

# *S-energy*<sup>®</sup> EES Energy Efficient Systems Rotary Screw Air Compressors

30-75 kW ■ 40-100 Horsepower



- Superior energy savings
- Payback in less than 2 years
- 90% of wasted heat is recoverable
- Excellent source of comfort heat

  
**SULLAIR**<sup>®</sup>  
Always air. Always there.<sup>™</sup>

# Sullair Capabilities

## Sullair Leadership

Since 1965, Sullair has been recognized around the world as an innovator and a leader in rotary screw compression and vacuum technology. For more than 40 years, Sullair has designed and manufactured its own rotors and air end assemblies at the corporate headquarters in Michigan City, Indiana.

The award-winning rotary screw design sets the industry standards and delivers the quality and reliability one expects from a leader.

## Sullair Technology

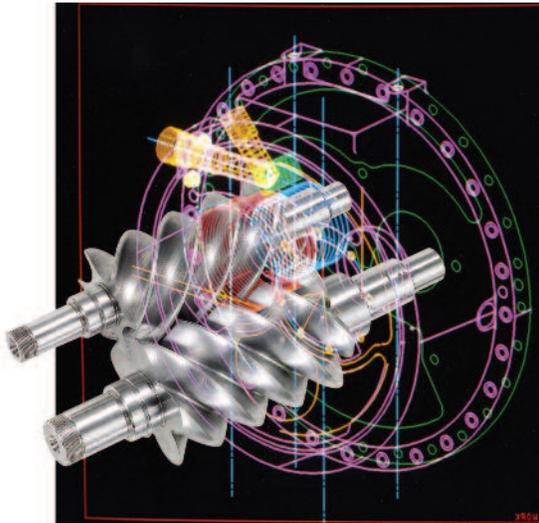
Utilizing the most modern technologies, equipment and advanced manufacturing techniques, Sullair designs, manufactures, assembles, and tests the most innovative compressed air and vacuum products in the industry. Sullair products are known around the world for their universally applicable design, outstanding craftsmanship and superior quality.

## Sullair's Statistical Process Control

Sullair's Statistical Process Control (SPC) system monitors rotor quality standards to assure consistent compressor and vacuum performance.

## Sullair's Commitment to Innovation

Underlying Sullair's leadership is a dedication to excellence and a commitment to innovation. Sullair is constantly exploring new ideas and seeking new ways to meet industry's need for increasingly energy efficient compressed air and vacuum solutions.

