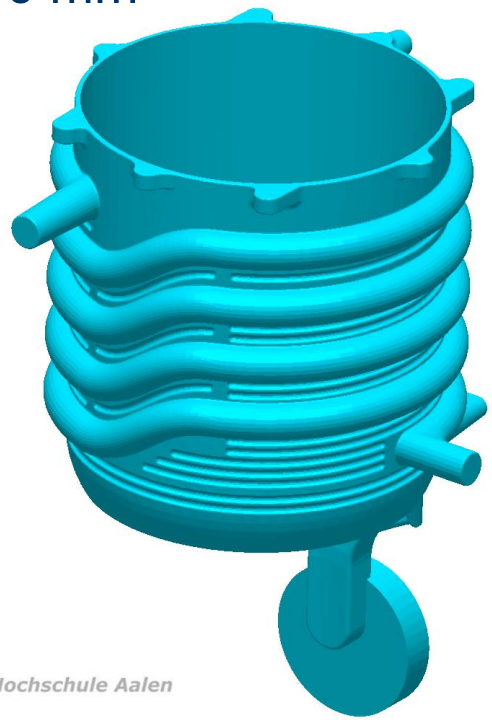
- No subsequent welding, pressing or joining processese
- High design freedom, no restrictions due to straight cores or „banana cores“

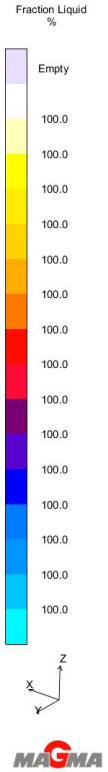


Practice and applications
Cooling channel E-axis

E-Enginehousing with Integrated cooling channel

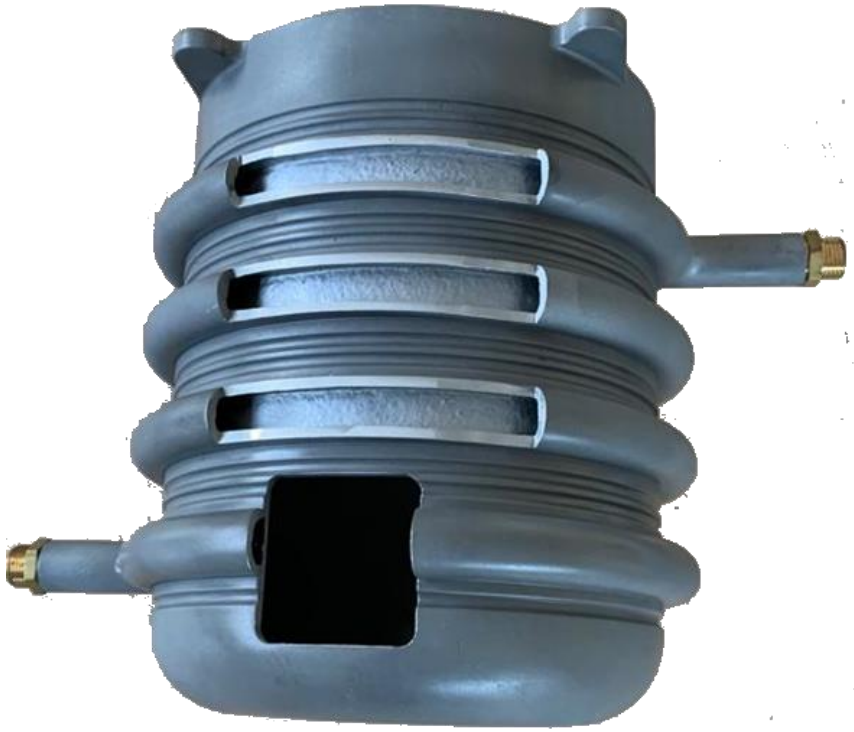
- One-piece instead of multi piece housing
- No joining and sealing processes
- Gas channel lengths >2500 mm

