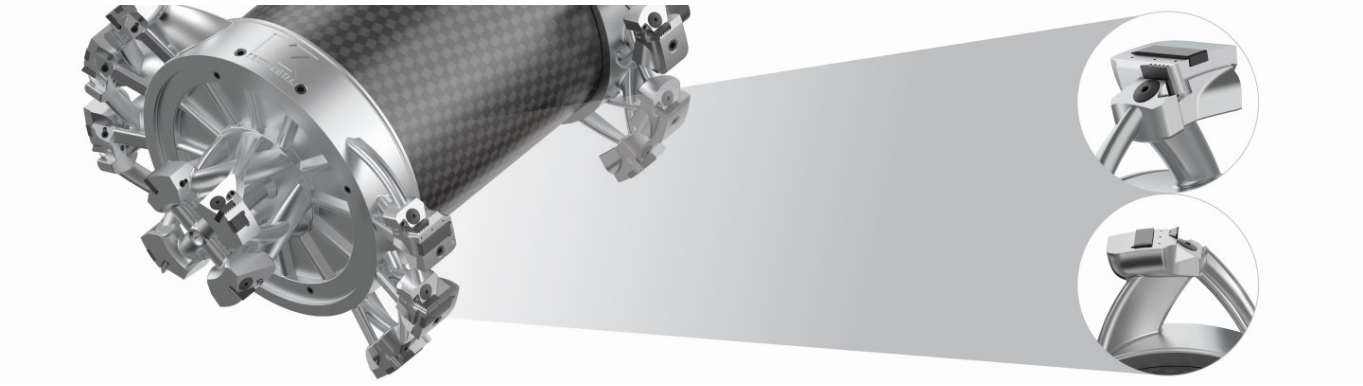

Automotive

Kennametal Introduces Lightest Weight Version of Electric Vehicle Tooling Solution Saving Set-up and Machining Time

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Award winning 3D printed stator bore tool weighs just 7kg, ensuring fast tool changes and spin-up on machining centers

Kennametal has introduced its next generation 3D printed stator bore tool for the machining of aluminum engine housings for electric vehicles. This latest version of the tool features a newly designed arm structure, a larger center tube made of carbon fiber, and a further weight reduction of greater than 20 percent over the original design. The complex tool is capable of machining three large diameters in just one operation, saving set-up time and machining time for automotive component manufacturers and delivering the highest accuracy and surface qualities.

The 3D printed stator bore tool with carbon fiber body weighs 7.3kg.

The newly redesigned tool recently won MM MaschinenMarkt's Best of Industry Award in the Production and Manufacturing category based on votes by readers and industry experts.

As Kennametal's automotive customers expand their offerings of hybrid and electric vehicles, the company continues to respond to their need for lighter weight tooling solutions. By leveraging advanced manufacturing techniques like 3D printing, Kennametal has reduced weight a further 20 percent over the first-generation tool, while improving chip control and increasing tool rigidity—innovations that help their customers machine faster and more efficiently, says Ingo Grillenberger, Product Manager, Kennametal.

Machining three diameters in one operation, the stator bore tool ensures the alignment and concentricity of the machined surfaces whilst reducing the cycle time significantly. The lightweight 3D printed combination tool enables a faster tool change and spin-up even on less powerful machines. The surface specifications and component tolerances are achieved without constraints.

The tool features airfoil shaped arms with through coolant and RIQ reaming technology. Complex internal and external features are enabled by additive manufacturing.

Hassle-free chip removal is ensured by means of airfoil shaped arms that are through coolant featured to ensure precise and powerful coolant supply to the cutting edges and guide pads. This would be difficult or impossible to economically produce with traditional manufacturing, but 3D printing enables

Kennametal to realize even such complex internal features. Additionally, the Kennametal RIQ reaming system features easy diameter adjustment and a trouble-free setup of new inserts.

Design evolution: First-generation design (9.5kg) on the left, and latest tool design variants (less than 8kg) on the right for hassle free tool changing.