



3D Printing Musical Instruments - Perfecting Sound and Style with Fliphead's Flute Mouthpiece



Industry

Musical instruments



Material

EOS PA 2200 – Polyamide 12, printed with SLS (Selective Laser Sintering).

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amtechnologies.com // fliphead.net // 1zu1prototypen.com

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Fliphead, in collaboration with 1zu1 (part of the Prototal Group), reimagined how wind instruments can be played by creating a unique 3D-printed mouthpiece that lets flutists play their c-flute with the relaxed posture of a saxophone and the tonal expressiveness of an Irish low flute. To deliver the right combination of sound quality, hygiene, and visual appeal, achieving a good surface finish was essential.

About the Application

Fliphead, in collaboration with 1zu1, designed and manufactured an SLS 3D-printed mouthpiece, enabling flutists to play the flute vertically with an easy to learn tone production known from Irish low flutes.

To achieve optimal sound quality, meet hygiene standards, and convince with aesthetics, only the best surface finish and precision manufacturing methods could be used.

Challenge & Solution

Initial prototypes, made using LCD printing, lacked consistency and scalability. At the same time, surface texture issues affected acoustic performance and hygiene, limiting suitability for end-use production.

Switching to SLS 3D printing enabled high-quality part replication, while AMT PostPro vapor smoothing created a sealed and smooth surface that met hygiene expectations. This combination unlocked production at scale.



Mouthpiece after PostPro Vapor Smoothing

The Difference Made by PostPro Vapor Smoothing

For a product worn on the mouth, surface quality wasn't optional. It was fundamental to hygiene, comfort, and acoustics. To meet these demands, AMT PostPro vapor smoothing was integrated into the production process, delivering these key advantages:

- **Optimized sound quality:** A smooth internal surface improves airflow and resonance.
- **Hygienic surface:** A sealed finish simplifies cleaning and ensures safe, repeatable use.
- **Improved aesthetics:** The surface looks and feels better, improving the musician's experience.
- **Scalable production:** Enables consistent quality across large-volume manufacturing.

Conclusion

Fliphead successfully scaled their product from prototype to mass production after integrating vapor smoothing into their workflow.

The combination of 3D printing and advanced post-processing methods ensured high quality, repeatable results, and scalability, thereby setting a new benchmark for musical instrument manufacturing.

Advantages of Vapor Smoothing for Manufacturing Musical Instruments

- ✓ Enabled serial production with consistent quality
- ✓ Hygienic & aesthetically refined surfaces that look and feel good
- ✓ Enhanced sound performance for a better playing experience





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