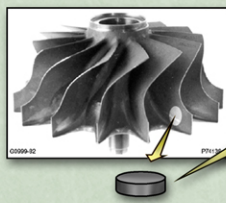


# Collaborative Evaluation of Ceramics for Gas Turbine Applications

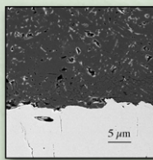
## Materials End Users



Surface Properties



Bulk Properties

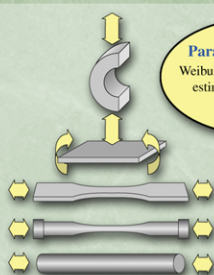


Microstructural Analysis

Evaluate mechanical properties of ceramic components under controlled environments and after field tests



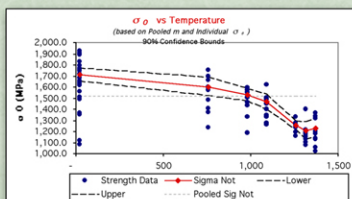
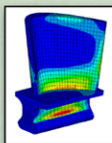
## Component Characterization



Parameter Estimation  
Weibull and fatigue parameter estimates generated from failure data

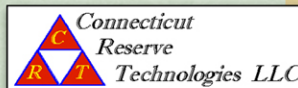
Finite Element Interface  
Output from FEA codes (stresses, temperatures, volumes) read and printed to Neutral Data Base

Reliability Evaluation  
Component reliability analysis determines "hot spots" and the risk of rupture intensity for each element

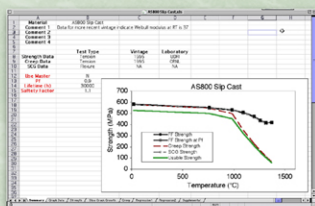
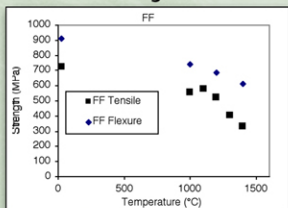


## Life prediction and Design Diagrams

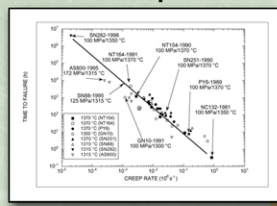
Key element of life prediction analysis



### Strength



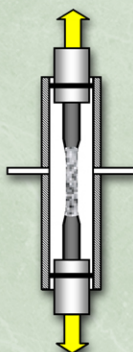
### Creep



Data for Selected Materials are Currently being Compiled into Excel Workbooks



## Database



Existing facilities are being modified to evaluate ceramics containing environmental barrier coatings

## Mechanical Property Measurements of Coated and Uncoated Ceramics

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Oak Ridge, TN 37831-6068

<http://www.eren.doe.gov/der/microturbines/microturbines.html>

Office of Power Technologies

