

## A TWIST TO RESIST

### BI-METALLIC 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 bi-metallic 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 forged steel bar.



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



The capsule is HIPed using high temperature and pressure, fully densifying the powder metal and bonding it to the steel bar, creating a coating (cladding).



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



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



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.

### BODYCOTE COMPONENT JOURNEYS

This is just one example of how Bodycote brings together the huge wealth of knowledge and expertise from across the Group to provide the vital engineering services our customers need.

For more component journeys visit [www.bodycote.com](http://www.bodycote.com)

The Bodycote 'B' next to a component journey stage shows where Bodycote's vital services have been applied.