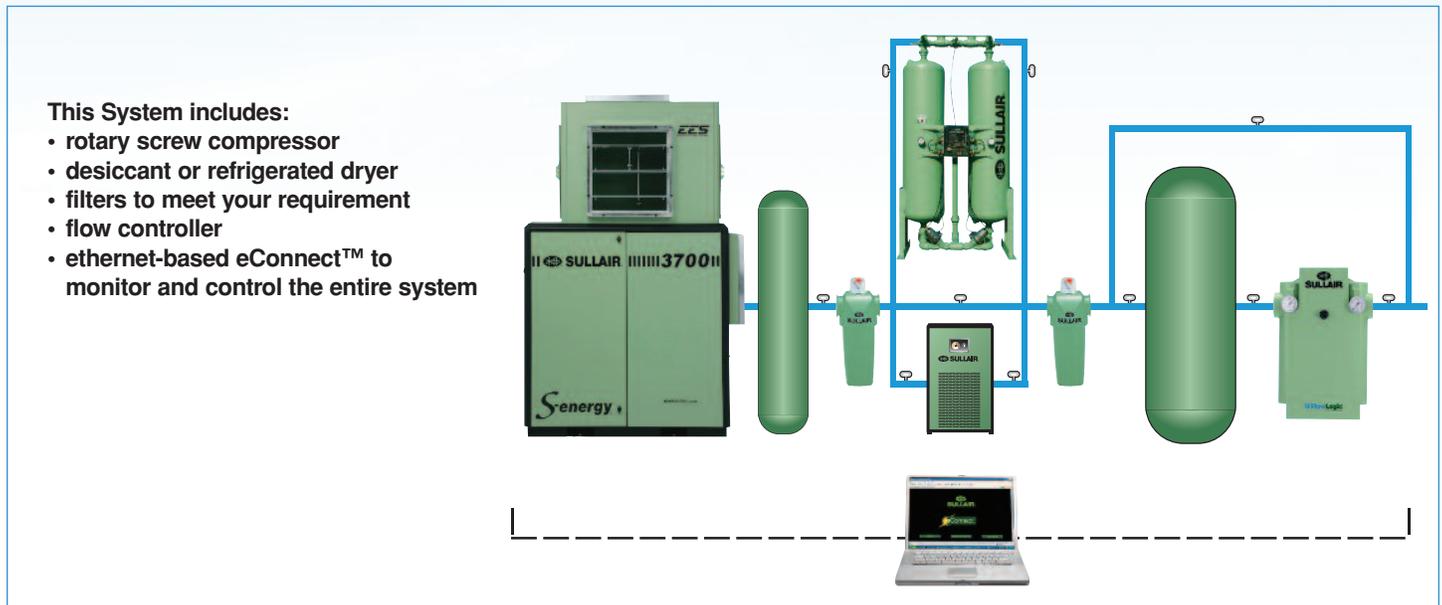


# Sullair Stationary Air Power Systems

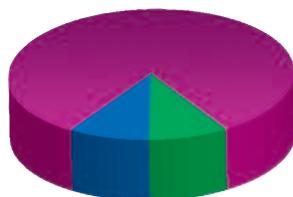
Sullair offers total compressed air systems to help compressed air users reduce energy costs and improve productivity by analyzing, managing and controlling their compressed air systems.

Sullair's air systems include: plant air audits, energy efficient products, compressed air system controls, equipment to monitor and manage systems, air distribution products, and after-purchase support.

Each component of the system is carefully matched for capacity and pressure to provide maximum performance and energy efficiency. A total Sullair system provides the user with an air quality guarantee.



## Sullair Reduces Your Life-Cycle Costs



- Equipment
- Maintenance
- Electricity

### Air Compressor Life Cycle Costs

According to *Best Practices for Compressed Air Systems*, Compressed Air Challenge, Second Edition, 2007, energy costs now

represent 82% of the total operating expenses. Energy savings from Sullair **S-energy** compressors can significantly reduce life cycle costs.

The Sullair **S-energy** compressors significantly reduce operating and energy costs over the entire compressor life cycle. Contributing to the energy savings are:

- Sullair's proven air-end with the low restriction inlet valve
- High efficiency fan
- Low pressure drop air-fluid separation system to prevent energy loss

Sullair designs deliver cost savings for the life of the product. Improved air filtration translates into:

- Extended separator life
- Improved fluid filter life
- Less lubricant contamination

To reduce fluid disposal costs, we offer our biodegradable Sullube™ 8000-hour fluid, or 24KT™, a long-life fluid that never needs changing.

# Why a Heat Recovery System?

## Energy from Compressed Air

The Sullair EES recovers energy that is expended while producing compressed air and converts it into a usable source of heat. The heat is stored in the compressor cooling air as it passes through the after-cooler and fluid cooler. This air can then be used as pre-heated make-up air or heating air for plants, warehouses and other buildings. Heat that is not needed is rejected from the system.

## Primary Function: Make-Up Air

The EES is designed primarily to recover the heat of compression in the form of heated make-up air. When the EES is used for this purpose, energy is fully utilized, installation costs are minimized and return on investment is maximized. For every cubic foot of outside air brought into a building by the EES, another cubic foot of air that would have infiltrated into the building at outside temperature is eliminated. Fuel savings result because the plant's primary heating system does not have to heat that cubic foot of outside air up to the temperature of the heated space.

## Supplementary Heating

The EES can also operate efficiently as a heating system. In this type of application, the air is drawn and heated to a higher temperature (90°F/32°C, for example), and then distributed throughout the heated space. This kind of application usually requires a larger ductwork system to distribute the heated air, and therefore a bigger capital investment.

## Process Heating

The EES can also utilize the wasted heat of compression for some process heating applications, such as drying parts, boiler and process combustion air pre-heating. These kinds of applications provide an excellent return on investment because the heat can be used year round.

## Types of Heat Loss

A plant's heat load is the amount of heat required to overcome the sum of two types of losses: infiltrative and conductive.

**Infiltrative** losses result when cold air comes into the plant through cracks, open doors and other openings. Ventilation, processing and other operations utilize the building's air, then exhaust it to the outside. As air is exhausted, it must be replaced by make-up air. If the primary heating system does not draw in outdoor air, there may be insufficient compensation for the exhausted air. When this occurs, a negative pressure is created, causing infiltration.

