



Additive manufacturing breathes new life into musical instrument production

World-renowned clarinet technician and authority Walter Grabner founded ClarinetXpress more than twenty years ago to bring professional-grade clarinet mouthpieces to musicians all over the world. His mouthpieces have made music on every continent (except Antarctica) in venues like Carnegie Hall and the Sydney Opera House. For years, ClarinetXpress products were made by a skilled machinist in Germany. When this manufacturing partner decided to retire, ClarinetXpress needed to quickly find another way to make their mouthpieces.

They tried other CNC providers first, but they took too long to deliver prototypes and none could produce the quality needed. That's when ClarinetXpress decided to try additive manufacturing.

Their first attempt at 3D printing didn't produce acceptable results, so they turned to Fast Radius. By taking advantage of Fast Radius' design expertise and the unique benefits of additive manufacturing, ClarinetXpress improved its design, manufacturing, and fulfillment processes.

Engineering expertise and rapid prototyping

ClarinetXpress tried other 3D printing companies, but the resulting mouthpieces did not look or feel smooth enough. Determined to find a better solution, the application engineers at Fast Radius sat down with Grabner to understand his performance and aesthetic requirements. They determined that [Rigid Polyurethane \(RPU 70\)](#) printed on [Carbon® Digital Light Synthesis™ \(DLS™\)](#) technology would give the mouthpieces the right look, feel, and sound.

ClarinetXpress and Fast Radius went through several rounds of rapid prototyping within a few weeks. Making a single prototype with their former supplier would have taken at least a month. At each step in the process, the Fast Radius team helped Clarinet Xpress optimize their designs to print effectively with Carbon technology.

Now that ClarinetXpress has gotten familiar with the process of [designing for additive manufacturing](#), they can prototype even faster. They simply submit designs for new mouthpieces to Fast Radius and receives the parts in a few days.

“The capacity to produce prototypes quickly is invaluable to me,” said Grabner, CEO and Founder of ClarinetXpress. “Being able to make quick changes and alterations to my mouthpieces has allowed me to deliver an exceptional product to my customers.” Further, the prototypes are made exactly the same way as production parts, so ClarinetXpress knows the end products will perform as expected.



Additive benefits

In addition to rapid prototyping, ClarinetXpress was able to take advantage of other key benefits additive manufacturing offers.

RELIABILITY AND REPEATABILITY

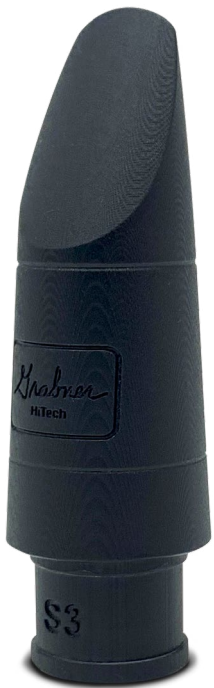
Even the tiniest variation in a mouthpiece can alter the sound of the clarinet drastically. Mouthpieces need to meet precise specifications to achieve the quality and pitch demanded by elite musicians. With additive manufacturing, ClarinetXpress produces parts that meet these requirements, down to one hundredth of a millimeter in some cases. This makes more uniform products than ClarinetXpress achieved with CNC because Carbon DLS technology uses the same digital design to make identical parts every time. If ClarinetXpress ever needs to find a new Carbon DLS supplier, they can be confident that the mouthpieces will print identically.

CUSTOMIZATION

ClarinetXpress can customize their products much more easily with additive manufacturing. With CNC, each mouthpiece had to be stamped or hand engraved with their logo after it was fabricated. With additive, ClarinetXpress prints the logo right on the part, eliminating the headache and cost of managing another step in the production process.

LOW-VOLUME PRODUCTION AND THE VIRTUAL WAREHOUSE™

When making a small number of parts, the economics of legacy manufacturing methods [don't always add up](#). ClarinetXpress frequently needs a relatively low volume of mouthpieces, comprising several different types and sizes. Where legacy processes would likely require them to order a large minimum number of each mouthpiece, additive allows them to order only as many as needed, without incurring extra cost. Plus, Carbon DLS technology allows Fast Radius to maximize efficiency by making several different mouthpiece models in a single print. This approach creates a Virtual Warehouse™ for ClarinetXpress; instead of ordering mouthpieces in bulk and storing them, they can now place orders for small batches to meet immediate demand.



Improving products with additive manufacturing

Losing a trusted supplier might have had a major impact on the quality and delivery of ClarinetXpress mouthpieces. Luckily, Fast Radius stepped in and implemented a long-term solution for quickly and reliably producing high-quality parts using Carbon DLS technology. Business is booming for ClarinetXpress, and customers couldn't be happier with the final product. Professional musicians from all over the world have [left testimonials](#) on the ClarinetXpress website praising the sound quality and tone the mouthpieces produce, with a handful even claiming it's the best mouthpiece they've ever used.

Ready to improve the way you make your products with additive manufacturing?

[Contact](#) the Fast Radius team today.

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