



Internal coating

Homogeneous temperature distribution and wear protection for the shot sleeve in the cold-chamber die casting process

Motivation and Relevance

The shot sleeve is never completely filled with melt, resulting in an inhomogeneous heat distribution within the chamber. Due to the one-sided fixed clamping, the chamber distorts and the plunger can no longer seal the melt completely to the rear. The shot sleeve can no longer be used for the casting process and must be replaced.

Approach

Development, simulation and testing of various new designs of the shot sleeve to generate a homogeneous temperature distribution. Design adaptations as a combination of cooling channels and DED coatings (stationary temperature control and wear protection). Complete closure of the cooling channels through a combination of sheet metal and coatings. Optimized heat dissipation through targeted material combination of outer and inner coatings.

Results

Advantages

- Optimized plunger run
- Service time extension
- Scrap minimisation
- Increased resource efficiency



Ressource Savings

- Lubricants
- Casting material
- Steel
- Energy

Research Area

- Foundry industry
- Resource efficiency
- Productivity

Partners



Gerhard Schoch
Druckgiesstechnik



Alteiner Gerelltheit für leichtbauteile
- Entlastungsgießerei -
zertifiziert nach DIN EN ISO 9001:2015
zertifiziert nach DIN EN ISO 14001:2015



AMZ
Weissenseer
Präzisionsguss



dap
Digital Additive
Production

Picture



Worn out shot sleeve



Internal coating process

50 mm

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