

## CASE STUDY



A 2013 Award of Distinction winner in the Hardware & Appliances category.

### Inside Hub Adapter

**Process:**  
Conventional powder metallurgy

**Secondary Processes:**  
Plating

**Density:**  
7.7 g/cm<sup>3</sup>

**Tensile Strength:**  
95,000 psi

**Hardness:**  
90 HRB

### End Use and Function

This component is an inside hub adapter used in modern, high-end electronic commercial and residential door-lock systems including the latest touch-screen devices. These systems are typically used in hospitals, schools, hotels, and government buildings.

### Fabrication

The copper-infiltrated powder metallurgy steel part has seven functional levels that are pressed using three upper punches, two separate shelf levels, and two lower punches, with a proprietary triple upper actuating mechanism used to achieve extensive powder transfers and fill compensation. The adapter is pressed to net shape with plating as the only secondary operation performed. Properties include

7.7 g/cm<sup>3</sup> density, 95,000 psi ultimate tensile strength, 8% elongation, 100 ft. per lb., unnotched Charpy impact energy, and 90 HRB hardness.

### Results

Aggressive PM part design yielded 40% savings over alternative fabrication methods.



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](http://PickPM.com)