

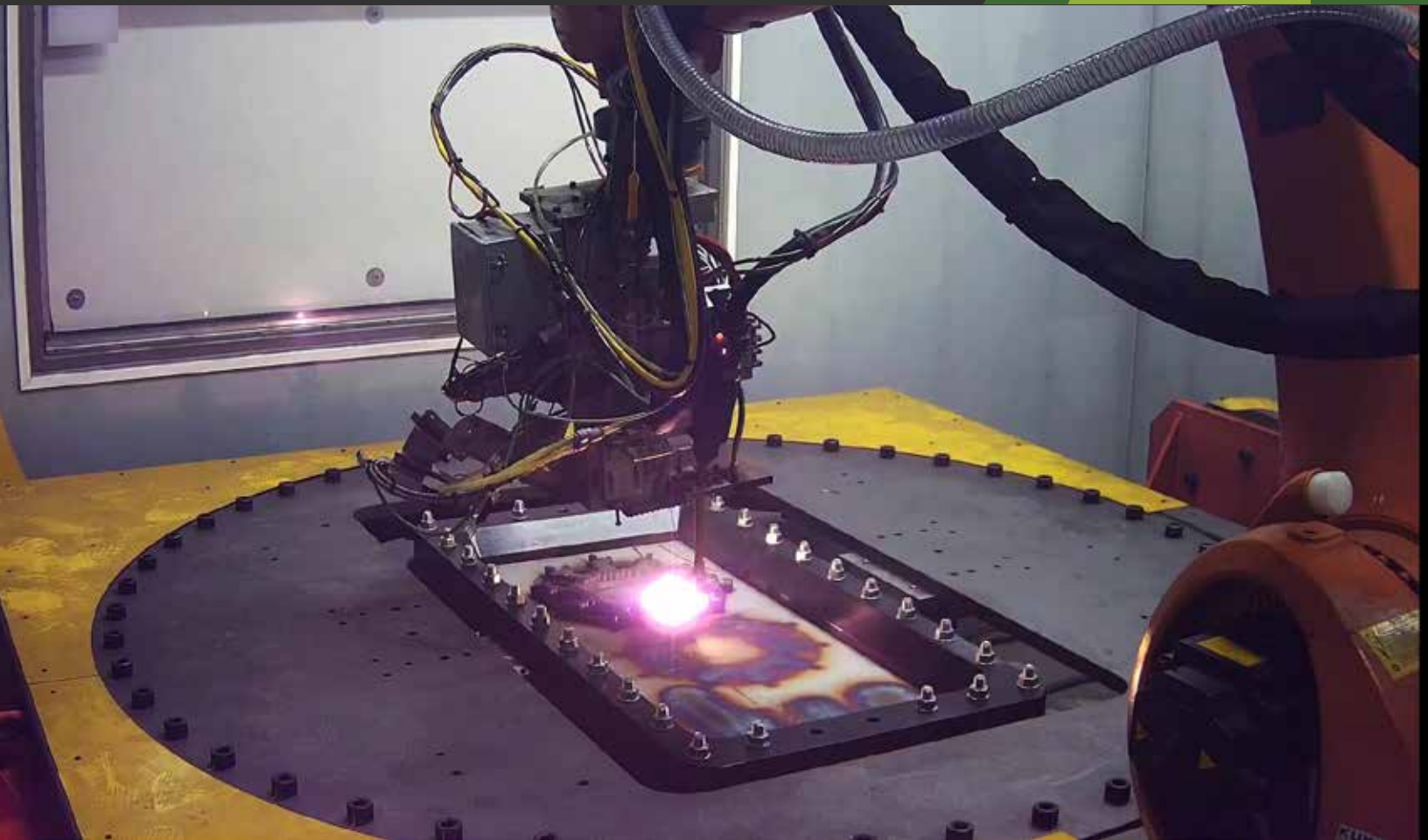


ADDERE ADDITIVE MANUFACTURING

Getting Structural Scale Metal Parts to Market Faster

How ADDere Additive Manufacturing dramatically reduced time and material costs by 3D printing large, high mass components.

CASE STUDY



Large Scale, High Mass

The ADDere printing process offers a unique capability for the right customer. Starting at scales larger than nearly all powder-based metal 3D printers, ADDere's cutting edge laser wire additive 3D printing capability allows firms to side step the expensive costs of working down a large billet of material or pursuing the process of casting to arrive at large, complex shapes.

Challenge

The customer came to ADDere Additive Manufacturing with the need for a short run of components – and within a relatively short timeline. The project involved the 3D printing of complex access covers for a highly sensitive aerospace/defense application.