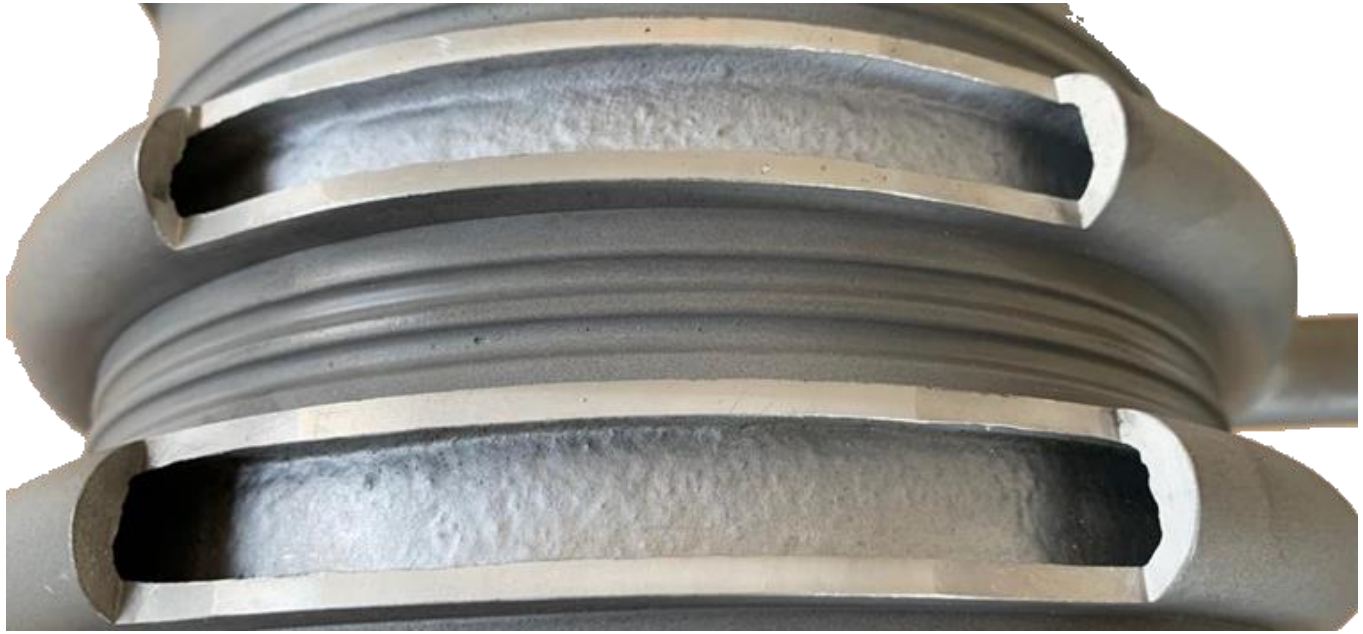




Practice and applications cooling channel E-axis

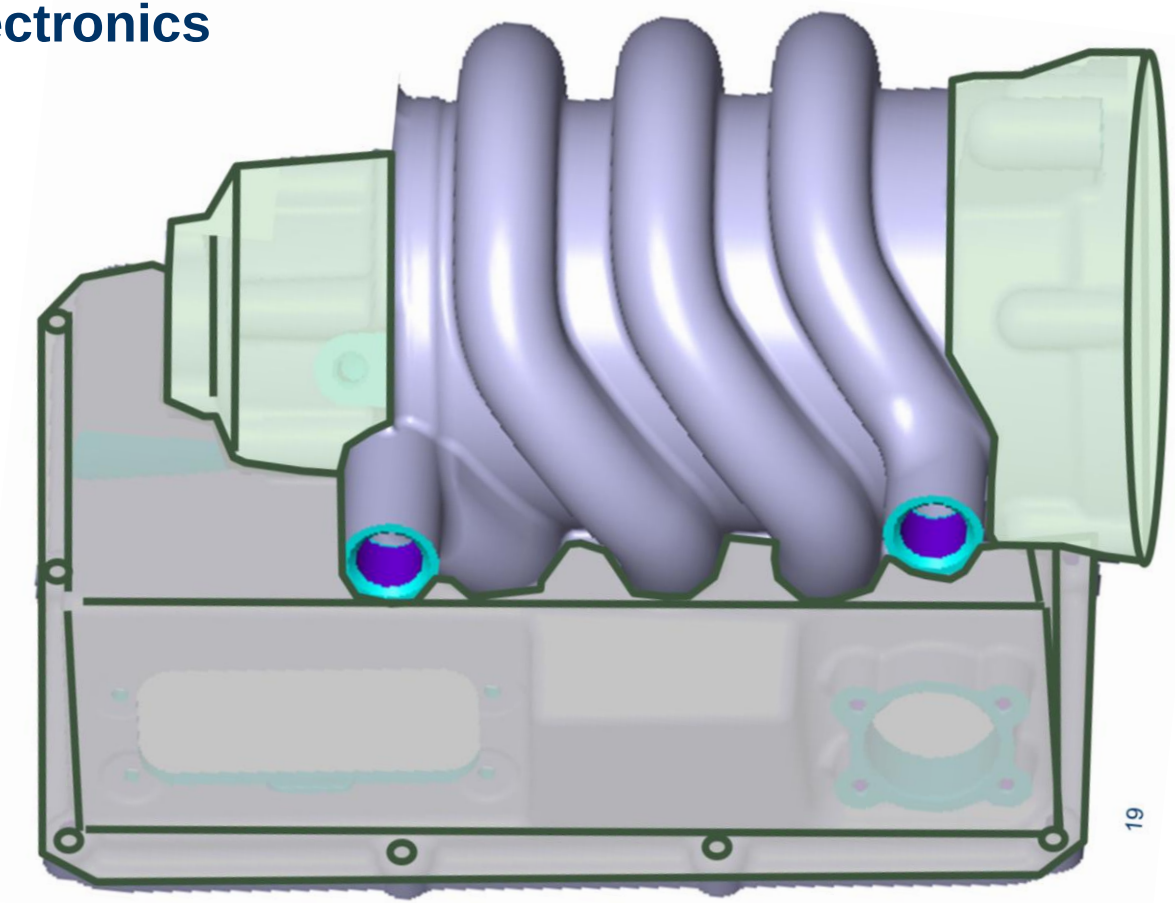
- Uniform wall thickness, even with gas channel lengths longer than 2500 mm
- Good channel surfaces
- Gas brakes prevent gas break-through between channel areas





