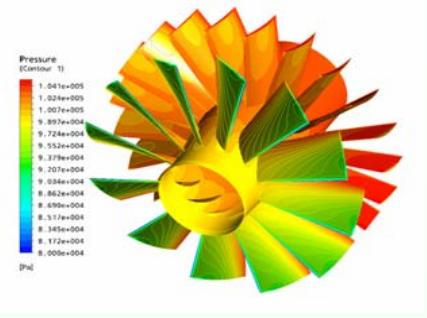
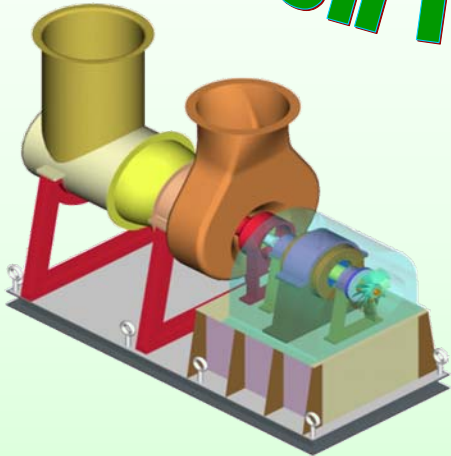


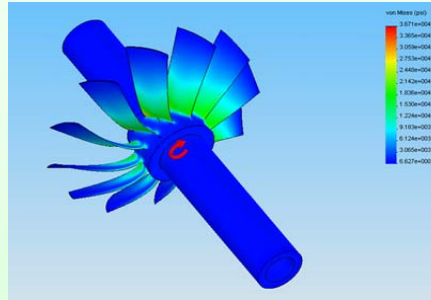
# Green Blowers for Green Technology



Aerodynamic Analysis



Concept Recycle Blower



FEA Analysis



Foil Journal Bearing

## 'FOIL BEARING SUPPORTED HIGH TEMPERATURE CATHODE / ANODE RECYCLE BLOWER'

...for Large MWe SOFC Power Plants

- **Phase I** successfully demonstrated the Cathode Recycle Blower design for a 5 Megawatt SOFC power plant.
- **Phase II** will enhance the Cathode Recycle Blower design for Anode Recycle. The final product will be a **Dual Use Cathode/Anode Recycle Blower**.

### Blower Features ....

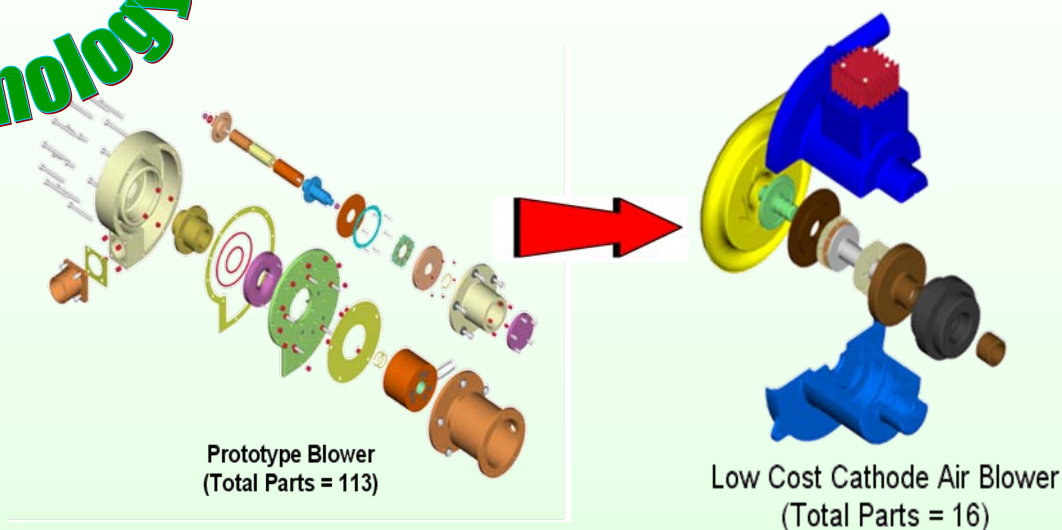
- ✓ High temperature capable (up to 850°C)
- ✓ Design life (>40,000 hrs)
- ✓ Dual Use (Cathode Recycle or Anode Recycle)
- ✓ Low noise (<70 dBA)
- ✓ Energy efficient
- ✓ Scalable
- ✓ Oil free
- ✓ Low life cycle cost
- ✓ Maintenance free



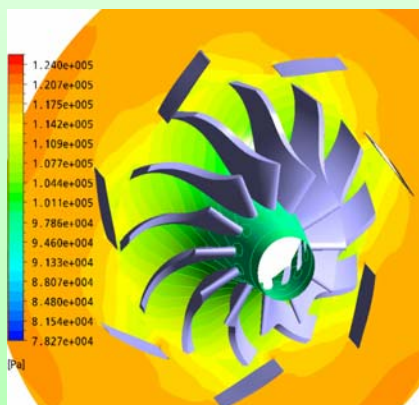
Journal Bearing Test Rig

# Green Blowers for Green Technology

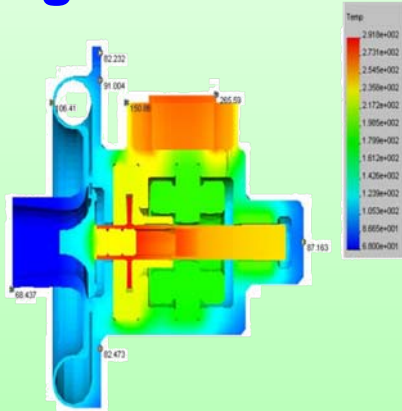
## LOW COST BLOWER



### Foil Gas Bearing Supported High Speed Centrifugal Cathode Air Blower



CFD Analysis



Heat Transfer Analysis



Controller Testing

- ✓ High Efficiency (> 60%)
- ✓ Maintenance Free
- ✓ Low Noise (< 70dBa)

- ✓ Oil-Free
- ✓ Life (> 40,000 hrs)
- ✓ Low Lifecycle Cost

- ✓ High Reliability
- ✓ Turn Down Ratio (> 5:1)

R&D Dynamics **Low Cost Cathode Air Blowers** for small fuel cells are the most energy efficient and reliable. Target cost of the blower is ~ \$100 for a production of greater than 50,000 units per year.

A prototype blower is planned to be tested in year 2010 in an actual SOFC system.