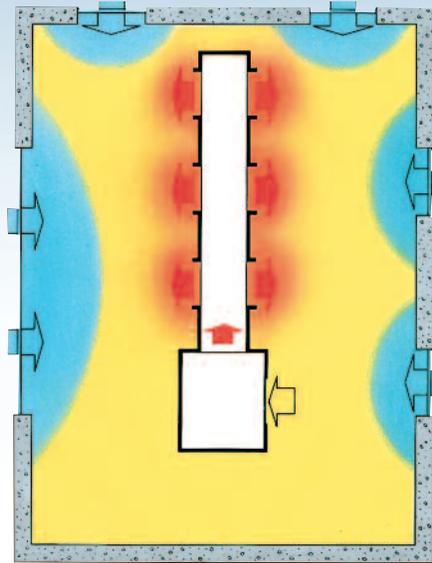
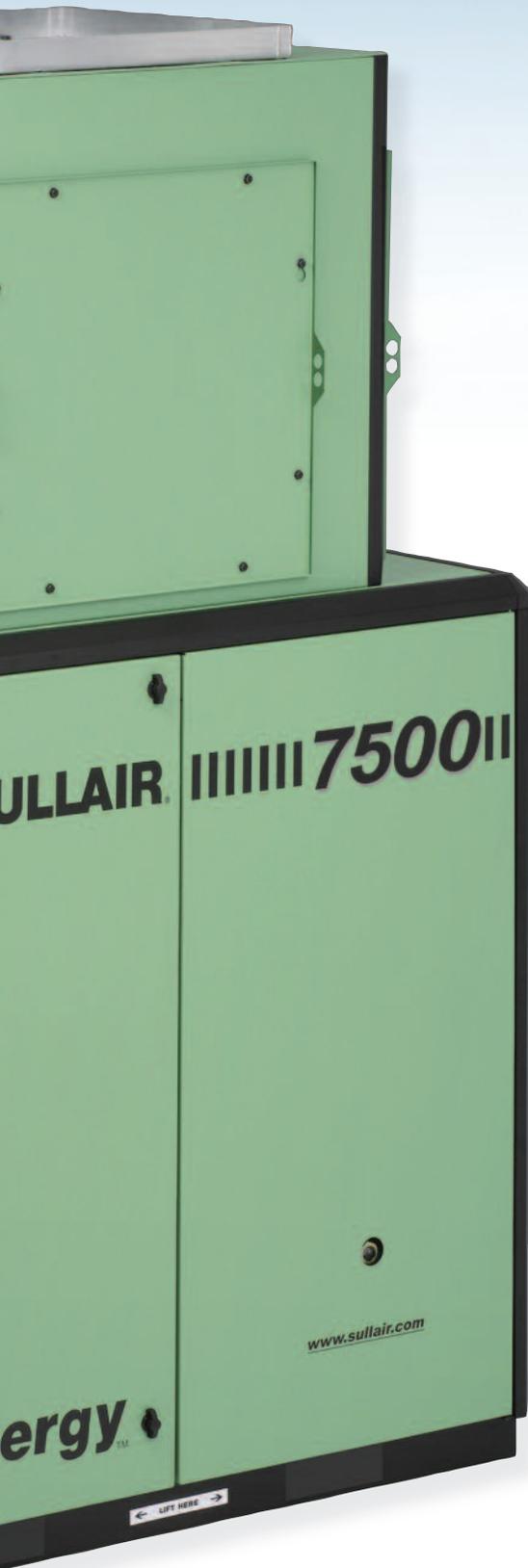
**Conductive** losses result when heat escapes through a building's barriers, including walls, floors, roofs and glass windows.

## Less Infiltration, Lower Heating Costs

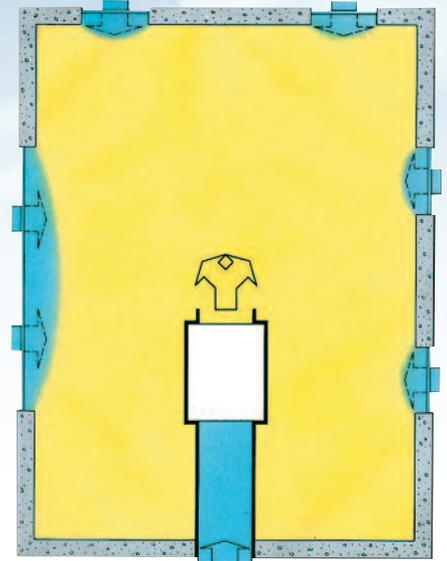
The Sullair EES takes some of the burden off the primary heating system. It draws in cooling air for the compressor from the outside, then recovers the compressor-heated air and delivers it into the building. This can substantially reduce heating costs.



