Powerex offers three different control panel options for our Laboratory Vacuum Systems —

- HOA switch for each pump
- Acknowledge button

- Audible and visual alarms with an enclosure
- Service intervals
- High temperature condition
- System overload trip
- Visual and audible alarms for:
  - Reserve pump in use alarm — when it is not needed to meet demand
  - Process requiring a fresh air flush before shutting down
  - Auto purge controls are available as an option for those processes requiring a fresh air flush before shutting down
  - The minimum run and auto purge functions are combined in the control as appropriate
  - Pump will run through an automatic purge cycle every 60 minutes
  - Pumps 1 and 2 making vacuum to meet demand, pump 3 in ready mode should demand increase
  - Pump will run through an automatic purge cycle every 60 minutes
  - Pumps 1 and 2 making vacuum to meet demand, pump 3 in ready mode should demand increase

- Great for applications in the research field—from simpler applications like a high school chemistry lab to more complicated applications in biomedical research and everything in between
- Multiple systems have built-in redundancy capabilities
- Feature built under some standards as our medical air and vacuum life support systems
- HMI, PBMI and Basic controls available
- Optional auto purge control feature available with HMI or PBMI controls

Knowing the type of research, application and what processes are being used is key in determining the best vacuum pump technology—flashized or clean—to use for your laboratory applications. Our sales team can help you select one of our standard systems or work with our engineers to design a system a optimal fit your needs.

**Claw Pump**

- Includes:
  - Vacuum pumps
  - AMI motor
  - Control panel (HMI, PBMI, or Basic)
  - All interconnecting piping and wiring
  - Vibration isolation pads and flex connectors
  - All interconnecting piping and wiring
  - Control panel (HMI, PBMI, or Basic)
  - ASME receiver
  - Vacuum pumps

**Oil Sealed Rotary Vane Pump**

- UL508A listed and labeled, NEMA 12 enclosure
- Manufactured in ISO 9001 UL certified facilities
- Built in redundancy in multiplex systems
- Standardized in 160 psi, UL listed, certified hailstone
- Optional auto purge feature (air or electric) with HMI or PBMI controls

**Laboratory Vacuum System Design**

- Provides extra protection for pumps by performing a fresh air flush before shutting down
- Air or electric auto purge control options available

**OPTIONAL AUTO PURGE CONTROLS**

- Provides extra protection for pumps by performing a fresh air flush before shutting down
- Air or electric auto purge control options available

Auto purge controls are available as an option for those processes requiring a fresh air flush before shutting down the off load pumps. The minimum run and auto purge functions are combined in the control as appropriate. Pumps will run through an automatic purge cycle every 60 minutes (after alternation phase). If a pump was active from the pump to atmosphere. A positive switch is provided to select automatic purge, manual purge, or purge off modes. The mean shut to the left simulation is a quadruplex system, with purge on and a vacuum to vacuum to atmosphere purge. Pumps 1 and 2 making vacuum to meet demand, pump 3 in ready mode should demand increase.

Auto purge features include:

- 15 min. purge cycle per pump
- Pump will be put away clean (after completed purge cycle) when it is not needed to meet demand
- Low vacuum alarm which indicates high usage or service requirement for other pump(s)

Our standard auto purge option will use a pneumatic actuated valve. The electric auto purge option will use an electric valve.

*Please specify which (air or electric) auto purge option you would like when ordering.

**FOR MORE INFORMATION, CONTACT YOUR LOCAL DISTRIBUTOR OR POWEREX SALES REPRESENTATIVE.**

**Laboratory Vacuum Systems**

**Product Selection Guide**

- Vacuum systems customized specifically for Laboratory Applications
- Packages that leverage proven Dry Claw and Oil Sealed Rotary Vane Technologies
- Easy to use product guide with control panel options and product specification charts to help you find just the right product
Oil Sealed Rotary Vane Technology

**Components**
- Axial to axial gap
- Compact Design
- Capability to isolate each pump safely
- Ultraglyt List Controls
- Ambient with dry contacts for remote monitoring
- Dual Vibration
- Low Maintenance
- Touch Screen Right-hand Display (for HMI or PBMI controls)
- High-temperature alarms
- Liquid tank
- Tank sight gauge

**Available Options**
- Powerex Building Management Integrator (PMRI) controls
- Air or Electric auto Purge
- Carbon Filters
- Small Synthetic Oil
- Liquid Impregnated

