

FDM Jigs, Fixtures and Manufacturing Tools

Overview

Jigs and fixtures used on the factory floor are typically expensive to make, come with long lead times when outsourced or require significant resources for coding and labor when made internally. These tools are usually heavy, with no regard for ergonomics and the impact on the user. As a consequence, they are limited to only what's essential to get the job done.

3D printed (additively manufactured) tooling is a transformative substitute, providing a lower-cost, faster means of making and deploying these tools, resulting in increased production efficiency and worker comfort and safety. Software simplifies the task of making the tools, streamlining the design-to-print workflow.

Application Detail

3D printing provides a faster and less costly alternative to traditionally fabricated tooling, offering several key benefits:

Reduced Cost – After the cost of printer, only the amount of material needed to make the tool is required. That's in contrast to machined tools, where much of the material is wasted. 3D printing is essentially labor-free too, offsetting the cost of skilled machining labor.

Reduced Lead Time - 3D printed tools avoid the delays associated with outsourcing or the constraints of using an internal machine shop. This is particularly helpful in reducing production downtime caused by the need to replace a broken or missing tool. Design changes are quickly handled by changing the CAD file and printing another version of the tool.

Design Freedom - 3D printing offers the freedom of customization. You can vary the material density as needed, using more at key stress points and less in non-stressed locations. The result is a lighter tool that's easier to use and manipulate, reducing the risk of repetitive motion injuries from heavy, bulky tools.

Light but Strong Materials – 3D printed jigs and fixtures made with industrial grade FDM® thermoplastics are lighter, easier to handle and faster to produce than metal tools. High-performance thermoplastics reinforced with carbon fiber and high-strength versions of PEKK provide the strength and rigidity when it's needed.

Simple and Fast Workflow – GrabCAD Print™ file processing software makes it easy to import the CAD model of your tool and print it out. There's no need for time-consuming file preparation or G-coding inherent with traditionally machined tools.

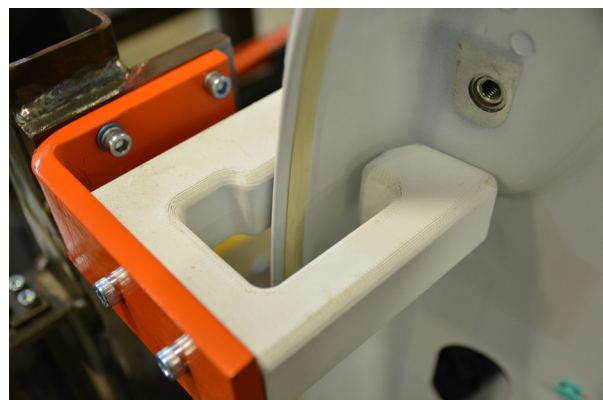
Combined, these benefits make it easier and faster to deploy more tools across the factory floor, where they can provide greater influence toward improving production efficiency.

Application is a Best Fit When:

- Fast turnaround needed for new and replacement tooling
- Customization is desired for ergonomic and/or functional purposes
- Tooling that doesn't require the properties of metal

Benefits Over Traditional Methods:

- Lower cost
- Faster tool creation and deployment
- Highly customizable
- Streamlined workflow – no G-coding required

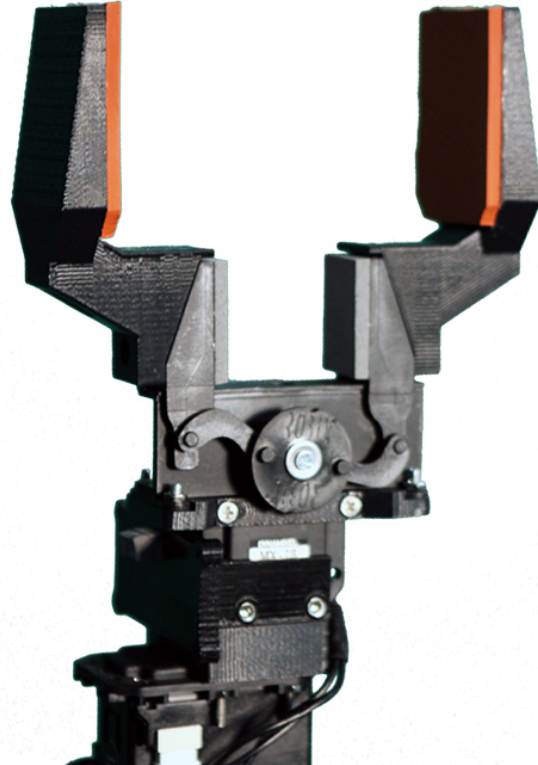


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Typical Factory Floor Applications

3D printed tools can be deployed virtually anywhere in the production environment:

Function	Tools
Production and Assembly Tools	<ul style="list-style-type: none"> • Assembly and machining fixtures • Holding devices • Alignment tools • End effectors • Masking devices
Quality Control and Inspection	<ul style="list-style-type: none"> • CMM fixtures • Text fixtures • Go-no-go gauges • Surrogate parts
Packaging and Logistics	<ul style="list-style-type: none"> • Tool guards • Dunnage trays • Kitting boxes • Thermoforming molds
Health and Safety	<ul style="list-style-type: none"> • Hand/wrist guards • Holding devices • Bumpers and guards • Ergonomic conversions



Make factory floor tooling an easier, faster, and less costly endeavor with 3D printing. To see just how simple it is to go from CAD model to a printed tool, download GrabCAD Print, our free file processing software.

Try GrabCAD Print

<https://grabcad.com/print>

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