Practice and applications
Cooling channel in stator housing

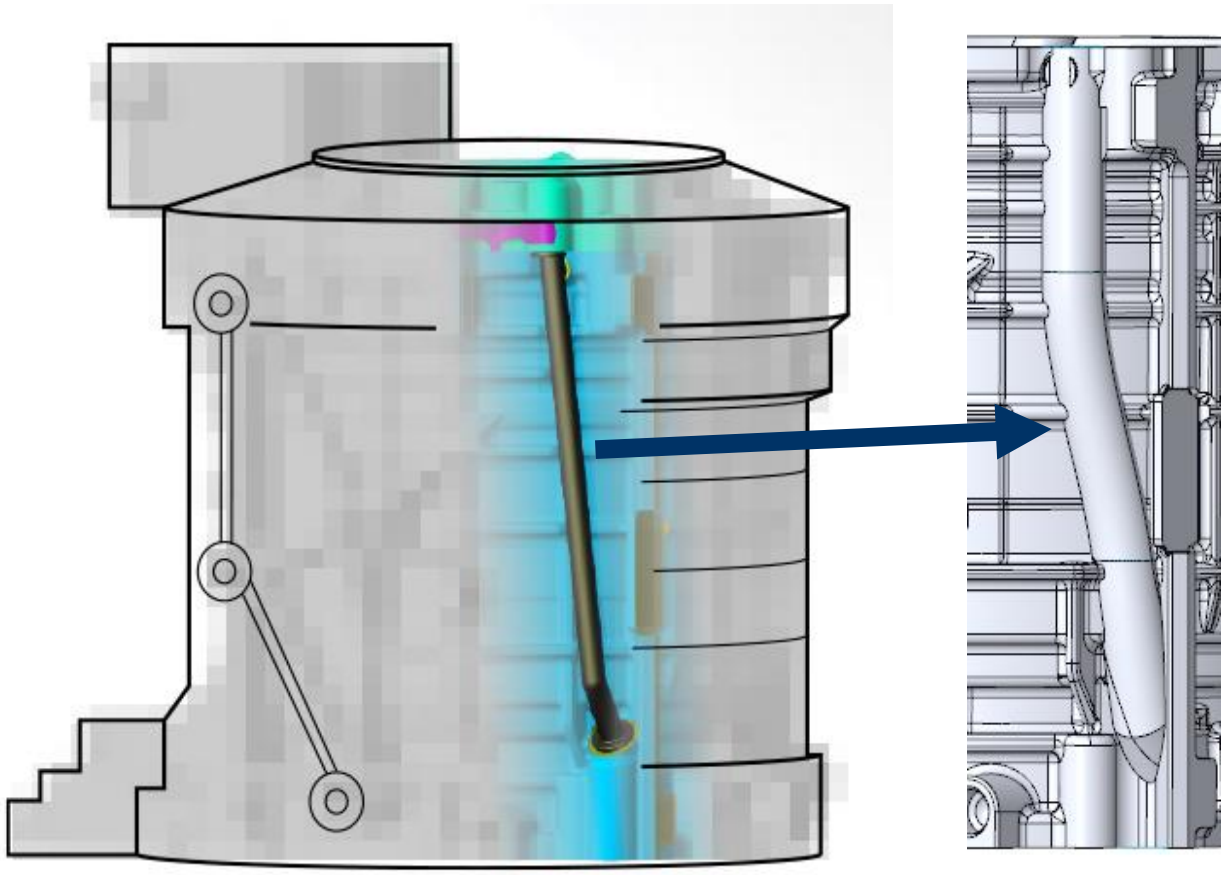
- **Stator housing with integrated power electronics**
- **Design criteria to be observed**
  - Hotspots in the area of the transition to the housing
  - Demouldability and undercuts
  - Positioning of the elements to be cooled depending on the channel layout of the stator housing



Practice and applications
Oil channel on the engine housing

Replacement of external pipes and hose lines

- Component reduction
- Minimised instalation space through integration into the housing wall
- Saving in assembly and testing costs



Practice and applications
Oil channel on the engine housing

MAGIT channels offers

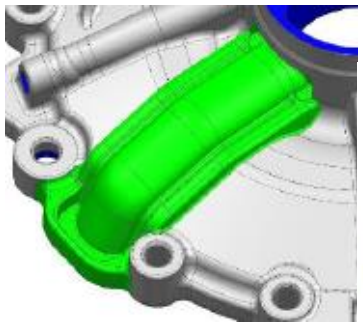
- Great design freedom in the channel run
- Simple integration with surrounding components
- Constant wall thickness and cross-sections

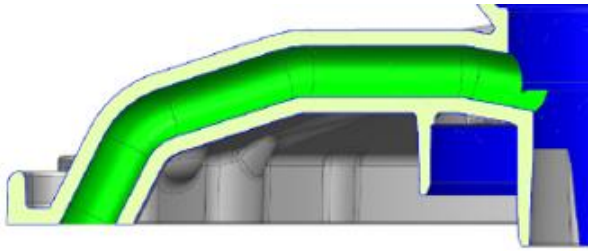
Practice and applications
Oil channel in housing cover

Integrated MAGIT channel

- Component reduction
- Saving in machining and assembly processes
- Fully integraded with the connection components

Standard part with plasic cover





CAD-design

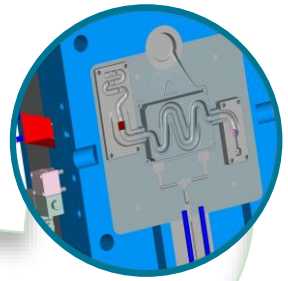
Die-casted channel

Presentation MAGIT together

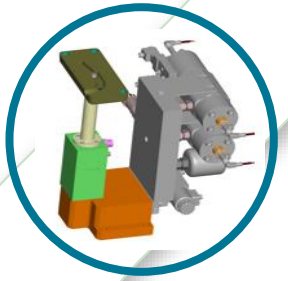
Success requires collaboration between three trades

