CASE STUDY

A 2016 Award of Distinction winner in the Medical & Dental category.

Tungsten Electrode

Process:
Metal injection molding

End Use and Function
This metal injection molding (MIM) tungsten electrode is used in a surgical ablation device that uses high temperature for the removal of tissue. The use of tungsten enables the electrode to reach its operating/effective temperature more efficiently and maintain it for a longer time than with other alloys.

Fabrication
The performance attributes for this medical device application resulted in a compound component design that is extremely complex due to its small geometry and minute features. As a result of innovated tooling and thermal processing techniques, minimal secondary processing was required to bring the component to its final geometry. The part is manufactured from a proprietary tungsten alloy.

Results
Using metal injection molding in combination with tungsten produced significant cost savings for manufacturing, as well as for the patient and hospital. Using tungsten allows the surgeon to reduce the number of replacement "tips" during a procedure thus reducing the amount of time to perform the surgery.

Tungsten material cost is not trivial and the amount of material wasted during a machining/removal process as compared to the final shape after machining is greater than 50%.