**How It Works**
A rotor is mounted essentially in the pump cylinder and contains several sliding vanes. As the rotor turns, centrifugal force causes the vanes to slide outward against the cylinder wall. Oil is injected into the pumping chamber to create a seal between the vanes and the cylinder wall and to lubricate the vanes for reduced wear. As a result of the offset rotor, a succession of variable volumes is formed in the cylinder housing creating the flow of air through the pump. Air is pulled into the pump inlet which is then compressed and discharged into the exhaust box. At this point oil is mixed with the air and is passed through several stages of internal oil mist eliminators to remove 99.9% of the lubricating oil before the exhaust is released to the atmosphere. The separated oil is then returned to the oil reservoir.

**Laboratory Oil Sealed Rotary Vane Systems** (with PMRI, PBMI or Basic controls)

<table>
<thead>
<tr>
<th>Model</th>
<th>HP</th>
<th>Old</th>
<th>New</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCPQ0505</td>
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<td>LCPQ1005</td>
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<td>LCPQ2005</td>
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</table>

**Laboratory Dry Claw Pump Technology**

**How It Works**
Inside the pump housing, two claw-shaped rotor teeth in air as they rotate in opposite directions. The air is compressed by the rotors, then discharged through a diffuser to the atmosphere. The pumping chamber is dry. There is no contact between the rotors or the cylinder wall eliminating internal wear and parts replacement. The rotors are synchronized by gears requiring a small amount of oil in the gear boxes. Gear oil change requirements are minimal at approximately every 10,000 hours.

**Laboratory Dry Claw Tank Mount Systems** (with PMRI, PBMI or Basic controls)

<table>
<thead>
<tr>
<th>Model</th>
<th>HP</th>
<th>Old</th>
<th>New</th>
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</thead>
<tbody>
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<tr>
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<td>0.5</td>
</tr>
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<td>0.75</td>
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<tr>
<td>LCD0703</td>
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<td>1.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

**Available Options**
- Powerex Building Management Integrator (PMRI) controls
- Air or Electric auto Purge
- Carbon Filters
- Liquid Impregnated

**How It Works**
The air is compressed by the rotors, then discharged through a diffuser to the atmosphere. The pumping chamber is dry. There is no contact between the rotors or the cylinder wall eliminating internal wear and parts replacement. The rotors are synchronized by gears requiring a small amount of oil in the gear boxes. Gear oil change requirements are minimal at approximately every 10,000 hours.

<table>
<thead>
<tr>
<th>Model</th>
<th>HP</th>
<th>Old</th>
<th>New</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCVD0203</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>LCVD0303</td>
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<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>LCVD0503</td>
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<td>LCVD0703</td>
<td>1.0</td>
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<td>1.0</td>
</tr>
</tbody>
</table>

**Dry Claw Pump Technology**

**How It Works**
Inside the pump housing, two claw-shaped rotor teeth in air as they rotate in opposite directions. The air is compressed by the rotors, then discharged through a diffuser to the atmosphere. The pumping chamber is dry. There is no contact between the rotors or the cylinder wall eliminating internal wear and parts replacement. The rotors are synchronized by gears requiring a small amount of oil in the gear boxes. Gear oil change requirements are minimal at approximately every 10,000 hours.

**Laboratory Dry Claw Tank Mount Systems** (with PMRI, PBMI or Basic controls)

<table>
<thead>
<tr>
<th>Model</th>
<th>HP</th>
<th>Old</th>
<th>New</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCD0203</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>LCD0303</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>LCD0503</td>
<td>0.75</td>
<td>0.75</td>
<td>0.75</td>
</tr>
<tr>
<td>LCD0703</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

**Available Options**
- Powerex Building Management Integrator (PMRI) controls
- Air or Electric auto Purge
- Carbon Filters
- Liquid Impregnated
Powerex offers three different control panel options for our Laboratory Vacuum Systems —

- HOA switch for each pump
- Acknowledge button

• Panel door includes:
  - Service intervals
  - High temperature conditions
  - System overload trip
  - Visual and audible alarms for:
    - Enclosure
  - UL508 listed and labeled, NEMA 4/12 enclosure

- Audible and visual alarms with an (Human Machine Interface) touch screen
- PLC controller and 6" color HMI

Knowing the type of research, application and what processes are being used is key to determining the best vacuum pump technology—lubricated vane or claw—to use for your laboratory application. Our sales team can help you select one of our standard systems or work with our engineers to design a system custom fit your needs.

