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Morgan Advanced Materials develops new materials for use in aerospace components

Following extensive research and development, Morgan Advanced Materials has successfully produced two new materials which offer superior performance and higher casting yields when used in injection-moulded ceramic cores for the aerospace market.

Building on the success of its existing range of specially-engineered ceramic core products, the new materials, P-57 and P-59, can generate exceptionally fine cross-sections in aerofoil and turbine blade casting, while offering enhanced surface finish. Both materials are ideal for directionally solidified (DS) and single crystal (SX) applications and can produce cores with minimum profile thickness of 0.30mm (0.01 inches) without compromising stability or rigidity during the casting processes.

Test results have shown that the new materials have led to an increase in casting yields by as much as seven per cent when compared to alternative materials on the market. By improving casting yields, the loss of valuable alloy materials during production is minimised, allowing manufacturers to benefit from greater cost efficiencies in the process. The new materials have also improved the thermal stability at casting temperatures by more than 30%, when compared to the current SX material of choice.

P-57 is ideal for use in thin cross sections, while P-59 is well suited for use in exceptionally fine spaces so each is composed primarily of 97% silica and 3% zircon, with traces of iron, bismuth, lead, silver, antimony, tin and zinc.

Both materials can be chemically dissolved after casting, leaving behind the clean channels required in new generation turbine applications. Dimensionally very stable at high temperatures, they can also be crushed if required, such as during metal solidification – a key property when using alloys which are prone to re-crystallisation during the single crystal casting process.

Robert Park, General Manager of Morgan Advanced Materials' Certech business, which is behind the innovation, explained: "As a business, our success is built on working closely with

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customers throughout each stage of the development and production process to deliver solutions which respond to their unique commercial challenges. In this case, the development of our proprietary advanced ceramic materials P-57 and P-59 offer us superior performance in a number of areas, allowing us to facilitate the casting of design features that have previously been very difficult to achieve. With P-57 and P-59, our customers can now create smoother and more intricate shapes than ever before.”

For further information, please visit: <http://www.morgantechnicalceramics.com/P57-P59>

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About Morgan Advanced Materials

Morgan Advanced Materials is a global materials engineering company which designs and manufactures a wide range of high specification products with extraordinary properties, across multiple sectors and geographies.

From an extensive range of advanced materials we produce components, assemblies and systems that deliver significantly enhanced performance for our customers’ products and processes. Our engineered solutions are produced to very high tolerances and many are designed for use in extreme environments.

The Company thrives on breakthrough innovation. Our materials scientists and applications engineers work in close collaboration with customers to create outstanding, highly differentiated products that perform more efficiently, more reliably and for longer.

Morgan Advanced Materials has a global presence with over 10,000 employees across 50 countries serving specialist markets in the energy, transport, healthcare, electronics, petrochemical and industrial sectors. It is listed on the London Stock Exchange in the engineering sector.

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