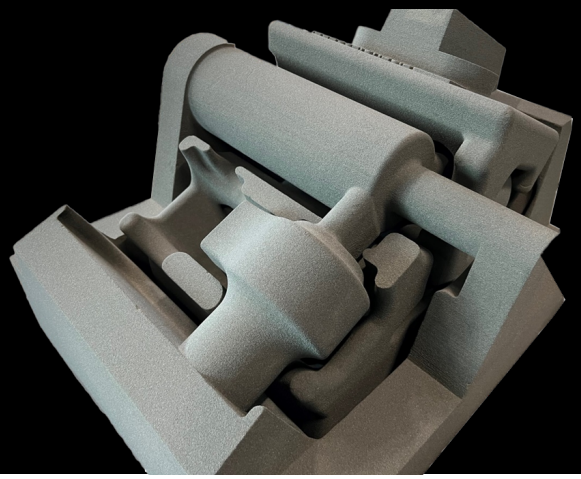
CASE STUDY

LARGE GEAR HOUSING

IRON FOUNDRY
COATINGS

FOSECO



Reduction of rework and scrap with the new TENO PRINT coating for the 3D printing process

INNOVATION & TECHNOLOGY

THE CHALLENGE

Mezger AG, based in Kallnach, Switzerland, manufactures sophisticated castings using modern 3D printing processes. Complex geometries, which can often only be realized using this process, are produced as a core and mould and cast as a finished core package. This „just in time" production offers the customers of Mezger AG, in addition to the high speed of the production process, new design possibilities. With the increasing establishment of the 3D printing process in foundries and the constant further development of printer sizes, both the complexity and the volume of the printed moulds and cores are increasing. However, with the resulting increasing casting weights, the requirement for freedom from defects and the least possible reworking of the castings produced in this process increases further.

FOUNDRY:

Mezger AG foundry produces both machine-formed and hand-formed castings. With their full-service 3D expertise, they can also quickly and highly professionally create prototypes or small series in the shortest possible implementation time and with low unit costs.

PARAMETER

Alloy: grey iron (EN-GJL-250)
Casting weight: 405 kg
Pouring temp.: 1,350°C
Moulding Process: 3D printed furane sand process

FOSECO PRODUCTS

TENO* PRINT 5781 A coating

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OUR SOLUTION

This is where Foseco comes in with a new line of coating products especially developed for the 3D printing process. Together with the Foseco R&D centre in Enschede and the development laboratory in Hengelo, a new combination of high-refractory raw materials was specifically developed for the special requirements of 3D printing process. The heat resistance was examined using a heating microscope and the surface roughness was assessed and optimised using a Keyence 3D profile measuring macroscope. In this way, an ideal combination of fillers could be determined.

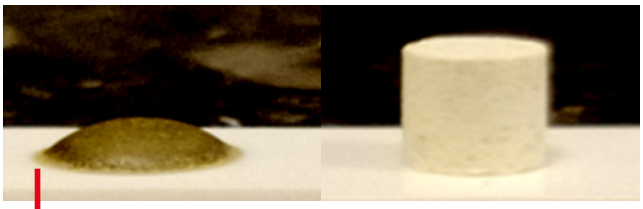
KEY BENEFITS

- **High refractory fillers**
- **Single application**
- **Low coating layer thickness**
- **Prevents penetrations and veining**
- **No expensive coating pre-treatment or special coatings required**
- **Significant reduction of process time and rework costs**
- **Reduced surface roughness**

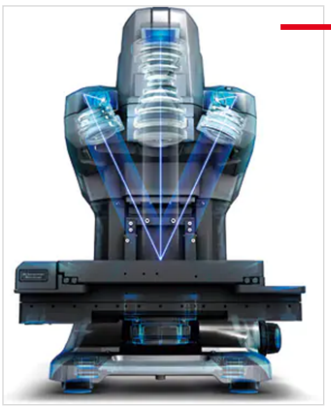
> LET´S LEARN MORE

THE OUTCOME

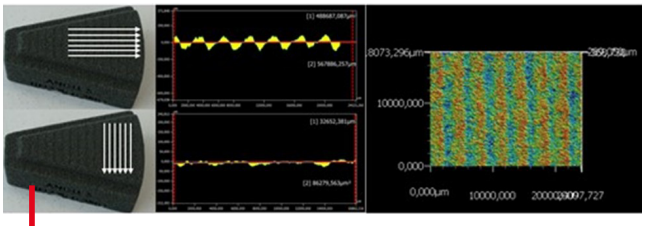
With the new combination of highly refractory zirconium-free fillers, the thermal resistance of the coating could be significantly increased. This enables the customer to work with lower layer thicknesses while avoiding penetration and veining defects. There is also no need for pre-treatment or the use of expensive special coatings. Furthermore, the selected raw materials in the coating result in a positive effect on the surface roughness of cast surfaces produced with 3D printed cores and moulds.



Heating microscope - heat resistance determination of different filler combinations



Keyence 3D profile measuring macroscope



Experimental – Roughness measurements

THINK BEYOND. SHAPE THE FUTURE.

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