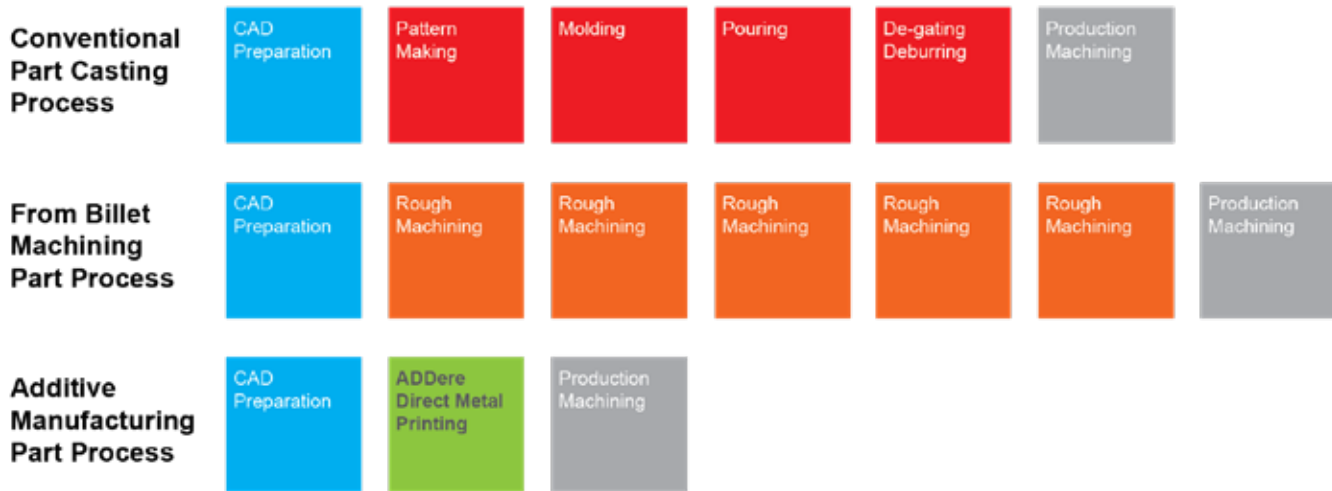
The customer couldn't use conventional manufacturing techniques for the components for a few important reasons. The turnaround time precluded the use of casting the part. On the other hand, the material specified, Ti-64, and the size of the part made the prospect of starting from a billet block prohibitively expensive. Titanium is demanding material, making it time consuming and thus expensive to machine large parts. Finally, the use of powder laser additive was out due to the size of the parts and the need for virtually zero porosity in the finished material.

Solution

Designed for large scale, high mass metal part printing, the ADDere system uses a high power laser to heat material delivered in wire form and deposit it on a compatible substrate. Using a five axis motion control system, the layers of material are built up successively until the shape is complete. ADDere's closed loop feedback system and proprietary control software is employed to monitor and adjust the process on the fly at ten times a second for optimum part quality.

Using this system, ADDere was able to print the roughly meter by meter sized component complete with structural ribbing printed on one side in less than three days for each part. Using the laser wire additive process, the parts come out of the machine in a casting grade condition that's ready for finishing, but with metallurgical quality rivalling billet materials.

Just as with cast parts, the customer will then take the printed part and perform the necessary processes to install the final tolerances needed for assembly.



Benefit

Using ADDere’s laser wire additive process from the beginning instead of conventional manufacturing processes helped the customer not only realize their timetable but helped save material costs along the way.

For this component run, that time savings turns out to be a savings counted in weeks for each part. Being able to put down large quantities of material per hour and being able to go directly from CAD file instead of interim steps typically found in casting are the cornerstones of the time savings. In terms of 3d printing performance versus only machining the parts, the time savings is estimated at almost 80% less the time needed than if starting with billet.

That speed isn’t at the cost of quality, either. The industrial grade motion control and ability to control the laser at a high level of precision during the process allows ADDere to offer nearly billet grade deposition quality that meets the customers’ strict quality standards, as well as industry leading dimensional accuracy across extremely large builds.

With scrap prices for Titanium around an eighth the value as new billet, there was also meaningful cost savings in lost material alone. Instead, with the laser wire additive process, about 97% of material consumed goes into the part being made.

Learn More

Contact ADDere today to learn how its laser wire additive process can speed your short run, high mass part production processes today.



ADDere ADDITIVE MANUFACTURING

W238N1800 Rockwood Dr.

Waukesha, WI 53188

414.327.0000

www.ADDere.com