

Hot Isostatic Press

Location : ACME building, 208

Year of CARE funding : 2005-06

Support provided by CARE Budget : 30 lakhs

**Name of Principal Investigator: Dr.J.Ramkumar jrkumar@iitk.ac.in; Tel 7546
Dr.Kamal.K.Kar kamalkk@iitk.ac.in; Tel 7687**

Participating Departments; AE, ME, MME, ChE, EE, CHM, PHY

Brief description of the process and capability of CARE facility:

Hot Isostatic Pressing (HIP) process, subjects a component to elevated temperatures and pressures eliminates internal voids and creates clean, firm bonds and fine, uniform microstructures. The virtual elimination of internal voids helps in designing components to near-net shapes of improved fatigue strength. Generally HIP process enables to produce materials of all shapes and sizes, including cylindrical billets, flat rectangular bar billets, solid shapes with complex external geometry, and complex shapes with internal cavities

HIP process provides a method for producing components from diverse powdered materials, including metals and ceramics. During the manufacturing process, a powder mixture of several elements is placed in a container. The container is subjected to elevated temperature and very high vacuum to remove air and moisture from the powder. The container is then sealed and HIP'ed. The application of high inert gas pressures and elevated temperatures results in the removal of internal voids and creates a strong metallurgical bond throughout the material. The result is a clean homogeneous material with a uniformly fine grain size and a near 100% density.



AIP6-30H

Technical Specification:

Max Pressure : 30,000 psi

Max Temperature : 2200 °C

Environment : Argon gas

Die material : Graphite

