AES Group, Inc.

Sales • Construction • Service

Powerex Enclosed Scroll Laboratory Compressed Air System Specification

BASE MODEL NUMBER:	LSE3005HP-AES-SPL
SYSTEM CAPACITY:	75 SCFM @ 145 PSIG
12.5 SCFM @ 145 PSIG Each Compressor	
HORSEPOWER:	30 HP Total (5HPx6)
RECEIVER SIZE/CONFIGURATION:	200 Gal./Vertical
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 59 dBA with all compressor units in operation.

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

System installation requirements:

1. Main power connection to master control panel with system main disconnect and circuit protection supplied at installation
2. Interconnecting power wiring between master panel, each compressor unit, and tank/dryer skid
3. Installation of factory provided control signal wiring between master panel and each compressor unit
4. Remote inlet air connection to each compressor unit if remote intake option is selected – minimum 1.5” NPTF
5. Interconnecting plumbing connections between compressor and tank/dryer skid

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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 fault), maintenance counters and warnings, system trends, and pump HOA control. System setup mode allows user to adjust system pressure set-points, 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

The system shall include a UL listed master control panel to provide single point electrical connection for incoming power and remote dry contacts for the required alarms. The control panel shall include a NEMA 12 enclosure with a C/B disconnect for the compressor cabinet, a 120V control transformer, and low-pressure alarm. A general compressor fault alarm with audible and visual indicators is provided for indication of high temperature shutdown or motor overload fault conditions. All alarms shall have dry contacts on a labeled terminal strip for remote monitoring. All control and alarm functions shall remain energized while any compressor in the system remains electrically on-line.

Summary of features:

- NEMA 12 enclosure
- Power distribution block
- C/B Disconnect switch (for compressor unit)
- 120V control transformer with primary and secondary protection
- Alarm horn with acknowledge pushbutton
- Low pressure light (LED) and dry contacts
- 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

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

- Pressure gauge
- Relief valve
- Manual and no-loss type automatic 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

MONITORING EQUIPMENT

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