OIL BRAKE LOADED EXPANDERS

**PERFORMANCE**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expander Ns Range</td>
<td>40 – 140</td>
</tr>
<tr>
<td>Expander Efficiency</td>
<td>up to 88%</td>
</tr>
<tr>
<td>Expander Pressure Ratio</td>
<td>up to 24:1</td>
</tr>
<tr>
<td>Tip Speed</td>
<td>up to 1,200 ft/sec (366 m/s)</td>
</tr>
<tr>
<td>Rotor Speed</td>
<td>up to 55,000 RPM</td>
</tr>
<tr>
<td>Refrigeration Production</td>
<td>up to 200 HP (150 kW)</td>
</tr>
</tbody>
</table>

**APPLICATIONS**

- Industrial gas production
  - Air separation
  - Liquefaction

**FLUIDS HANDLED**

- Air
- Nitrogen
- Waste gas (high oxygen content)
- Carbon dioxide & carbon monoxide

**FEATURES & BENEFITS**

- Compact footprint
- “Zero leakage” inlet guide vanes
- Rugged rotor design
- Tapered shaft wheel attachment for field interchangeability
- Components individually balanced for ease of field replacement
- Externally adjustable power absorption control
- Labyrinth shaft seals with oil-free design
- Manual or automatic oil brake flow control valve for adjustment

**AVAILABLE OPTIONS**

- Inlet screens
- Inlet trip valves
- Surge control system
- Low hysteresis high cycle inlet guide vanes
- Cable trays or conduit
- Safe area or hazardous area location
- International code compliance (HPGSL, PED, GOST, etc.)
- Cryogenic performance testing
- Spare cartridge with nozzle assembly
"Zero Leakage" Inlet Guide Vanes
- Adjustable inlet guide vanes provide optimum flow patterns as well as precise and continuous control across the machine’s full operational spectrum
- Self-energizing back plate maintains zero sidewall clearance for maximum expander efficiency
- Zero backlash variable guide vane configuration provides smooth turn-up capability to 125% of design flow

Rugged Rotor Design
- Stiff rotor shaft and high capacity tilt pad bearings assure maximum stability at all operating loads and speeds
- Sealing design offers robust construction and reliable performance
- Uniformly loaded drive tangs provide the high torque capacity necessary to handle upset conditions

Self-Aligning Wheel Attachment
- Tapered bore and stretch rod design automatically compensates for thermal and mechanical changes to maintain alignment under all operating conditions
- Precision machined tapered bore/shaft attachment allows independent balancing of turbine wheel and shaft to facilitate field repair