# Why a Sullair Energy Efficiency System?



**Figure 1.**  
**Conventional Recirculating System**  
40°F ■ 65°F ■ 90°F ■



**Figure 2.**  
**Sullair Energy Efficiency System**  
40°F ■ 65°F ■ 90°F ■

**Figure 1.** shows a conventional compressor recirculating system. For compressor cooling, it uses inside air rather than outside air. The warmed air is then distributed to the building through a costly ductwork system. While this system adds heat to the building, it fails to offset some of the negative pressure that causes infiltration.

**Figure 2.** shows the EES drawing in 40°F outside air, then discharging it into the plant at a comfortable 65°F. Note the reduced infiltration.

## Why It's Best

### Positive Pressure Make-Up Air

- May eliminate the need for additional or alternative make-up systems.

### Pre-Engineered Factory Package

- Assures system reliability and responsibility through one source.
- High static fans optimize system performance.

### Sound Reduction

- EES enclosure provides additional sound reduction.

### Thermostatic Damper Package

- No manual damper adjustments necessary.
- Adjustable make-up air temperature settings.
- Consistent temperature in package and make-up air to plant.

### Constant Clean Inlet Air

- Minimizes compressor maintenance.

# Outstanding Energy Savings

## Annual Energy Savings Up to \$16,700

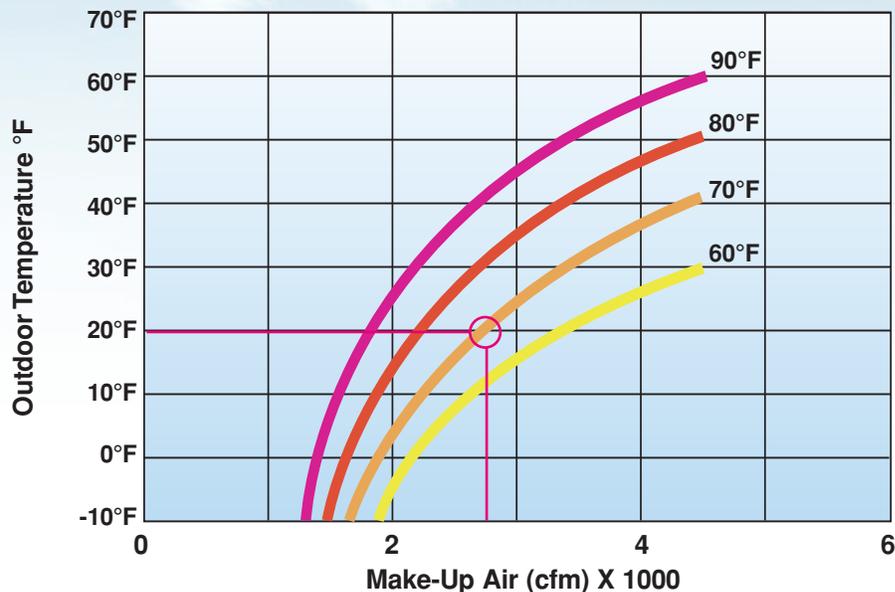
With Sullair's EES, you can achieve significant savings on fuel heating bills. For example, a 300 hp compressor can generate 13,610 BTU/minute. This represents 8.16 therms/hour of usable heat worth \$4080.00 per 1000 hours of compressor operation at \$0.50/therm. And the EES does not impair compressor cooling efficiency.

## CFM Make-Up Air vs. Outdoor Temperature for Typical 50 hp Compressor

The Make-Up Air Versus Outdoor Air Temperature curve (right) indicates the quantity of make-up air provided by a Sullair EES under common outdoor and recovered air temperature conditions. The curve shown applies to Sullair 50 hp compressors.

For example, for a 20°F outside temperature and a desired delivered air temperature of 70°F, follow the 20°F horizontal line to its point of intersection on the 70°F curve. Read down to find a make-up flow of 2700 cfm make-up air at full-load on the compressor.

