

AES Group, Inc.

Sales • Construction • Service

SPECIFICATION

AES-Powerex Laboratory Enclosed Oil-Less Scroll Compressed Air System

BASE MODEL NUMBER: LSE4005HP-AES-SPL
SYSTEM CAPACITY: 100 SCFM @ 145 PSIG – 100 PSIG Delivery Pressure
*100 SCFM @ 145 PSIG Each Enclosed Scroll Compressor
HORSEPOWER: 40 HP Total (5HP x 8)
RECEIVER SIZE/CONFIGURATION: 200 Gal./Vertical + 240 Gallon “DRY” Receiver
ELECTRICAL: 208/230/460V, 3PH, 60Hz
(MUST SPECIFY VOLTAGE WHEN ORDERING.)

GENERAL DESCRIPTION

The Laboratory Scroll Enclosure Systems are designed specifically for laboratory applications. They shall supply continuous oil-free air by using the most advanced scroll technology available. Each unit includes scroll compressors mounted inside of a rigid steel sound enclosure. Enclosure to have a powder coat finish and shall include sound deadening insulation. Noise levels shall not exceed 62 dBA per compressor unit with all internal compressor sets in operation.

Simplex system consists of (1) enclosed scroll compressor units, a master control panel, an air receiver, and a desiccant dryer package. Each enclosed compressor unit to include in-line intake filter with optional NPT connection for remote piping, high temperature shutdown, and an internal isolation ball valve. System includes (1) compressor modules, and (1) air purification module. Each module is shipped loose for field installation.

System installation requirements:

- Main power connection to master control panel
- Interconnecting power wiring between master panel, each compressor unit, and tank/dryer skid
- Installation of control signal wiring between master panel and each compressor unit
- Interconnecting plumbing connections between each compressor and tank/dryer skid
- Remote inlet air connection to each module – minimum 1.5” NPTF (only if unit ordered with remote inlet option)

DETAILED PRODUCT DESCRIPTION:

OIL-LESS SCROLL COMPRESSOR PUMP

The compressors shall be belt driven oil-less rotary scroll single stage, air-cooled oil-less construction with absolutely no oil needed for operation. The rotary design shall not require any inlet or exhaust valves and shall be rated for 100% continuous duty. Direct drive compressors shall not be used. Tip seals shall be of a composite PTFE material and be rated for 5,000 hours operation. Compressor bearings shall be external to the air compression chamber, and shall all be serviceable for extended compressor life. Bearing maintenance shall not be required until 5,000 run hours. Compressors with bearings that are not accessible for service have a limited life span and shall not be accepted. Compressors shall have an integral radial flow fan for cooling and are rated for 145 psig maximum pressure at sea level. Each compressor is equipped with a discharge check valve, flex hose, and air-cooled aftercooler.

COMPRESSOR CABINET CONTROLS

The controls shall be integrated with the compressor cabinet from the factory. A lighted on/off switch is provided along with a user friendly, touch screen, HMI type display panel. The controls will operate and continuously monitor the system and provide information and alarms to the user through the HMI display. Features include display of system pressure, pump run status, pump fault conditions (high temperature shutdown, motor overload

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fault), maintenance counters and warnings, system trends, and pump HOA control. System setup mode allows user to adjust system pressure setpoints, enable auto restart function, reset alarms, and reset maintenance counters. Compressor operation shall include the Powerex Variable-Pump-Drive control logic. Each compressor pump is automatically staged on or off individually based on actual system demand. Energy efficiency is maximized at all usage levels. Lead compressor status will rotate based on demand, as well as timed alternation to maintain equal run hours. Dry contacts are provided for remote monitoring of compressor fault conditions.

- Building automation communication gateway, with BacNet® protocol. Ethernet port for connection to BacNet® /IP server or direct connection to facility Ethernet for viewing of system operations and status via device IP-address.

MASTER CONTROL PANEL

NEMA12 Enclosure – Single point connection for incoming three phase power via main power distribution block – Circuit Breaker Disconnect with lockable handle provides circuit protection for each scroll enclosure – Control Voltage Transformer with fused primary and secondary protection provides power to air quality monitor, desiccant dryer, and receiver drain – Low Pressure Switch – System Alarms to include Audible and Visual Indication and Dry Contacts (Low Pressure Alarm – General Fault Including High Temp or Overload Trip) – Dry Contacts for Air Quality Monitor -

Summary of features:

- NEMA 12 enclosure
- Power distribution block
- C/B Disconnect switches (one for each compressor unit)
- Control transformers with primary and secondary protection
- PLC controlled alternation
- Lighted (LED) HOA switches
- Alarm horn with acknowledge pushbutton
- Low pressure light (LED) and dry contacts
- Integrated dew point monitor power and alarm connections
- Power connection for tank drain
- General compressor fault light (LED) to indicate high temperature/motor overload
- General fault dry contacts for connection to master alarm
- Terminal blocks for connection of field devices and remote alarm signals

AIR-COOLED AFTERCOOLER

Aftercoolers are provided for each compressor pump. Each unit is constructed of copper tubing with metal headers and is to be mounted integral to the compressor enclosure.

MOISTURE SEPARATOR

A liquid separator with automatic float condensate drain is provided to be installed after the final discharge of the air compressor and prior to the tank/dryer assembly.

RECEIVER TANK – Additional 240 Gallon “DRY” Receiver

The AMSE National Board registered 200 psig working pressure, vertical air receiver is provided with:

- Pressure gauge
- Relief valve
- Manual and automatic no-loss auto drain
- Sight glass
- 3-valve bypass plumbing
- External paint and internal lining to resist corrosion

Receiver is mounted on a common steel frame along with desiccant air dryers.

AIR PURIFICATION SYSTEM

- Dual heat-less, desiccant air dryers
- Dual pre- and after filters
- Dual pressure reducing regulator valves
- Automatic dew point dependent switching to reduce purge frequency

DESICCANT AIR DRYER / FILTRATION

The twin-tower, heatless desiccant air dryer shall yield a pressure dew point of -40 degrees F. The dryer shall be installed and plumbed on a common steel skid to the air receiver. The dryer design shall be of the automatic pressure swing, heatless, regenerative type and shall include a solid-state cycle timer, reliable switching valve design, and purge muffler for quiet operation. Dryer controls shall include on/off/variable mode selector switch and digital display with cycle mode counter.

The filtration system shall consist of 2 stages of filtration mounted and plumbed to the air dryer. The first stage of filtration shall include a .01 micron coalescing pre-filter with element change indicator and automatic condensate drain and installed up-stream of the air dryer. The second stage shall include a 1-micron particulate filter with element change indicator and installed downstream of the air dryer.

MONITORING EQUIPMENT

- Dew point monitor with audible/visual alarms & dry contacts for remote alarm signal