



**ADDITIVE
MANUFACTURING
TECHNOLOGIES**



WEST COAST INDUSTRIES SAVES TIME AND MONEY WHILE IMPROVING AEROSPACE TOOLING PART PERFORMANCE WITH GOPROTO'S ADDITIVE MANUFACTURING AND AMT'S POSTPRO3D SURFACE FINISHING TECHNOLOGY

West Coast Industries, an innovative aircraft and aerospace tooling manufacturing company, has been finding solutions for durable aerospace tooling for over 20 years. This case study highlights the performance enhancement achieved on a complex handle of a portable high-precision drilling machine. The revolutionary drilling technology is used to drill holes in highly loaded aircraft structures making this manufacturing task more efficient. The ergonomic pneumatic handles were 3D printed by GoProto using HP Multi Jet Fusion Technology and post-processed with GoProto's vapor smoothing technology PostPro3D by AMT. GoProto's additive manufacturing capabilities are centered around performance. The use of PostPro3D set a new record of performance for West Coast Industries and for technology like MJF which already outputs some of the best performing parts in the industry.

CHALLENGE:

The portable tool West Coast Industries uses has a 2.5 HP air motor on it and all the compressed air moves through the metal handle. The metal handle became an issue for the operator's hands due to the temperature. In addition, these tools are frequently dropped, and due to the material and shape of the handle, they became very expensive to replace. Each time a handle is broken there is also a significant amount of downtime and delays in throughput as it can take several hours or days to get replacement. The fragileness of the parts became a major issue in their production chain, so West Coast Industries was looking for a solution to replace this handle with a design and a material that met the following criteria:

- Ability to achieve complex external shape
- Ability to have complex internal geometries
- Low thermal conductivity
- Durability passing their destructive tests

SOLUTION:

West Coast Industries collaborated with GoProto, a product development and custom manufacturing firm in San Diego, California, to find a solution to produce durable parts. GoProto printed a pneumatic handle to go onto their machine using glass-filled nylon material with HP's MJF 4200 technology. This resolved the temperature issue, however, the raw part (*left part in photo*) still did not meet the impact strength requirements. GoProto then post-processed the handle using AMT's PostPro3D technology (*right part in photo*), and the parts passed the impact strength test.

MJF yields parts that are tougher than most additive processes. PostPro3D is a complimentary surface finishing technology that increases the durability of thermoplastic parts. PostPro3D does not increase the weight of parts and it allows for the retention of tight dimensional tolerance. Other unintended value-added benefits also included the improved aesthetics of the parts, the ease of cleaning and reduced costs of maintaining spare parts.





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RESULTS:

After post-processing, they put the parts through a series of impact tests. AMT demonstrates the increased durability of parts treated with PostPro3D over 3D printed raw parts. This test visibly illustrates how PostPro3D enhances the mechanical properties of parts, which is critical for many aerospace tooling applications in terms of increasing part durability.



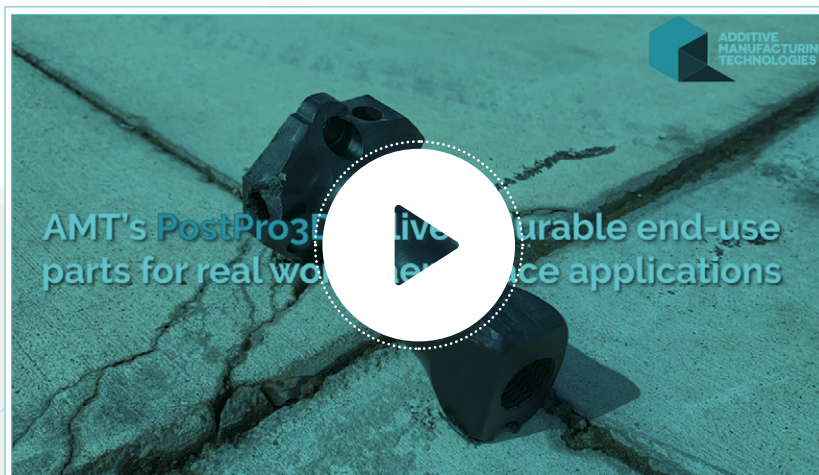
Raw part after impact test



Post-Processed part after impact test

Overall, the results were exactly the solution West Coast Industries were looking for: durable, airtight, watertight, functional, end-use parts that are produced sustainably and repeatedly, therefore reducing overall costs, and enabling their ability to scale production.

WATCH THIS VIDEO TO SEE THE IMPACT TEST RESULTS



TO LEARN MORE ABOUT HOW ADDITIVE MANUFACTURING AND POSTPRO3D CAN IMPROVE THE PERFORMANCE OF YOUR PRODUCTS AND HAVE A POSITIVE IMPACT TO YOUR BOTTOM LINE, PLEASE VISIT:

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