



Precision Tools Created with 3D Printing

Utilizing design accuracy and manufacturing flexibility to produce automotive prototypes

OVERVIEW

WKW.automotive is a global supplier to Automotive OEMs producing aluminum profiles for samples and prototypes. These design-oriented applications are critical tools within the industry as they must to be manufactured for both bending and deep drawing. Cost figures, lead times and accuracy are essential as the OEM is striving for a prototype closest to the serial production part as well as the option for these tools to be produced utilizing metals, as some plastic printed parts would not possess the strength or stiffness required. Through collaboration with Forward AM, WKW.automotive is using the extensive capabilities of 3D printed metal materials and technology to provide innovative applications and solutions to the automotive industry.

QUICK FACTS

Material:

- Ultrafuse® 17-4 PH

Technology:

- Metal Fused Filament Fabrication

Partner:



WKW.automotive is an internationally active and successful aluminum and steel processing company. For more than a century they have been providing solutions for the automobile and other industries. The many companies within the WKW group represent the widely diverse spectrum of products and expertise offered. WKW.automotive develops and builds specialty tools for this purpose that drive progress in the industry.

WKW.DE



Uniform particle distribution enhances mechanical properties



Significant cost reduction can be achieved

Challenge: Produce a tool for prototypes in an expedient and cost-effective manner with little or no overhead costs.

The principles of Additive Manufacturing (AM) brings both design expertise and innovative production technologies to the automotive industry through the accessibility of printed metal tools with the lowest total cost of ownership to the users. [Ultrafuse® 17-4 PH](#) and [Ultrafuse® Support Layer](#) are the perfect-fit materials to produce integrated shrinkage plates with qualities of hardness, strength and stiffness while also being a mechanically superior solution in comparison to plastics. Forward AM also provides expertise in Debinding and Sintering Services as well as the necessary post-processing solutions to polish critical areas of the printed tool resulting in a part that meets all tolerances and mechanical values required.

“By eliminating intensive production steps like eroding and milling, pre-serial-tools for prototypes parts can be realized faster and a significant cost reduction can be achieved. Geometric freedom for drawing-tools as well as shorter lead times for pre-serial-parts are further important advantages.”

-- Michael Hoinka, Head of Product Development WKW Engineering GmbH



Profile with drawn edges before final machining

Challenge: Ability to quickly respond to design changes needed during production of series application tools.

By utilizing AM principles, a functional pre-serial-tool assembly can be manufactured which successfully produces bent and formed aluminum prototype parts matching all the OEM requirements while also resulting in cost savings. Ultrafuse 17-4 PH offers an efficient way to create metal parts with high mechanical strength giving customers a high degree of design flexibility and freedom while significantly reducing lead time. Other advantages of this innovative metal material include geometric freedom of design and the elimination of costly production steps (such as eroding and milling).

[Learn more about more about Ultrafuse® 17-4 PH](#)