

## Breakthrough Solutions

UPSA Spurs  
Pharmaceutical  
Manufacturing  
Innovation With  
3D Printing

“

We've used [3D printing] for tooling new and replacement parts, improving the factory line, and creating custom-made parts and functional prototypes to accelerate the decision-making process. Its immediate and positive impact is reflected in the fact that in the first year of integrating the machine, we more than made a return on our investment.”

Mathieu Dumora  
UPSA





3D printed vacuum nozzle for the removal of any contaminating particles, produced using the Fortus 450mc 3D Printer.

UPSA, a pharmaceutical manufacturer producing more than 340 million boxes of tablets annually, owes its success to a remarkable family of doctors. In 1935, Dr. Camille Bru established UPSA (the Union de Pharmacologie Scientifique Appliquée) in France after discovering certain medicines are more effective when taken with sparkling water. This finding led to the development of effervescent remedies, a turning point in pharmaceutical research and production.

UPSA is now owned by Bristol-Myers Squibb, but as Mathieu Dumora, a technical and infrastructure project manager, explained, the company continues to build on its traditions.

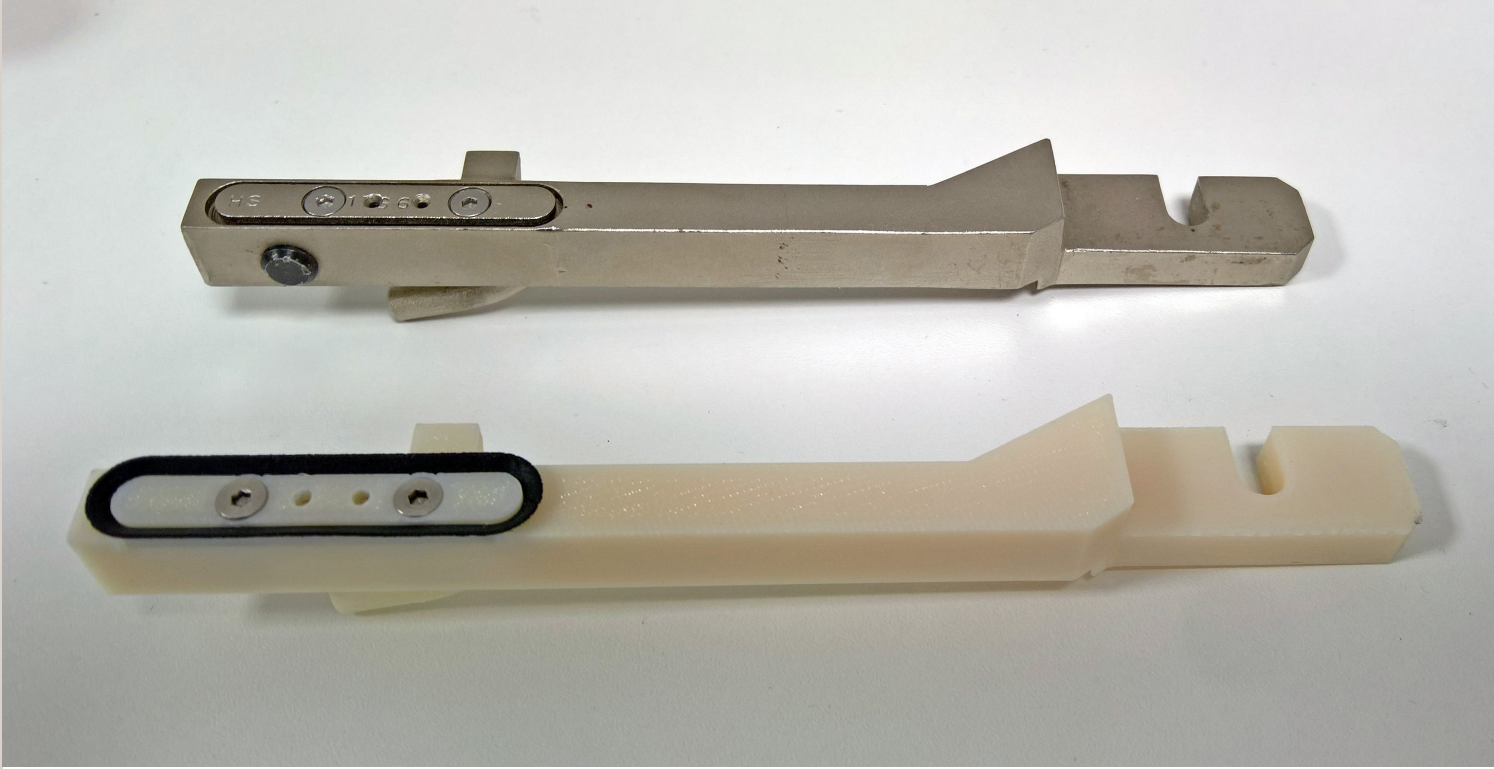
“Several years ago, we realized all our expertise lay in the hands of a few longstanding technicians,” said Dumora. “With fewer young people learning the necessary skills, we had to find a new approach to our tooling and our in-house workshop. We were also limited in the type of parts we could make ourselves with our traditional production technologies.”