- Standard HMI Control Panel:
  - PLC controller and 4" color HMI
  - BacNet protocol
  - Building automation gateway with BacNet protocol
  - Touch screen displays the operating status of the unit
  - Ultragard labeled and labeled, NEMA 4X enclosure
  - Control and audible alarms for:
    - Systems controlled trips
    - High temperature conditions
    - Humid internal
    - Audible and visual alarms with an acknowledgment feature
  - DEAS switch for each pump

- Optional HMI Control Panel:
  - All features of the standard HMI control panel
  - Building automation gateway with BacNet protocol
  - Visual notifications for alarms and service alerts

Options for auto purge controls:

- Provides extra protection for pumps by performing a fresh air flush before shutting down
- Air or electric auto purge control options available

Auto purge controls are available as an option for those processes requiring a fresh air flush before shutting down the off load pumps. The minimum run and auto purge function are combined in the control as appropriate. Pumps will run through an automatic purge cycle every 60 minutes (after alternation phase). Pumps are used to flush the pumps to atmosphere. A positive switch is provided to select automatic purge, manual purge, or purge off mode. The purge shut to the left simulates a quadplex system, with pump 1 and a making moment to meet demand. Pump 3 will purge and pump 4 is ready mode should demand increase. Auto purge benefit includes:
  - 15 min. purge cycle per pump
  - Pump will be put on stand (after completed purge cycle) when it is not needed to meet demand
  - Low vacuum alarm which indicates high usage or service requirement for other pump(s)

Our standard auto purge option will use a pneumatic actuated valve. The electric auto purge option will use an electric valve.

*Please specify which (air or electric) auto purge option you would like when ordering.

For more information, contact your local distributor or Powerex sales representative.
Oil Sealed Rotary Vane Technology

**Features**
- +2 to +5°C
- Compact Design
- Capability to isolate each pump solely
- Ultragrip Listed Controls
- Ability to display key data for remote monitoring
- Manual Filtration
- Low Maintenance
- Touch Screen Display (for HMI or PRMI controls)
- High-temperature alarms
- Large tanks
- Tank sight gauges

**Innovative Options**
- Powerex Building Management Integrator (PRMI) controls
- Air or Electric Auto Purge
- Carbon Filters
- near Acoustic Oil
- Liquid Isolators

**How it works:**
A rotor is mounted essentially in the pump cylinder and contains several sliding rails. As the rotor turns, centrifugal force causes the oil to slide outward against the cylinder wall. Oil is mixed in the pump chamber to create a seal between the vanes and the cylinder wall and lubricates the vanes to ensure reliable, quiet, and long-lasting performance. The oil, being a high-temperature fluid, acts as a refrigerant, and its heat is dissipated through the pump’s housing. This process ensures that the oil remains at an optimal temperature, ensuring maximum efficiency and reliability. The pump’s design is optimized for high performance and durability, providing reliable and efficient operation under a wide range of conditions.

**Laboratory Oil Sealed Rotary Vane Systems** (with HMI, PRMI or Basic controls)

<table>
<thead>
<tr>
<th>Model</th>
<th>SCFM @ 19” Hg</th>
<th>HP Tank</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCPQ1005</td>
<td>152</td>
<td>15 (2)</td>
</tr>
<tr>
<td>LCPQ0905</td>
<td>116</td>
<td>10 (2)</td>
</tr>
<tr>
<td>LCPQ0805</td>
<td>91</td>
<td>7.5 (2)</td>
</tr>
<tr>
<td>LCPQ0705</td>
<td>74</td>
<td>5 (2)</td>
</tr>
<tr>
<td>LCPQ0605</td>
<td>58</td>
<td>5 (2)</td>
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<td>LCPQ0505</td>
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<tr>
<td>LCPQ0105</td>
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<td>1 (2)</td>
</tr>
</tbody>
</table>

**Dry Claw Pump Technology**

**How it works:**
Inside the pump housing, two claw-shaped rotors rotate at the same rate in opposite directions. The air is compressed by the rotors, then discharged through a silencer to the atmosphere. The pumping chamber is dry. There is no contact between the rotors or the cylinder wall, eliminating internal wear and parts replacement. The rotors are stabilized by gears requiring a small amount of oil in the gear housing. Gear oil change requirements are minimal at approximately every 20,000 hours.

