Topics

- Blower Technologies – Two Basic Categories
  - Dynamic
    - Centrifugal Blowers
    - Regenerative Blowers
  - Positive Displacement
    - Twin Lobe
    - Tri-Lobe
    - Helical Tri-Lobe
    - Helical Screw
    - Variable Helix

- Advantages / Disadvantages
- Limitations
- System Interaction
- Thermodynamics
- Maintenance
Blower Technologies
Positive Displacement – Twin Lobe
Blower Technologies
Positive Displacement – Twin Lobe

- Two symmetrical two-lobed rotors
- Timing gears to prevent any contact
- Minimal clearances
- No internal compression
- Pressure is created by a restriction downstream – external to blower

<table>
<thead>
<tr>
<th>Technology</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bi-Lobe</td>
<td></td>
</tr>
<tr>
<td><strong>UP TO</strong></td>
<td></td>
</tr>
<tr>
<td>26,000 CFM</td>
<td></td>
</tr>
<tr>
<td>15 PSI</td>
<td></td>
</tr>
<tr>
<td>24 inHg</td>
<td>Wet</td>
</tr>
</tbody>
</table>
Blower Technologies
Positive Displacement – Quiet Case
Blower Technologies
Positive Displacement – Tri-Lobe

- 6 pulses / revolution means pulsations are reduced.
- Must run faster for same flow = higher frequency noise.
- Enclosures attenuate higher frequency noise effectively.

<table>
<thead>
<tr>
<th>Technology</th>
<th>Specifications</th>
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</thead>
<tbody>
<tr>
<td>Tri-Lobe</td>
<td></td>
</tr>
<tr>
<td>UP TO</td>
<td>CFM</td>
</tr>
<tr>
<td>14,570</td>
<td>PSI</td>
</tr>
<tr>
<td>15</td>
<td>inHg</td>
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</tbody>
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Blower Technologies
Positive Displacement – Twisted Tri-Lobe

REDUCED PULSE = LOWER NOISE = QUIETER OPERATION

Rotation Angle - Degrees

- Bi-Lobe
- Tri-Lobe
- HeliFlow

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Blower Technologies
Positive Displacement – Twisted Tri-Lobe

- Helical Rotor
- Triangular tuned ports reduce noise.
- Noise reduced by 4-7 dBa

<table>
<thead>
<tr>
<th>Technology</th>
<th>Specifications</th>
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<tbody>
<tr>
<td>Twisted Tri-Lobe</td>
<td></td>
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<tr>
<td>UP TO</td>
<td></td>
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<tr>
<td>4,800 CFM</td>
<td></td>
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<td>15 PSI</td>
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<tr>
<td>17 inHg</td>
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Blower Technologies
Positive Displacement – Rotary Screw
2x4 Fixed Helical Rotor Profile
Blower Technologies

Positive Displacement – Rotary Screw

2x4 Fixed Helical Rotor Profile

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Blower Technologies
Positive Displacement – Rotary Screw
2x4 – Fixed Helical Rotor Profile

• Since 1958
• 2x4 rotor
• Less pulsation = lower noise
• 8-10% More efficient than straight lobe machine
• Helical gears
• Dual splash lubricated.

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Blower Technologies
Positive Displacement – Rotary Screw
3x5 – Fixed Helical Rotor Profile

- Higher Efficiencies vs 2x4
- Food grade PTFE Teflon coating.
- Pressure capabilities up to 36 psig, 22Hg
- Flow rates up to 6200 cfm
Blower Technologies
Positive Displacement – Rotary Screw
3x5 – Fixed Helical Rotor Profile

- Large shafts
- Inpro Oil seals
- 5 ring piston rings
- O-ring housing seals
- Dual splash lubrication
- Helical gears
- Different cylinders for pressures (discharger port geometry)
By adding a variable helix to our helical screw rotor design, unmatched levels of blower efficiency are achieved.

**Why Variable Helix?**

- Faster Internal Compression
- Significantly Larger Discharge Port
  - Eliminates Air Losses
  - Higher Efficiencies
  - More Efficient Turndown
  - Patent-Pending Design
- **SAVE UP TO 35% on Energy Costs**
It’s all about... the Variable Helix

Variable vs. Fixed Helix
- Variable Helix Rotor Geometry Allows Discharge Port to Open 41° Earlier than Fixed Helix Design
- Lowering Flow Loss
- Increasing Efficiency

Highlighted Area = Port Exposure
It's all about....the Energy Savings

HORSEPOWER SAVINGS

Save up to 35% on Your Energy Costs

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100CDL300 Performance Capability

- Operating Pressure Limits
  - Discharge Pressure = 20 psig (1375 mbar)
  - Inlet Vacuum = 18” Hg (600 mbar)
  - Air Flow up to 775 cfm

- Max RPM = 4500

- Operating Temperature Limits
  - Discharge Max = 350°F (176°C)
  - Delta Max = 250°F (139°C)

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The Result = the Most Extensive & Innovative Blower Line in the Industry to Meet Customer-Specific Needs

- GOOD
  - Sutorbilt DSL Bi-Lobe
  - DuroFlow Solid Tri-Lobe
- BETTER
  - RBS Series Solid Tri-Lobe
  - HeliFlow Twisted Tri-Lobe
- BEST
  - CycloBlower 2x4 Screw Fixed Helix
  - CycloBlower H.E.
  - CycloBlower VHX 3x5 Screw Variable Helix

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Package Product Offering

**IQ-RB**
*Simple*
- Straight Tri-Lobe
- Fixed Speed
- Mechanical Gauges
- Pressure up to 15 psig
- Vacuum up to 15” Hg
- Flows up to 5,500 cfm
- 3-500 HP

**IQ**
*Smart*
- Twisted Tri-Lobe
- Fixed Speed or VFD
- AirSmart Controller
- Pressure up to 15 psig
- Vacuum up to 17” Hg
- Flows up to 1,500 cfm
- 7.5-100 HP

**IQ-HE**
*Efficient*
- 3x5 Helical Screw
- Fixed Speed
- AirSmart Controller
- Pressure up to 36 psig
- Flows up to 5,625 cfm
- 7.5-500 HP
Better Service

We're Where You Need Us

It's all about... the Network

Extensive Distributor Network:

• Gives you local relationships, fast response and service

• Reliable and trusted distributors with factory-trained technicians

• Parts, lubricants and other operating supplies are available locally

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