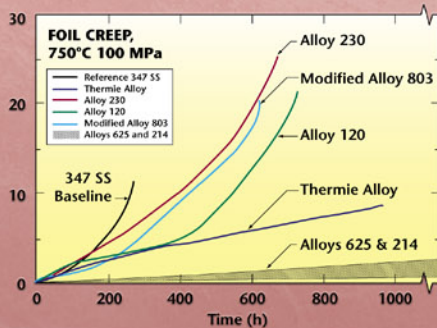


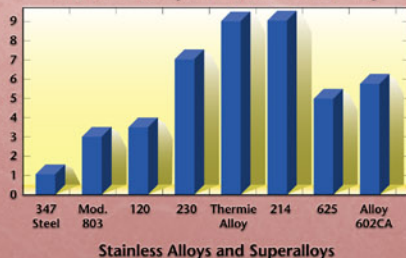
Recuperator Materials for Advanced Microturbines

To meet the goals of the US DOE Advanced Microturbines Program to achieve greater than 40% efficiency at a cost of less than \$500 per kilowatt, higher-temperature recuperator materials are being developed, screened, and evaluated to demonstrate durability beyond 10,000 hours at temperatures between 750°C and 1000°C.

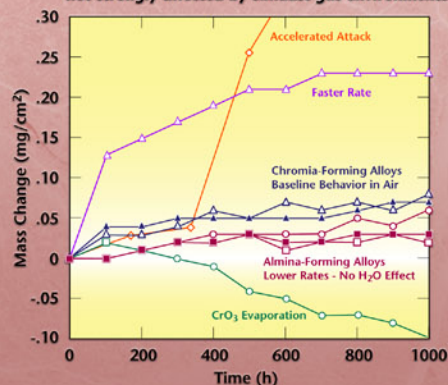
A Group of More Heat- and Corrosion-Resistant Advanced Austenitics show better creep strength than 347-SS



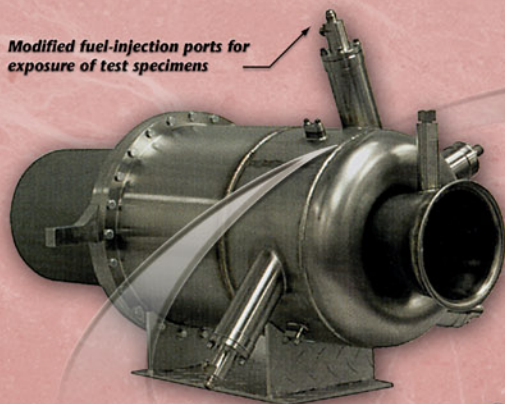
Relative Cost (Normalized to 347-SS)



Alumina forming alloys (Haynes 214 or Plansee PM2000) have slower oxidation rates and are not strongly affected by exhaust gas environments

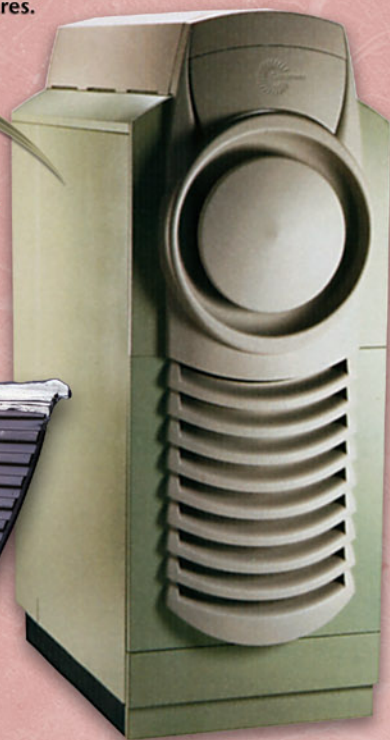


ORNL Test Facility for Evaluation of Materials for Advanced Microturbine Recuperators



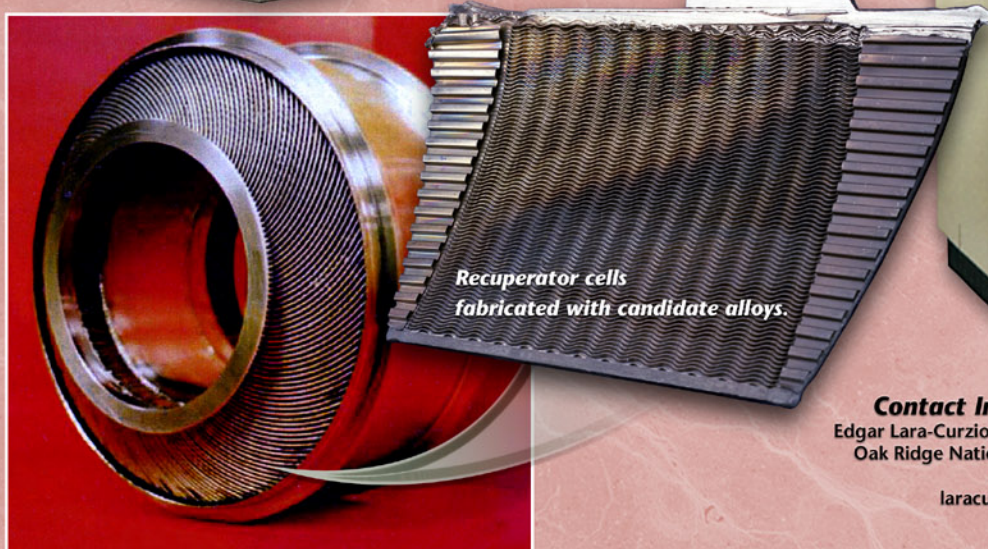
Modified fuel-injection ports for exposure of test specimens

60 kW natural gas-fired Capstone microturbine modified to operate at higher turbine rotor inlet temperatures.



Recuperator materials will be evaluated after test campaigns to:

- characterize the microstructure of the base alloy and corrosion products.
- determine the evolution of their physical and mechanical properties.



Recuperator cells fabricated with candidate alloys.

Contact Information:
Edgar Lara-Curzio, Research Staff
Oak Ridge National Laboratory
(865) 576-1749
laracurzioe@ornl.gov



Office of Power Technologies