

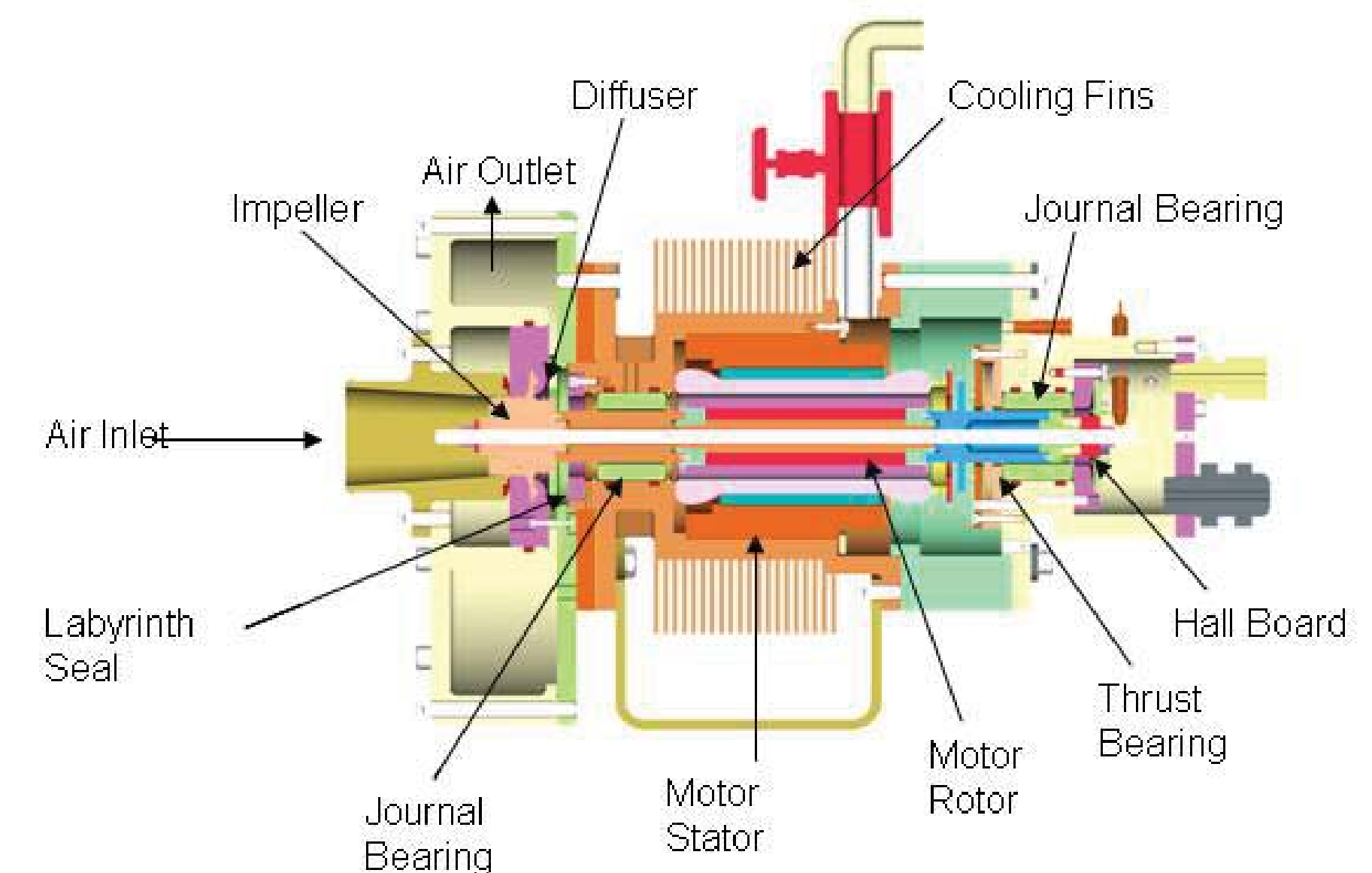
DOE SBIR Phase I
CATHODE AIR BLOWER

...FOIL BEARING SUPPORTED HIGH SPEED CENTRIFUGAL...

Highlights...

