

CASE STUDY

Endoscopic Device Parts



A 2016 Grand Prize Winner in the Medical & Dental category.

Process:
Metal injection molding

Materials:
MIM 17-4 and MIM 420

End Use and Function

This component is an endoscopic device parts—four stainless steel metal injection molded (MIM) components comprised of an articulation lock bar, articulation connector, articulation drive block, and knife guide—used in an articulating endoscopic surgical device designed specifically for thoracic surgery. Challenges addressed in the development of this component included complex geometry.

Fabrication

All the parts feature complex 3D geometry, especially the features on the articulation connector, that would be extremely difficult to machine. This powder metallurgy (PM) part is much smaller than the existing device, which lead to smaller tolerance and variation

allowance with finer attention to detail. Only a small amount of machining was used during component creation. All other parts were made to net shape with print dimensions met using no secondary operations.

Results

These are designed-for-PM parts, saving an estimated 70% over machining them. The ability of the MIM process to produce parts of different alloys with tight tolerances enabled the design of a smaller endoscopic device, a critical benefit in thoracic surgery.



PickPM is a resource created by the Metal Powder Industries Federation, a trade association for the metal powder industry, for the benefit of the metal powder industry. To learn more about powder metallurgy, or to find a part fabricator, visit us at PickPM.com