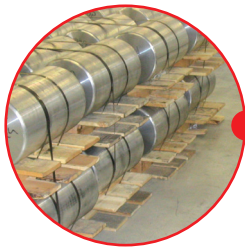


## A component journey

# The power to deliver – Aircraft turbine blades and vanes

Aircraft turbine blades and vanes must withstand extreme temperatures in operation. These materials frequently operate at temperatures approaching their melting point – heat treatment, HIP and the use of surface technology allow these blades to operate reliably at these high temperatures for extended periods of time.



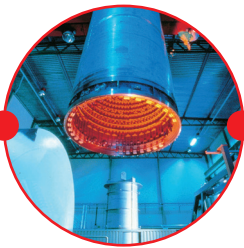
The turbine blades begin life as nickel-based superalloy ingots or billets. This superalloy gives superior strength at high working temperatures.



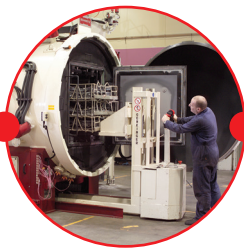
The billets are investment cast to form the blade shape and then fettled to remove casting material.



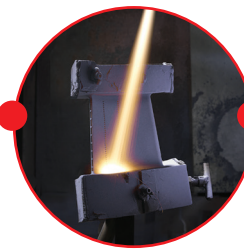
**B** Honeycomb for abrasion seals is vacuum brazed onto the vanes' main sections.



**B** The cast blades are HIPed to remove porosity and increase their creep and fatigue resistant properties.



**B** The blades are precipitation hardened to increase their strength at high temperatures.



**B** A thermally sprayed coating is applied to improve temperature resistance.



End application,  
**aircraft engine.**



**B** Finally, the blades are machined prior to their assembly as part of an engine.

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