- ✓ Low Cost
- ✓ High-Speed Centrifugal Rotor
- ✓ Foil Air Bearing Supported
- ✓ High Efficiency
- ✓ Oil Free
- ✓ Maintenance Free
- ✓ High Reliability
- ✓ 5 to 1 Turndown
- ✓ PM or SR Motor
- ✓ Low Weight/Volume

Cut Away View



Technical Requirements

Fluid Type	Atmospheric Air
Pressure Ratio	1.2
Peak Airflow	1500 SLPM
Speed Control	Variable Speed
Turn-Down Ratio	5:1
Overall Efficiency	≥60%
Design Life	>40,000 hours @ 100% Duty Cycle
Maintenance	Interval >10,000 hours
Target Cost	<\$100 per unit based on 50,000 units/year
Noise	<70 dBA
Contamination of Process Air	None

Design Performance

Type	Centrifugal
Impeller Diameter	1.67 inches
Inlet Pressure	14.7 psia
Inlet Temperature	68 °F
Outlet Pressure	17.64 psia
Outlet Temperature	103.7 °F
Pressure Ratio	1.2
Mass Flow Rate	3.98 lbm/min
Adiabatic Efficiency	79%
Speed	80,500 rpm

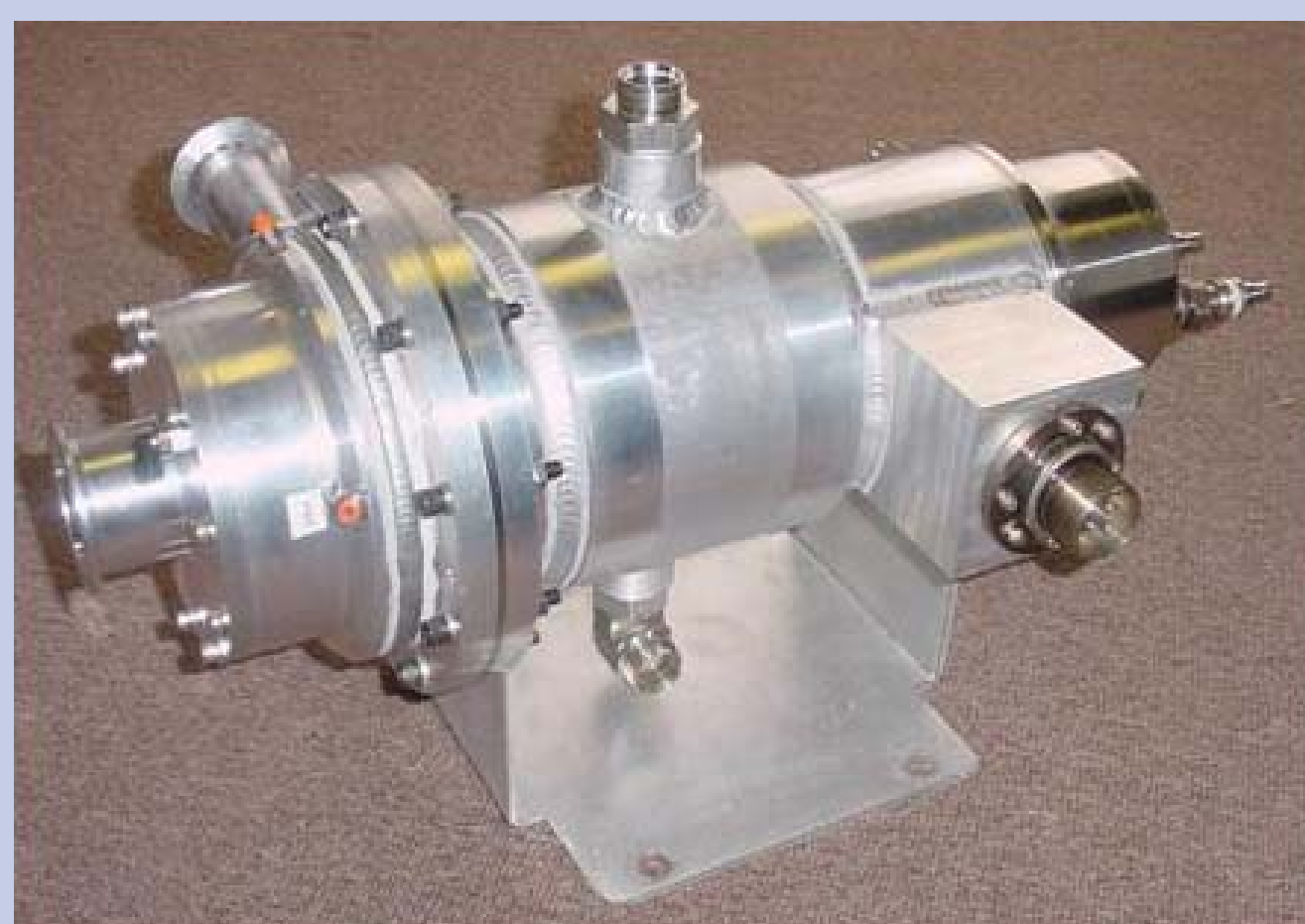
RELATED TURBOMACHINERY EXPERIENCE

VAPOR CYCLE COMPRESSORS
...Refrigeration...