**Laboratory Dry Claw Tank Mount Systems** (with HMI, PRMI or Basic controls)

<table>
<thead>
<tr>
<th>Model</th>
<th>SCFM @ 19” Hg</th>
<th>HP Tank</th>
</tr>
</thead>
<tbody>
<tr>
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<td>261</td>
<td>15 (2)</td>
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<td>LCVQ0205</td>
<td>195</td>
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<td>LCVQ0305</td>
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<td>LCVQ0405</td>
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<td>5 (3)</td>
</tr>
<tr>
<td>LCVQ0505</td>
<td>91</td>
<td>3 (3)</td>
</tr>
<tr>
<td>LCVQ0605</td>
<td>74</td>
<td>2 (3)</td>
</tr>
<tr>
<td>LCVQ0705</td>
<td>58</td>
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<td>LCVQ0805</td>
<td>41</td>
<td>1 (2)</td>
</tr>
<tr>
<td>LCVQ0905</td>
<td>34</td>
<td>1 (2)</td>
</tr>
</tbody>
</table>

**Innovative Options**
- Powerex Building Management Integrator (PRMI) controls
- Air or Electric Auto Purge
- Carbon Filters
- Liquid Isolators

**END**
Oil Sealed Rotary Vane Technology

**Features**
- 2 to 4 HP
- Compact Design
- Capability to isolate each pump solely
- UL Listed Controls
- Alarms with dry contacts for remote monitoring
- Inlet Filtration
- Load Management
- Touch Screen Display (for HMI or PBMI controls)
- High temperature alarms
- Liquid tank
- Tank sight glass

**Available Options**
- Powerex Building Management Integrator (PBMI) controls
- Air or Electric Auto Purge
- Carbon Filters
- Anti-Rotative Oil
- Liquid Isolator

**How it works:**
A rotor is mounted essentially in the pump cylinder and contains several sliding vanes. As the rotor turns, centrifugal force causes the vanes to slide outward against the cylinder wall. A succession of variable volumes is formed in the cylinder housing creating the flow of air through the pump. The pumping chamber is dry. There is no contact between the rotors or the cylinder wall eliminating internal wear and parts to replace. The rotors are synchronized by gears requiring a small amount of oil in the gear housing. Gear oil change requirements are minimal or approximately every seven years.

**Laboratory Oil Sealed Rotary Vane Systems**

**Parameters**
- HP Tank
- Old/New

**Table 1**

<table>
<thead>
<tr>
<th>Model</th>
<th>HP Tank</th>
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<tbody>
<tr>
<td>GNO005</td>
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<td>GNO010</td>
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<td>GNO015</td>
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<td>GNO060</td>
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**Table 2**

<table>
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</thead>
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<td>GNO010</td>
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<td>GNO015</td>
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</tr>
<tr>
<td>GNO060</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

**Dry Claw Pump Technology**

**Features**
- 2 to 4 HP
- Compact Design
- Capability to isolate each pump solely
- UL Listed Controls
- Alarms with dry contacts for remote monitoring
- Inlet Filtration
- Load Management
- Touch Screen Display (for HMI or PBMI controls)
- High temperature alarms
- Liquid tank

**Available Options**
- Powerex Building Management Integrator (PBMI) controls
- Air or Electric Auto Purge
- Carbon Filters
- Liquid Isolator

**How it works:**
Inside the pump housing, two claw shaped rotors rotate in air as they rotate in opposite directions. The air is compressed by the rotors, then discharged through a discharge to the atmosphere. The pumping chamber is dry. There is no contact between the rotors or the cylinder wall eliminating internal wear and parts to replace. The rotors are synchronized by gears requiring a small amount of oil in the gear housing. Gear oil change requirements are minimal or approximately every seven years.

**Laboratory Dry Claw Pump Tank Mount Systems**

**Parameters**
- HP Tank
- Old/New

**Table 1**

<table>
<thead>
<tr>
<th>Model</th>
<th>HP Tank</th>
<th>Old/New</th>
</tr>
</thead>
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**Table 2**

<table>
<thead>
<tr>
<th>Model</th>
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<th>Old/New</th>
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<tbody>
<tr>
<td>CGD005</td>
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<tr>
<td>CGD010</td>
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<td>CGD015</td>
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</tr>
<tr>
<td>CGD050</td>
<td>50</td>
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</tr>
</tbody>
</table>

