

## A component journey

# A twist to resist – Bimetallic extrusion screw

Plastic extrusion technology is used to create a huge number of everyday items for industries such as plastics, pharmaceuticals and food. The equipment used to compound the polymer feedstock, such as extrusion screws and barrels, must be highly resistant to brittleness, wear and abrasion. Parts produced from monolithic materials cannot be optimised to produce the desired specification so the use of bimetallic parts produced by hot isostatic pressing (HIP) and powder metallurgy overcomes this limitation by bonding a high wear and abrasion resistant powder alloy onto a tough substrate.



The extruder screw begins life as a forged steel bar.



**B**

An empty cylindrical steel capsule is manufactured. The steel bar is placed into the centre and the free volume is filled with metal powder.



**B**

The capsule is HIPed to fully densify the powder metal and bond the steel bar creating a coating.



**B**

The bar requires cladding to add a layer of wear-resistant material. This material will be produced from high quality steel powder.



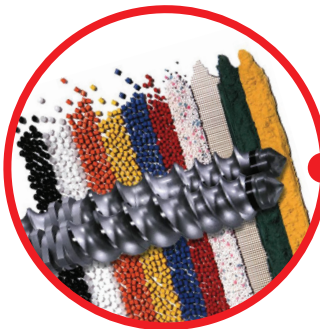
**B**

The outer profile is machined to the final shape and dimensional tolerances.

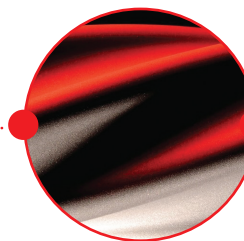


**B**

The finished screw is hardened and tempered using a thermal cycle engineered to allow the material to retain toughness whilst allowing optimum hardness characteristics in the (clad) surface.



End application,  
**plastic extrusion equipment.**



**B**

K-Tech coating applied for increased wear resistance, corrosion protection, and anti-galling.

**B** Denotes the parts of the component journey undertaken by Bodycote