Gas-compatible component design

Component



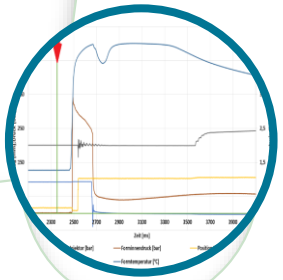
Mould concept



MAGIT Mould module

Mould

MAGIT Power module



Process-optimisation

Cast

Presentation MAGIT together

Power-module

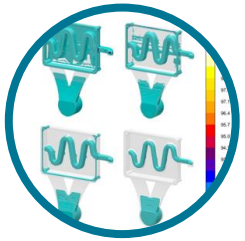
Part development

more then an HPDC-Process

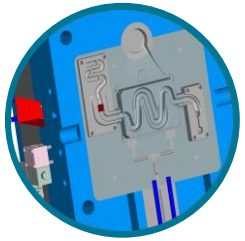
our MAGIT together philosophy stands for a complete range of support and counselling services, from component developer to mouldmaker and die caster.

Service & Training

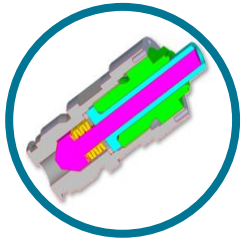
Component tests



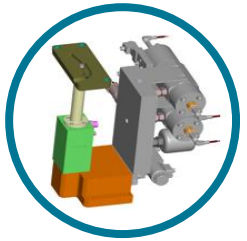
Simulation



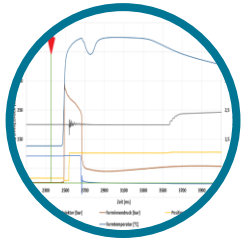
Mould concept



Injector



Mould-module



Process optimisation

MAGIT system technology
Integration into the casting cess

Power-module

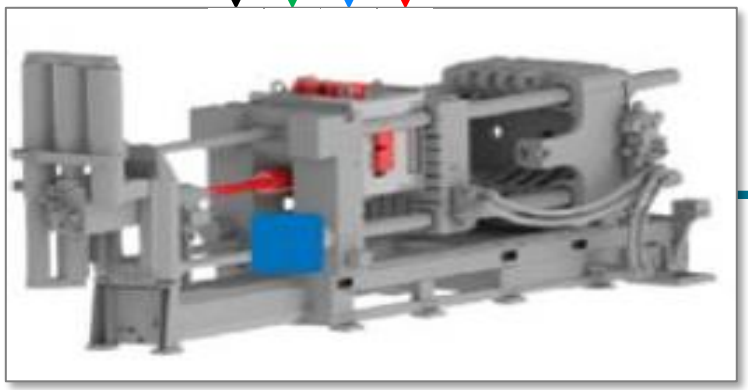
Self-contained control and regulation unit
with integrated high pressure compressors

Gas suplpy

Oil-hydraulic

pressure, Temperature

Start & savty signals

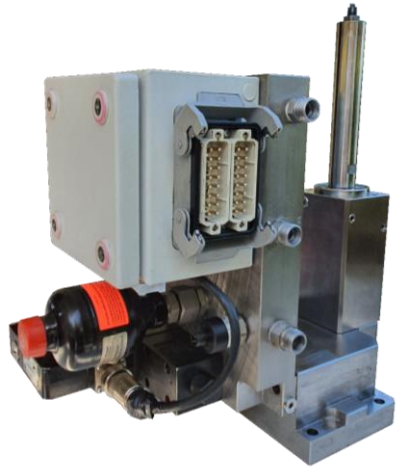


Hot- and Coldchamber casting cells

can be refitted regardles of maufacturer

Mould-module

accordding Mould-
and component concept/design



Injektion modul
includig hydraulical
manifold

Side cavity modul
with gate valve

MAGIT plant engineering
Power module PM500

Eight configuration options in one housing

One or two cavity (gas channel) design

One or two stage compressor unit depending on the gas supply

With or without hydraulics for mould modules

Are you also ready for MAGIT

We are happy to advise you

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Our partners

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