*Receiver is frame mounted on top of the two pumps.
Powerex offers three different control panel options for our Laboratory Vacuum Systems —

- **HOA switch for each pump**
- **Acknowledge button**
- **Audible and visual alarms with an enclosure**
  - Service intervals
  - High temperature conditions
  - System overload trip
- **Visual and audible alarms for:**
  - Enclosure
  - Standardized 115 or 230 volt, 50/60 Hz．
  - Optional auto purge feature
- **Panel door includes:**
  - Service alerts
  - Email notifications for alarms and monitoring
- **All features of the standard HMI control panel**
  - Building automation gateway with BacNet® protocol
  - Fixed allocations for alarms and service alerts

**Laboratory Vacuum System Design**

- **Includes:**
  - Vacuum pumps
  - AMI motor
  - Control panel (HMI, PBMI, or Basic)
  - All interconnecting piping and wiring
  - Redundant control circuit transformers
  - Dry contacts for remote alarm monitoring
  - Reserve pump in use alarm
  - Timed lead/lag pump alternation
  - Power on light
  - Run light meter
  - Minimum run timer
  - Hand/Off/Auto selector switch
  - Circuit breaker
- **Features built under same standards as all our medical air and vacuum life support systems:**
  - HMI, PBMI and Basic controls available
  - Optional auto purge control feature available with HMI or PBMI controls

Knowing the type of research, application and what processes are being used is key to determining the best vacuum pump technology—lubricated vane or claw—to use for your laboratory application. Our sales team can help you select one of our standard systems or work with our engineers to design a system a customized to your needs.

**Standard HMI Control Panel:**

- PLC controller and 4” color HMI (Human Machine Interface) touch screen
  - Displays the operating status of the unit
- Ultraviolet labeled and labeled, NEMA 12 enclosure
- Vibration isolation pads and flex connectors
- All interconnecting piping and wiring
- Control panel (HMI, PBMI, or Basic)
- ASME receiver
- Vacuum pumps
- NEMA 12 enclosure
- UL508A listed and labeled, UL and CE marks
- **Optional HMI Control Panel:**
  - PLC controller and 4” color HMI
  - Building automation gateway with BacNet® protocol
  - Fixed allocations for alarms and service alerts
- **Optional PBMI Control Panel:**
  - Building automation gateway with BacNet® protocol
  - Fixed allocations for alarms and service alerts
  - Service intervals
  - High temperature conditions
  - System overload trip
  - Visual and audible alarms
  - Redundant control circuit transformers
  - Dry contacts for remote alarm monitoring
  - Reserve pump in use alarm
  - Timed lead/lag pump alternation
  - Power on light
  - Run light meter
  - Minimum run timer
  - Hand/Off/Auto selector switch
  - Circuit breaker
  - Horn silence and lamp test pushbuttons
- **Optional Basic Control Panel:**
  - Control panel
  - NEMA 12 enclosure
  - UL508A listed and labeled, UL and CE marks
  - **Auto purge controls**
    - Provides extra protection for pumps by performing a fresh air flush before shutting down
    - Air or electric auto purge control options available

Auto purge controls are available as an option for those processes requiring a fresh air flush before shutting down the off load pumps. The minimum run and auto purge functions are enabled in the control as appropriate. Pumps will run through an automatic purge cycle every 60 minutes (after alternation phase), to purge any gases from the pump to atmosphere. A positive switch is provided to select automatic purge, manual purge, or purge off modes. The screen shot to the left simulates a quadplex system, with purge gas and a making moment to shunt demand, pump #2 jumping and pump #3 in ready mode should demand increase. Auto purge feature includes:

1. **Min. purge cycle-per pump**
2. **Pump will be put away clean (after completed purge cycle) when it is not needed to meet demand**
3. **Low vacuum alarm which indicates high usage or service requirement for other pump(s)**

Our standard auto purge option will use a pneumatic actuated valve. The electric auto purge option will use an electric valve.

*Please specify which (air or electric) auto purge option you would like when ordering.*

**FOR MORE INFORMATION, CONTACT YOUR LOCAL DISTRIBUTOR OR POWEREX SALES REPRESENTATIVE.**

- **Laboratory Vacuum Systems**
- **Product Selection Guide**
- **Vacuum systems customized specifically for Laboratory Applications**
- **Packages that leverage proven Dry Claw and Oil Sealed Rotary Vane Technologies**
- **Easy to use product guide with control panel options and product specification charts to help you find just the right product**