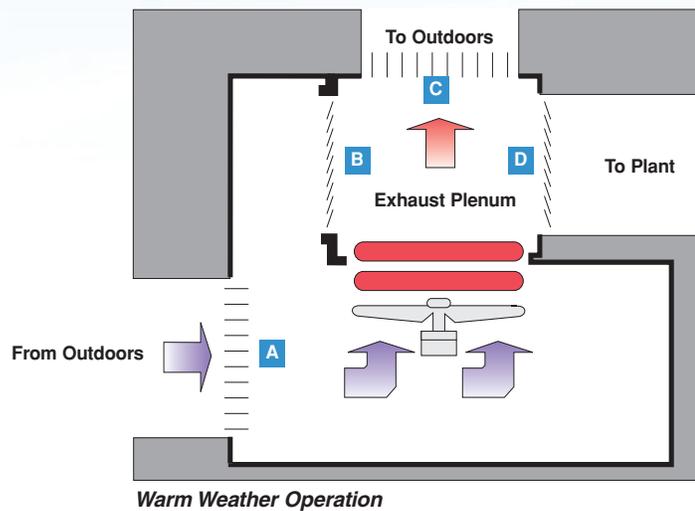
CFM Make-up Air vs. Outdoor Temperature for Typical 50 hp Compressor



# How They Work

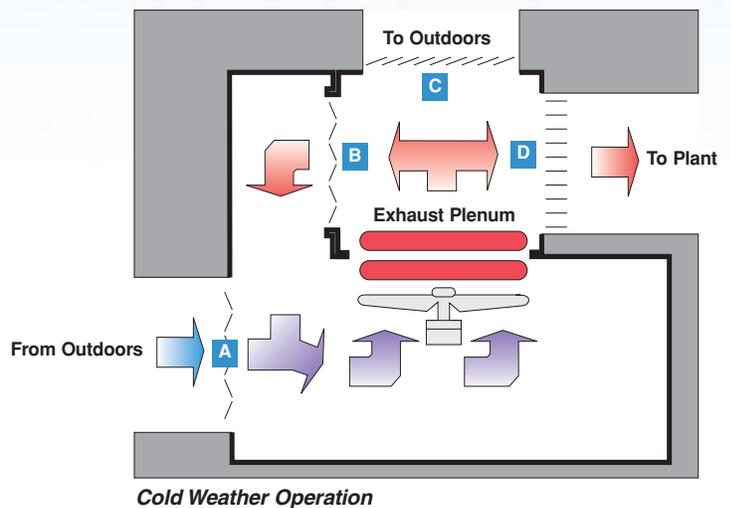
## Warm Weather Operation

The temperature controller signals damper C to open and discharge the compressor-heated air to the outside. Simultaneously, damper A opens fully while dampers B and D close. The compressor takes in all cooling air from the outdoors and the heat recovery module discharges all of the heated cooling air to the outdoors, thus isolating the compressor cooling system from the indoor plant environment.



## Cold Weather Operation

When the compressor isn't operating, dampers A, C, D are fully closed to prevent heat loss and damper B is open. When the compressor starts, damper A opens; and either damper C or D also opens, depending on the signal received from the room thermostat or the outside air changeover control.



# Specifications:

## Dimensions and Weights

Models	Motor hp	Length in	Width in	Height in	Weight* lbs
3000	40	67.1	34.5	98.3	2097
3000V	40	70.9	34.5	98.3	2173
3000P	40	67.1	34.5	98.3	2272
3000PV	40	70.9	34.5	98.3	2348
3700	50	67.1	34.5	98.3	2322
3700V	50	70.9	34.5	98.3	2398
4500	60	67.1	34.5	98.3	2772
4500V	60	70.9	34.5	98.3	2640
4500P	60	84	43.3	111.7	3189
4500PV	60	88	43.3	111.7	3460
4500PS	60	84	43.3	111.7	3465

\*Weight based on 460V ODP.

## Dimensions and Weights

Models	Motor hp	Length in	Width in	Height in	Weight* lbs
5500	75	84	43.3	111.7	3260
5500V	75	88	43.3	111.7	3586
5500PS	75	84	43.3	111.7	3651
7500	100	84	43.3	111.7	3587
7500V	100	88	43.3	111.7	3779
7500P	100	84	43.3	111.7	3718
7500PV	100	84	43.3	111.7	3921
7500PS	100	84	43.3	111.7	3793

\*Weight based on 460V ODP.



# Sullair Supplies Compressed Air Systems

For the lowest total cost of ownership, Sullair provides an air system designed to lower operating cost, improve reliability and maximize return on investment.



Sullair offers air systems to help compressed air users reduce their energy costs and improve their productivity by analyzing, managing and controlling total compressed air systems. Information on the compressed air system tailored to your specific needs can be obtained by contacting your local Sullair Distributor. To acquire local distributor contact information visit us online at [www.sullair.com](http://www.sullair.com) or call 219-879-5451.



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