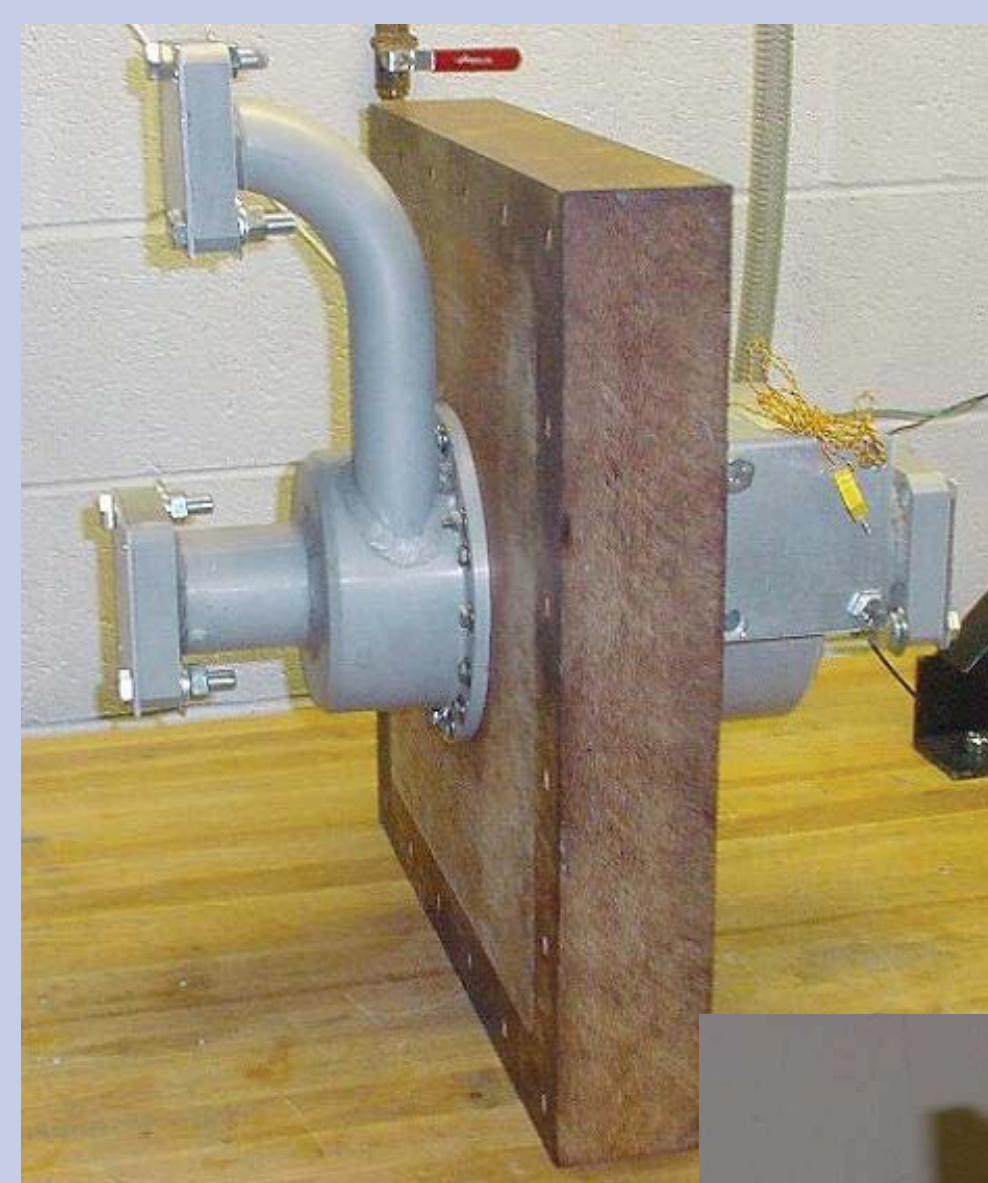


Xenon

R134a

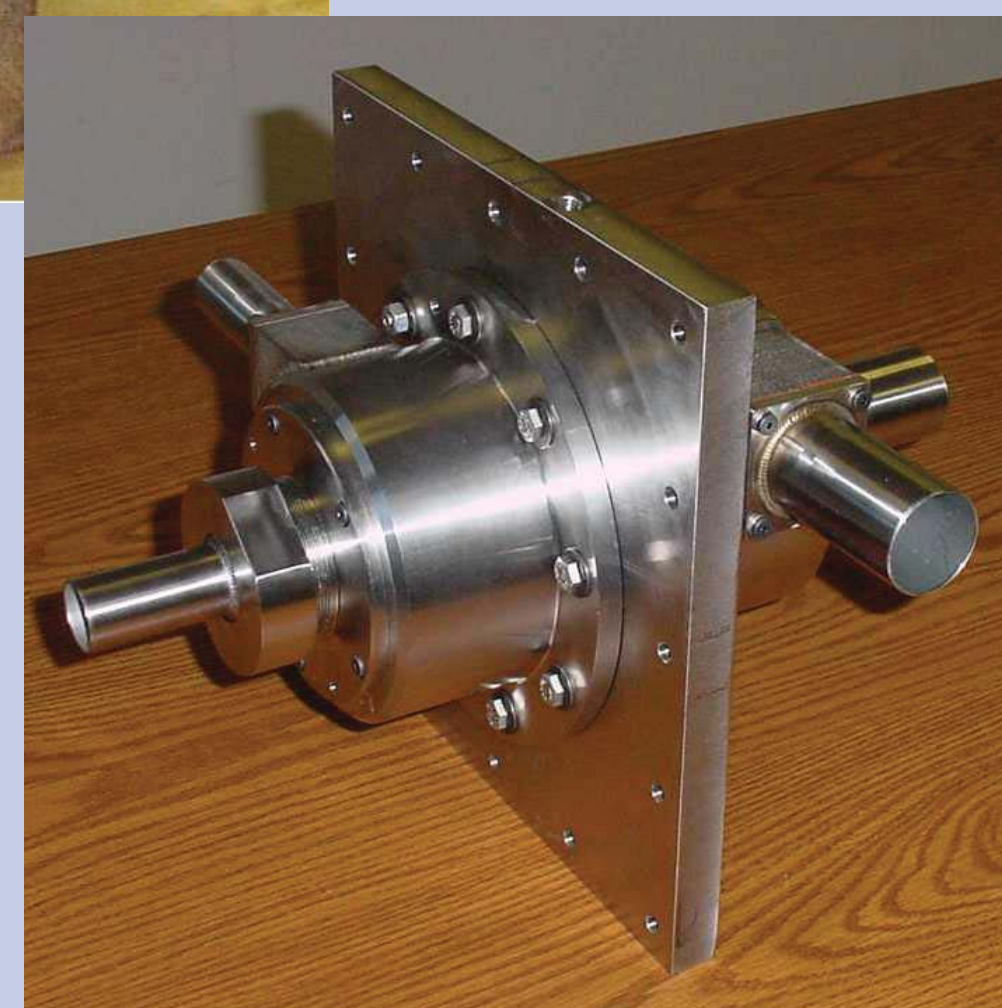


TURBOEXPANDERS
...Cryogenic Applications...



Nitrogen,
Oxygen

Hydrogen



TURBOALTERNATORS
...Power Extraction...



5 kW
Output

10 kW
Output