UPSA regularly monitors developments in technology in order to identify what could make a difference to their business. After investigating 3D printing and additive manufacturing, UPSA estimated they could easily save on manufacturing costs and reduce their stock of parts by adopting the technology.

“We realized that by using 3D printed parts, we could reduce part weight by 70%, which would reduce machine wear and tear, and have a big impact on productivity and machine longevity,” said Dumora.

According to Dumora, the addition of FDM® technology and the Fortus 450mc™ not only revitalized their in-house workshop, but also stimulated creative thought throughout the company. “There were those at UPSA who didn’t even know we had a workshop,” he explained. “Now, people from all departments are suggesting ideas, as well as coming to us with one-off problems to solve.”





UPSA is making 95% cost-savings on just one part alone by replacing cast steel arms with high-performance 3D printed arms using ABS-M30i 3D printing material.

## 95% Cost Savings With Just One Part

After adopting 3D printing, replacing critical parts on the machines was a priority, and the Fortus 450mc soon showed its capabilities. UPSA develops pharmaceuticals, and also manufactures and packages them. One piece of manufacturing equipment uses a heavy cast steel arm to grip and suction a carton in order to insert blister packs.

“These arms were heavy, could become distorted, and sometimes fail and break the machine,” Dumora explained. “Using a 3D printed arm is safer, the ABS-M30i™ 3D printing material can recover if it distorts, but if it breaks, it’s a minimal cost and a short printing time to replace. That’s a huge improvement over a costly steel one. In one year alone, we produced 55 of these parts and made a 95% cost-saving on each.”

### Additive Manufacturing Replaces Time-Consuming, Expensive Inspections

UPSA also 3D printed a device to improve the safety of the closure caps for its Efferalgan (paracetamol) for children. Caps from the supplier had particles that could inadvertently pose a contamination risk to the medication. Expensive and time-consuming visual monitoring was instituted at both UPSA and the supplier’s site.

“We created a team from the quality, maintenance and production departments, and developed a special system that sucks and blows air to remove any particles,” said Dumora. “We tested the air suctioned, and even placed particles in caps to test efficacy. Additive manufacturing enabled us to make this solution ourselves and evolve it through development iterations quickly and cost-effectively. We were able to discontinue the visual inspections that were time-consuming and expensive.”

# Huge Savings With 3D Printed Camera Mounts

Another example of creative design and practicality was building camera mounts on the production line. UPSA applies track-and-trace coding to its packaging and to ensure these vital marks are properly printed, a camera is mounted above each one. One of UPSA's design engineers used the Fortus 450mc to create the shape, and 3D printed 22 units, one for each machine. Prior to this innovation, 27 parts were needed for assembly. The new design has only two, representing a significant reduction in production time and cost.

"We've extended our use of the Fortus 450mc over the time we've had it," explained Dumora. "We've used it for tooling new and replacement parts, improving the factory line, and creating custom-made parts and functional prototypes to accelerate the decision-making process. In fact, its immediate and positive impact is reflected in the fact that in the first year of integrating the machine, we more than made a return on our investment."

"Our 3D printer is reliable and easy to use. I was stunned to see that a machine that constantly works, actually works flawlessly and produces perfectly finished parts. At first, we were slightly hesitant to use it for high-volume jobs until it had demonstrated its technical reliability and consistency. However, it's proven to be a workhorse, printing around the clock for up to 15 days, and the results are phenomenal," Dumora said.

