

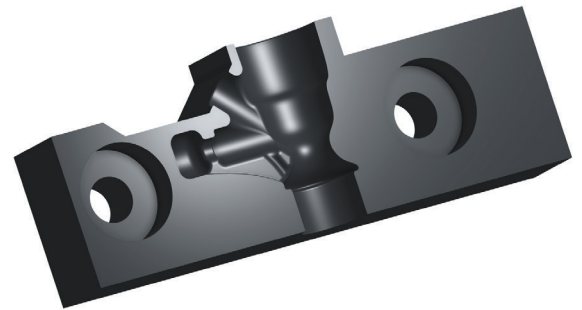
SAMPLE PART

# FUEL INJECTOR SOFTJAW

- Fuel injectors require precision-machined bores for tight seals on mating faces to prevent leaking.
- This fuel injector was designed for an SLM (selective laser melting) 3D printer to reduce complexity and mass.
- The unique part geometry makes tooling components for post machining costly and time consuming to create.
- Markforged machines allow users to print accurate, strong soft jaws for precision boring on a CNC Mill.

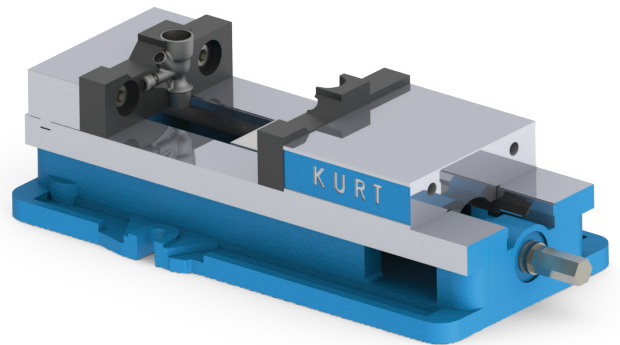
## PART FEATURES

The designer of this fuel injector utilized the advantages of Direct Metal Laser Sintering (DMLS) additive manufacturing to create a light, complex part. To hold this part for post machining, they printed an Onyx and Fiberglass part that conformed specifically to the injector's surface geometry. Onyx resists corrosive cutting oils and lubricants while continuous Fiberglass reinforcement withstands significant vice and tool forces.



## WHY MARKFORGED

Onyx is one of a few 3D printed plastics capable of withstanding the demanding environment that tools are exposed to during heavy machining. Adding continuous fiber to Onyx yields the only way to achieve a blend of tooling-appropriate strength and complex geometry. Typical machined aluminum soft jaws require expensive and difficult machining and deburring to achieve the appropriate geometry.



## INDUSTRY APPLICATIONS

The need for tools that hold parts with complex geometries spans multiple industries. 3D printing the work-holding fixtures for this category of parts allows engineers to bring their products to market cheaper and quicker than was ever possible before.

	Markforged	Standard Process	Savings
<b>PART COMPARISON</b>			
<b>Materials</b>	Onyx and Fiberglass	Aluminum	-
<b>Turnaround Time</b>	32 Hours	2 Weeks	89%
<b>Cost</b>	\$50.80	\$612.52	92%