Magnesium and Aluminium Gas-Injection-Technology

DEFINITION

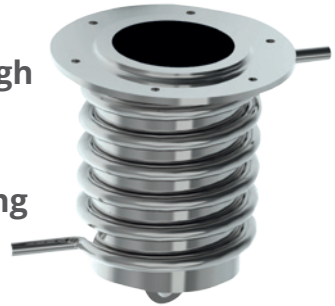
MAGIT is a gas injection technology developed for the creation of completely new die casting applications to generate integrated hollow magnesium and aluminium die-cast structures.
This technology involves the still liquid melt at the core of the component being displaced into an opening overflow cavity during the cooling phase in the die, creating reproducible and defined cavities in castings during the casting process itself without the need for upstream and downstream processes.

Typical applications include integrated cooling lines in power electronic housings, media-carrying lines with integrated attachments, lightweight structural components, closed outer contours used instead of ribbing and many more.

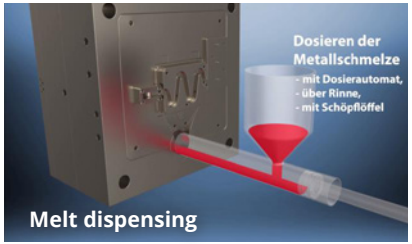
The entire **MAGIT** plant technology is also designed to facilitate retrofitting in the case of existing casting cells, regardless of the manufacturer involved.

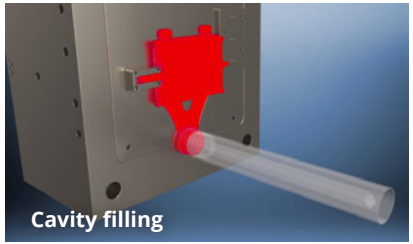
WHY AND WHEREFOR

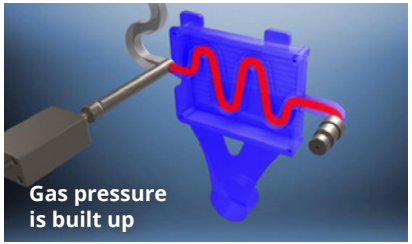
- **Greater latitude during product design**
- **Production of complex geometries for hollow components**
- **Reduced component costs through material and process savings**
- **Machine-independent retro-fitting on all cold and hot chamber HPDC systems**