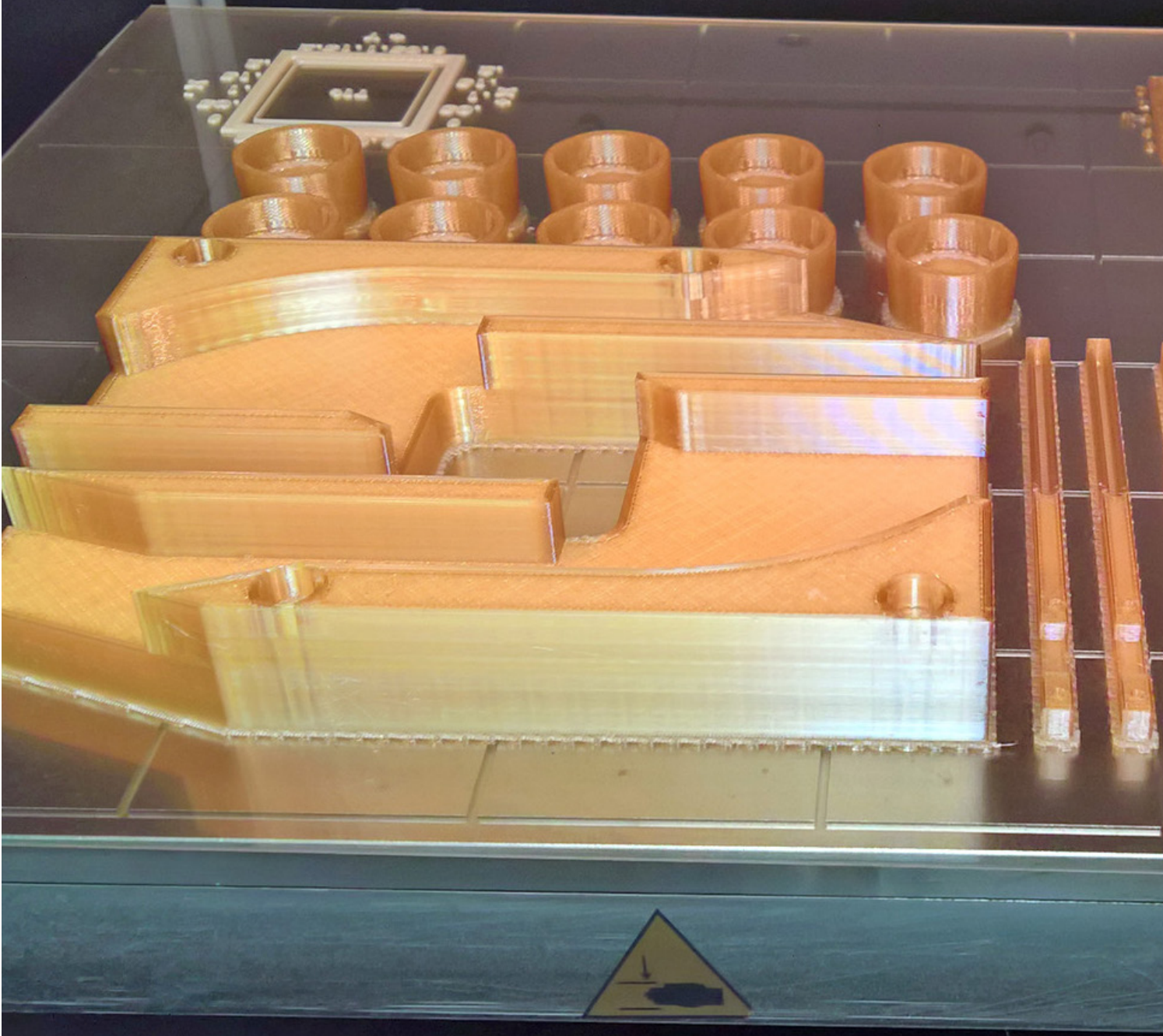


Frédéric Tremoulet, 3D Printer Manager and Mathieu Dumora, UPSA Project Manager, 3D print production tools for the camera mounts.

## USPA Assembly Tooling Savings

Parts	Cost
70% less weight	95% cost savings



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