

Omco Metals strengthens market position with new alloy

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Kurt Beghyn

To meet the market's demand for less expensive but equally performing materials for high-temperature applications, Omco developed an equivalent alternative.

Omco Metals manufactures castings from cast iron and aluminium bronze in small and medium-sized series. Since its beginning and definitely under the current conditions—primarily the price pressure from low-wage countries - the Belgian foundry specializes in the manufacturing of small- to medium-sized series of "difficult" castings – especially castings that impose very high demands both metallurgically and in terms of casting technology. A significant fraction of Omco's current manufacturing consists of castings in SiMo cast iron and NiResist cast iron for high-temperature applications in engine construction.

Alternative for expensive nickel

SiMo cast iron is one of the economically most interesting iron-based materials for such high-temperature applications because of its good castability and the relatively inexpensive alloying elements added to it. The maximum temperature at which SiMo can be used, however, is limited to 800 °C. If the material must be able to withstand even higher temperatures, it is necessary to change to NiResist cast iron. Depending on the type of NiResist, the nickel content of these alloys

ranges from 20% to 35%. However, these alloys cost much more because of their high nickel content.

Omco achieved new material developments on this market, developing new types of SiMo cast iron that can withstand higher temperatures and can mean a less expensive alternative to NiResist in the long run.

Casting technology challenge

Therefore Omco pursued the question of whether a less expensive alternative can be used to fulfil the high requirements of high-temperature applications. The company wanted to study the effect of adding aluminium to SiMo cast iron on the temperature resistance, castability and properties by analysing experimental research and to evaluate the possibility of implementation within the plant-specific context. The addition of aluminium to cast iron does indeed increase the resistance to high temperatures, but this is also accompanied by a number of casting technology challenges. These had to be resolved, and therefore Onco worked on this with the experts from Sirris.

To achieve a readily castable material with the required properties, several steps were taken. Test castings were performed on site under coordination by the Sirris experts to tackle the casting challenges. In parallel with this, a search was done for possible compositions with the desired properties. Several test campaigns to achieve the desired properties were initiated.

The project resulted in a castable aluminium-alloyed cast iron that is resistant to high temperatures, with which Omco can offer an answer to its clients and the market.

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Authors



Kurt Beghyn