Turboexpander Design & Manufacturing

Configurations & Specifications

<table>
<thead>
<tr>
<th>Turboexpander Configurations</th>
<th>EC*/EG/ED</th>
<th>EC/EG/ED</th>
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</thead>
<tbody>
<tr>
<td>Frame Sizes</td>
<td>L1000</td>
<td>L2000</td>
<td>L3000</td>
<td>L4000</td>
<td>L5000</td>
<td>L6000</td>
</tr>
<tr>
<td>Inlet Flow (max.)</td>
<td>ACMH (SI Unit)</td>
<td>600</td>
<td>1,500</td>
<td>4,000</td>
<td>7,500</td>
<td>10,000</td>
</tr>
<tr>
<td>Inlet Pressure (max.)</td>
<td>BARG</td>
<td>206</td>
<td>3,000</td>
<td>206</td>
<td>3,000</td>
<td>206</td>
</tr>
<tr>
<td>Temperature</td>
<td>-195 to 260°C</td>
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<tr>
<td>RPM (max.)</td>
<td>105,000***</td>
<td>52,000</td>
<td>31,000</td>
<td>29,000</td>
<td>18,000</td>
<td>15,000</td>
</tr>
<tr>
<td>Seal Types</td>
<td>Labyrinth Seal</td>
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<td>Labyrinth Seal</td>
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<tr>
<td>Wheel Power (max.)</td>
<td>800 kW</td>
<td>1,500 kW</td>
<td>3,000 kW</td>
<td>6,000 kW</td>
<td>10,000 kW</td>
<td>14,000 kW</td>
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<tr>
<td>Bearing Types (3)</td>
<td>Oil/AMB</td>
<td>Oil/AMB</td>
<td>Oil/AMB</td>
<td>Oil/AMB</td>
<td>Oil/AMB</td>
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Applications:
- Hydrocarbon Processing: LNG | LPG | NGL | DPC
- Geothermal Power Generation
- Air Separation
- Refrigeration
- Industrial Power Recovery | Pressure Letdown

In-House Capabilities:
- 90,000 square feet dedicated to Design | Engineering | Parts Machining | Fabrication | Quality Control | Inspection & Testing
- Engineering expertise in Gas Dynamics | Rotor Dynamics | FEA Analysis | Tribology | Structural Design
- Specialization in Anti-Surge Systems | Automatic Thrust Control | Oil & Magnetic Bearings | IGV Systems
- State-of-the-art design and manufacturing tools applied: 3D CAM, CAD & Laser Scanning, CNC Machines
- ISO 9001: 2008 Certified Supplier

(1) Configurations: EC* = Expander-Compressor / EG = Expander-Generator / ED = Expander-Dyno (Oil Brake)**
(2) High Pressure/High Power does not apply on ED equipment
(3) Bearing Types: AMB = Active Magnetic Bearings / Oil = Oil Bearings

*EC is available with Oil and Active Magnetic Bearings
**Operates at a lower power level than the range shown above
***Maximum RPM of 105,000 applicable to ED only
L.A. Turbine designs and manufactures application-specific, highly engineered turboexpanders used in hydrocarbon processing, geothermal power generation and other industrial power recovery or refrigeration applications.

The company is also a recognized leader in aftermarket repair, redesign, maintenance and production of spare parts for all brands and configurations of turboexpanders worldwide.

A global field service team provides diagnostics, maintenance and emergency support 24/7/365.

Turboexpanders

Turboexpander configurations include expander-compressor, expander-generator, expander-dyno (oil brake) and expander-compressors with active magnetic bearing units. Turboexpanders range from 3kW to 14MW, are capable of handling up to 3,000 PSIG pressure, can operate at speeds up to 105,000 RPM, and accommodate temperatures between -195˚C to 260˚C.

Ability to Deliver

From concept to commissioning, L.A. Turbine controls and manages the entire design, engineering manufacturing, assembly and testing process for all new and aftermarket equipment. As a result, we are able to deliver faster-to-market customized solutions than competitive firms, and our equipment not only meets but often exceeds clients’ output performance requirements. All engineering design and development processes comply with ISO 9001:2008.

Global Presence

L.A. Turbine has established a global presence on five continents, in 16 world offices and partner locations. U.S. headquarters and manufacturing is located in Valencia, California, with sales and service facilities in California, Texas and Belgium. U.S. operations also support the needs of Canada, South America, Asia and Australia. European headquarters in Belgium serve Europe, the Middle East and Africa.

L.A. Turbine: Your On-Call Turboexpander Experts

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