



CUSTOMER SPOTLIGHT

 **voxeljet**



THE SITUATION

Voxeljet stands at the leading edge of the industrialization of additive manufacturing for the high-performance enterprise sector. And for Voxeljet, that edge requires a smooth finish.

With decades of experience in investment casting, Voxeljet created a 3D printed mold of a turbo housing. Voxeljet recognized that scaling its business to the world stage required a smoother surface finish on their patterns, especially for more demanding applications. A phone call to PostProcess Technologies put the wheels in motion.

THE OPPORTUNITY

Historically, patterned metal casting prototypes were created using a tool to mold the wax patterns. The cost and lead time to build this tooling limited the scope and scale of new products using investment castings. The process is expensive, cumbersome, and makes the normal design iteration process prohibitively expensive and time consuming. 3D printing solved this, enabling the creation of investment casting prototypes without the use of tooling. While still expensive, they're much cheaper and faster than traditional tooling.

Voxeljet recognized this as a doorway to new opportunities: The speed of Voxeljet 3D printers now makes it viable to use printed patterns for much higher numbers of castings, moving beyond prototype castings and into low volume production. But there was still one problem to solve.

“There is no question that this provides us with a competitive advantage. It will improve the quality of our patterns, reduce the cost and increase our throughput. Any one of them is good. All three is terrific.”

*Tom Mueller
then Director,
North American Castings
Voxeljet*



Voxeljet Printer Turbo Casting

THE PROBLEM

All printed patterns require some manual labor to prepare them for use – removing supports, sealing the surface or smoothing the surface. **The amount of manual finishing labor may be as much as several hours.** For Voxeljet patterns, this includes an unpacking process (where the pattern is removed from the block of powder after the build); removing unbound powder adhering to the outside of the pattern; and infiltrating the pattern with wax to seal and smooth the surface of the pattern.

In addition to increasing cost, this type of detailed finish work bottlenecked the production process. In short, it limited the market opportunity for printed patterns because of the expense and time to produce them. To scale the business, labor had to be reduced and throughput increased.

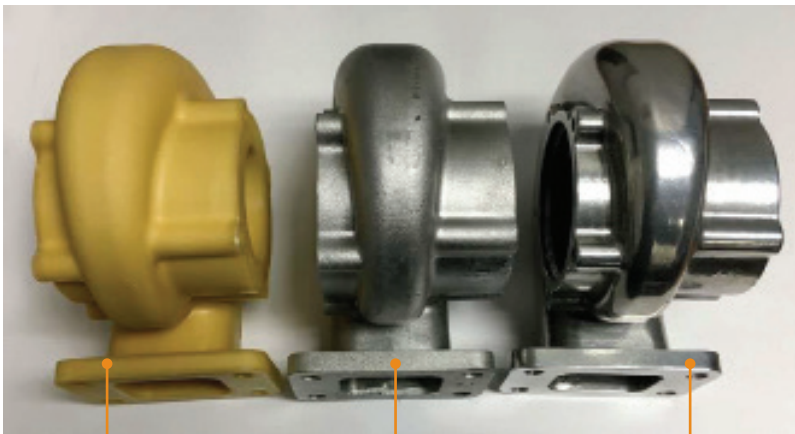
Detailed patterns requiring post processing



THE POSTPROCESS SOLUTION

PostProcess Technologies was established specifically to solve “the problem after the print”. According to Tom Mueller, Director Casting, North America at Voxeljet, PostProcess helped Voxeljet:

- Improve surface finish for complex patterns, enabling qualification for jobs with more demanding requirements
- Lower labor rates, decreasing cost / unit
- Improve throughput to 100+ patterns a day



Step 1: 3D printed pattern was processed in CENTI Rectangular machine for 15 minutes

Step 2: Pattern in Step 1 was used to cast Aluminum casting

Step 3: Casting from Step 2 was processed in CENTI Rectangular machine for 120 minutes

OPERATING TIME: 135 MIN
TECHNICIAN ATTENDANCE: 2 MIN
RINSE TIME: 2 MIN



No Discernable Pattern Out of Aluminum Casting



PostProcess Surface Finishing Reveals Intricate Pattern

Imagine having six more full-time employees.

“With PostProcess, we can now process 100 patterned pieces a day. This was previously unthinkable as it was just too time consuming (and therefore costly).

PostProcess cut the finishing time by 30 minutes per application. At full run rate of 500 patterned pieces a week, this saves 13,000 hours of finishing time annually – the full-time work of over six employees.”

AUTOMATED.
INTELLIGENT.
COMPREHENSIVE.



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