

CASE STUDY



2026 Grand Prize winner in the Medical/Dental category for MIM components

Vessel Sealing Device

Process:

Metal Injection Molding (MIM)

Material:

MIM-17-4 PH stainless steel, H900 condition

Density:

7.65-7.69 g/cm³ minimum

Five MIM components

360-degree articulation

End Use and Function

The eight-level valve handle is designed for fluid-transfer applications where full flow, fluid compatibility, leak resistance, and operational safety are essential.

Fabrication

A proprietary multi-punch assembly and engineered powder displacement produce a blank close to final shape. Optimized copper infiltration eliminates leak paths, and secondary machining creates radial and side features with the required finish. Interchangeable tooling inserts provide built-in lot identification.

Results

The all-metal PM design is fully leakproof at the specified pressure and reduces the risk of hose torsion and leakage. Converting from a machined casting reduces finishing requirements, incorporates a previously machined feature, and supports lower cost, lead time, and transportation impact.



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](https://www.PickPM.com)