

State-of-the-art material testing facility for Creep, Fatigue, Fracture and other high temperature tests in a vacuum environment

Molten Salt Breeder Reactor (MSBR) and Indian High Temperature Reactor (IHTR) are currently being designed at BARC. To provide impetus to the design and code qualification of in-core components of these reactors, a state-of-the-art material testing facility for conducting various types of mechanical, fracture, fatigue and combined creep-fatigue tests upto 1200°C in a high vacuum environment has recently been installed and commissioned at RSD, BARC. The loading frame has a capacity of 50 kN and is equipped with both contact-type and advanced non-contact type sensors (laser and video extensometer) for in-situ recording of test data. The load-train has zero backlash and it is one of the very few testing facilities capable of conducting through-zero fatigue tests at high temperature. A three-zone furnace maintaining a temperature uniformity of less than 2°C over the gauge length of test specimen meets the stringent requirement of ASTM standards. Special fixtures are designed for conducting creep, fatigue fracture and other high temperature tests on graphite, ceramics and refractory alloys.



High temperature material testing facility with vacuum



Detailed view of vacuum furnace