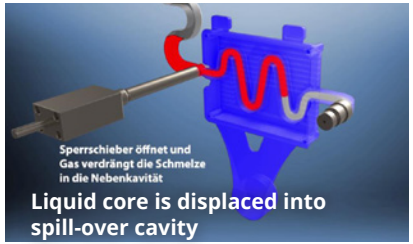


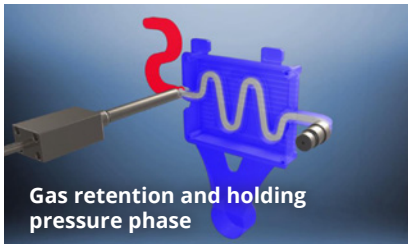
MAIN PRINCIPLE GIT GAS INJECTION

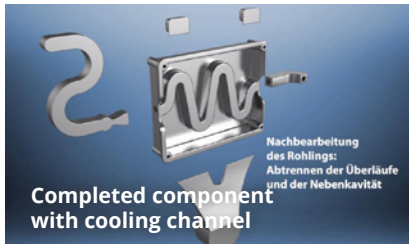






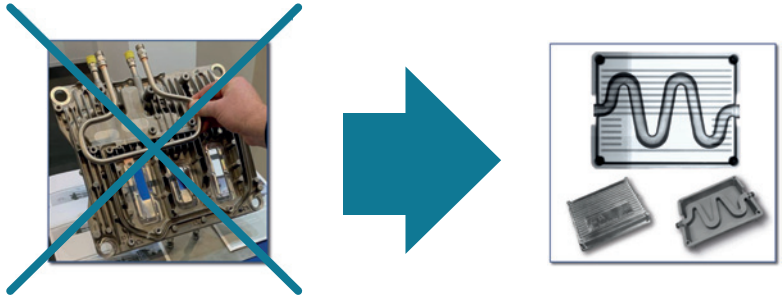






COST REDUCTION POTENTIAL

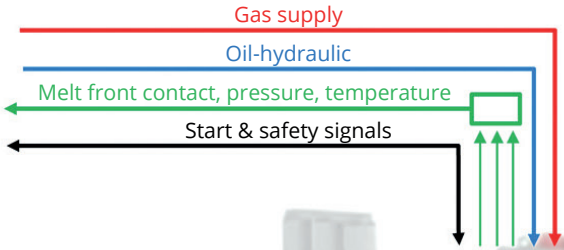
- Integration of fluid ducts directly into casting parts
- One-piece parts with cooling channels without joining an sealing work
- Without additional insert tubes or lost cores
- Closed hollow components instead of ribbed structures sensitive to dirt



DESIGN OF THE MAGIT SYSTEM

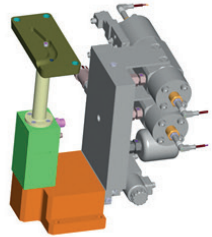
Power modul

Stand-alone control unit with integrated high-pressure compressors



Die modules

Pursuant to die and component concept/design



Injection module
Incl. hydrauic valves

Overflow module
With gate valve

Hot and cold chamber casting cell

Can be retrofitted regardless of manufacturer

AN HOLISTIC SUPPORT AND GUIDANCE OFFER

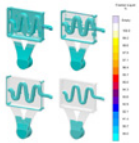
Our **MAGIT together** philosophy is an holistic support and consulting offer from the component developer via the toolmaker to the die caster.

Plant technology

We offer the complete technology range of all necessary systems and components. From the nitrogen supply to the **MAGIT** power modules to the die modules, you receive all the necessary equipment from a single source to successfully implement to use **MAGIT**.

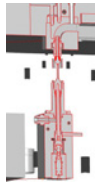
Support for Gas-compatible component design

- Functional integration (avoidance of friction stir welding or inserts)
- Optimum duct dimensioning and course
- Integration of gas brakes
- Design of duct connection geometries (screw bosses, ribbing)



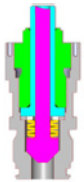
Solidification and filling simulation

- Casting layout with MAGMA software
- Simulation of solidification phase, taking gas injection into consideration
- Theoretical determination of duct wall thickness
- Determination of cavity volume



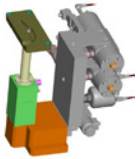
Creation of die concepts

- Specification of ideal injector positions and overflows
- Definition of component position in die
- Dimensioning and positioning of gate valve
- Layout of overflow cavity



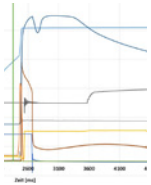
MAGIT injector

The injector technology, which enables the reproducible introduction of gas to the interior of the die-cast component, is decisive for the success of this gas injection technology.
The injection process for the gas and, consequently, the quality of industrial-scale die-cast components can only be assured with the injectors appropriate for use with MAGIT.



Die-adapted injection and overflow cavity modules consisting of the following:

- Connection plates with standardised hydraulic, cooling water, gas supply and sensor connections
- Different injector and gate valve lengths adapted to suit die
- Tool inserts for overflow and injection duct



Process optimising of MAGIT process following commissioning and installation of new dies

- Optimising of gas injection
- Optimising of injector and gate valve opening and closing times
- Adaptation of overflow volume
- Optimising of clearing and holding pressure

Broad range of diverse component tests

- Testing pursuant to LV 124
- Vibration testing (on 24 KN and 70 kN shakers)
- Static and dynamic burst pressure testing
- Flow testing (oil, glycol, water)
- Climatic chambers
- Leak tests
- Pressure loss measurements (air, oil, glycol, water)
- Pulsation tests (air, hot air, oil, glycol, water)

Service &Training

We offer complete post-commissioning support with the following:

- Operator training
- Prompt replacement and wear part supply
- Support during maintenance and service work
- Service training

we look forward to your enquiry

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