



SCAN TO VIEW THE DIGITAL VERSION
ON THE XACT METAL WEBSITE



ALTERNATIVE TO CASTING

An Industrial Case Study for Metal 3D Printing





The Customer

KSK Precise Motion, an engineering company from Kurim, Czechia, has been producing and distributing ball screws, among other precision components, around the world for 50 years. With 120 employees involved in the production of ball screws, which are used in a wide range of industrial areas, such as machine tools and injection molding machines, as well as in the automation and energy sectors, [KSK Precise Motion](#) is a globally sought-after partner for machine and equipment manufacturers. When **they approached Xact Metal with a request for 3D printed end parts for a specific nut for a ball screw**, we knew it was an exciting opportunity for us to collaborate with a respected industry leader.

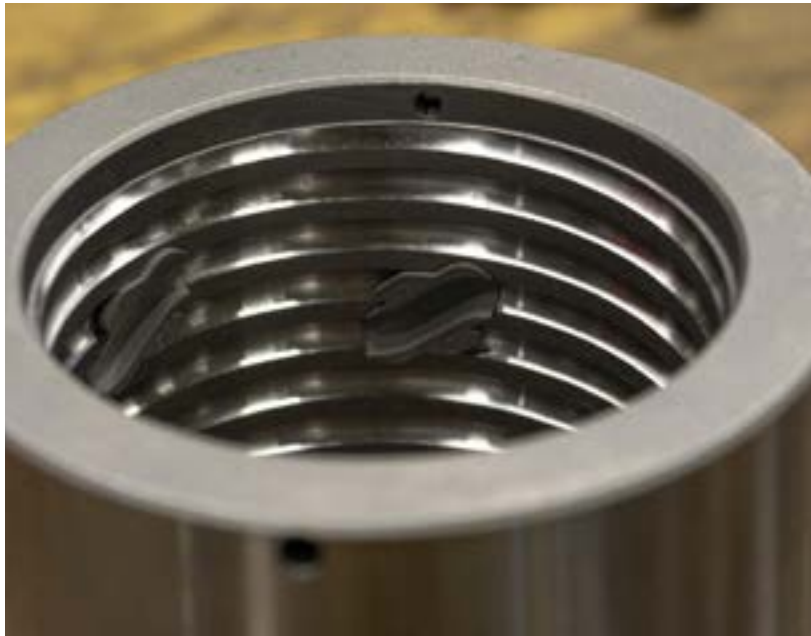
The Project

The company's goal was to optimize production speed, and they had three requirements for any 3D printed components to be accepted into their production. **The first requirement was that the converter prints have highly accurate part geometry. A secondary, but no less important requirement, was that the quality of all parts must be repeatable. The solution also required the capacity for a large build volume so many copies could be printed at once and delivered in a short time.**

The project began by optimizing the converter geometries for 3D metal printing using powder bed fusion technology. Following design iterations to meet the part requirements, the ball screw converters were printed using 316L stainless steel- a construction material with resistance to corrosion and mechanical stress. The suitable device for this project was a metal 3D printer from [Xact Metal](#).



KSK Precise Motion required the final solution to have a large enough capacity for many copies to be printed at once and reliable enough to have repeatable results.



(Above: The custom converter in place after assembly.) It was required by KSK that the printed parts must have highly accurate path geometry to achieve the designed result.

The Solution

Metal 3D printing allowed the manufacturer to produce complicated shapes which are very difficult to machine, if not impossible, and is more cost effective than casting for these small quantities.

Once printed, the converters were immediately handed over for final assembly of the ball screws. **The printed converters were determined to be a suitable alternative for KSK Precise Motion when dealing with non-standard or low-volume orders.**

Thanks to the success of metal 3D printing in this project, KSK Precise Motion has expanded its portfolio of used ball converters. This expansion would not have been possible if it was not for the cost savings from metal 3D printing compared to the traditional machining. **This project is a testament to the collaboration between established industry and emerging technology.** Xact Metal was able to work closely with KSK Precise Motion to create a solution that met their specific needs and allowed them to optimize their production speed. Together Xact Metal and [Additive Systems](#), the Xact Metal sales partner in Czechia, are proud to have been a part of this success story and look forward to continued collaboration with KSK Precise Motion and other industry leaders.



Printed converters are thus a suitable alternative for KSK Precise Motion compared to cast converters when dealing with non-standard or low-volume orders.