Air Capital Equipment

Energy Efficient Compressed Air Equipment

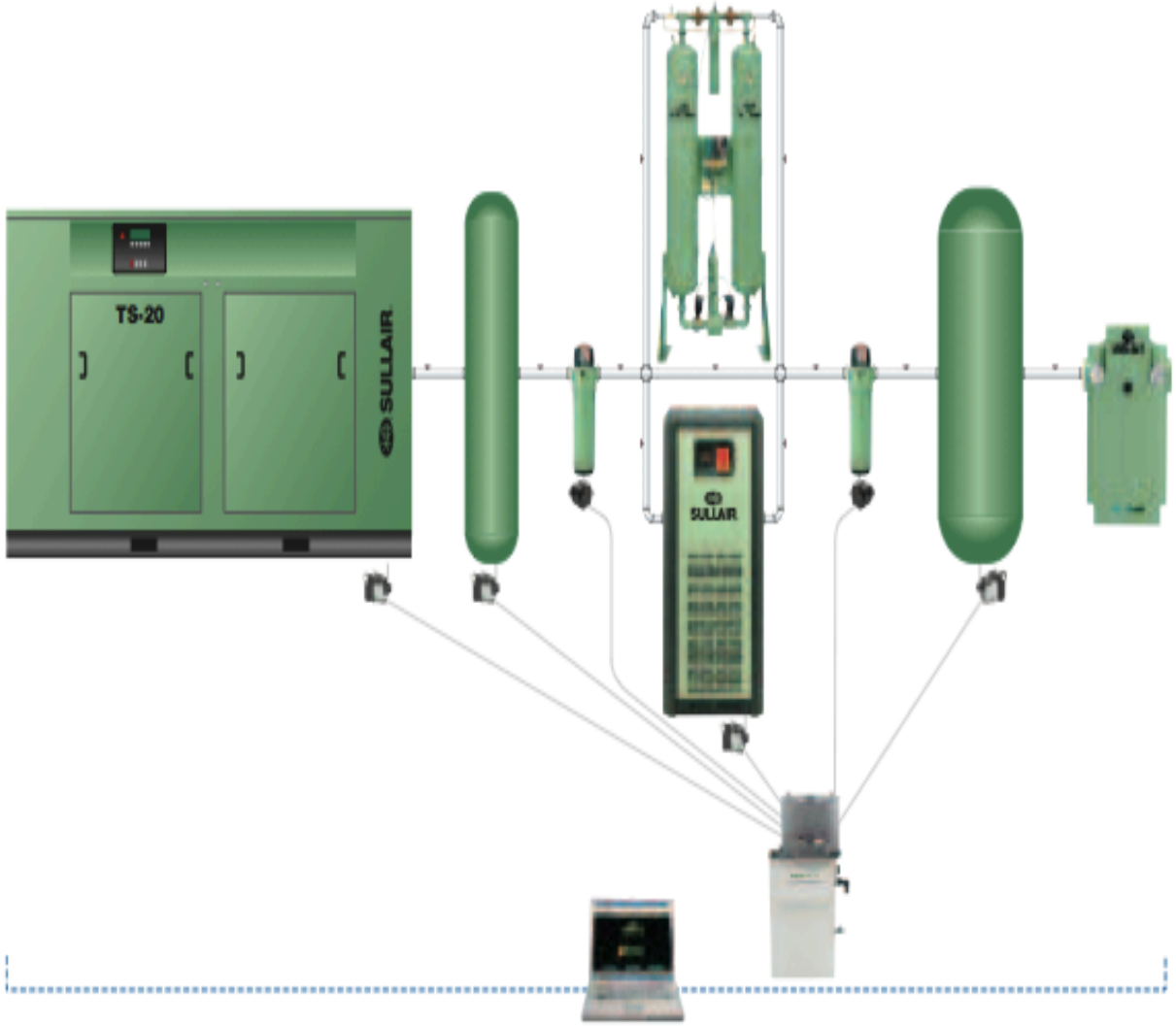
SULLAIR®

Always air. Always there.®

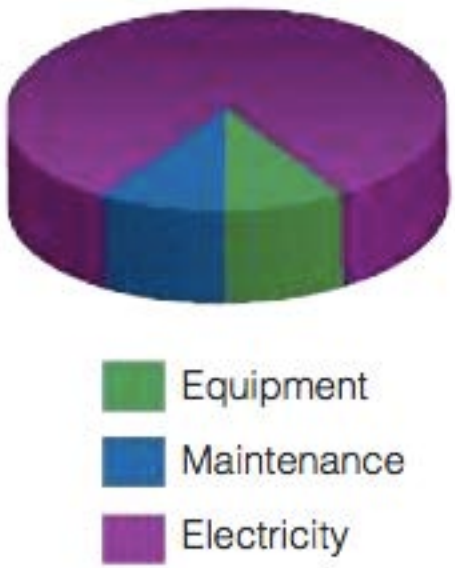
The Sullair Stationary Air Power System

This System includes:

- rotary screw compressor
- wet storage
- refrigerated dryer or desiccant dryer
- filters to meet your requirement
- dry storage
- flow controller
- drains
- oil/water separator
- ethernet-based eConnect™ to monitor and control the entire system



Air Compressor Life Cycle Costs

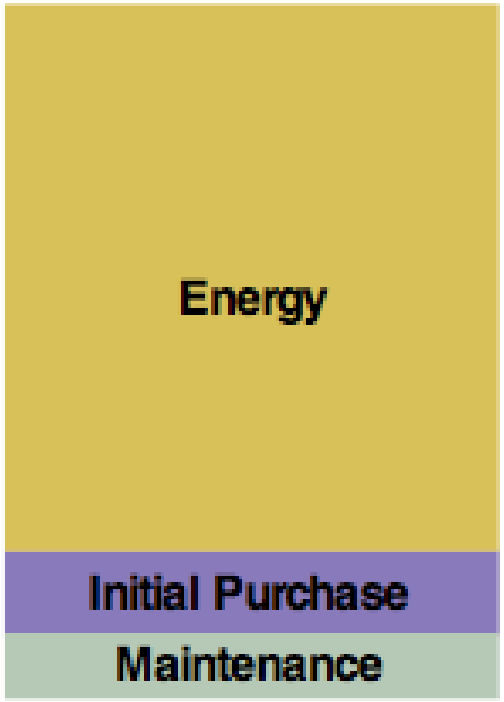


According to *Best Practices for Compressed Air Systems*, Compressed Air Challenge, Second Edition, 2007, energy costs now represent 82% of the total operating expenses. Energy savings from Sullair's Two-Stage Compressors can significantly reduce life cycle costs.

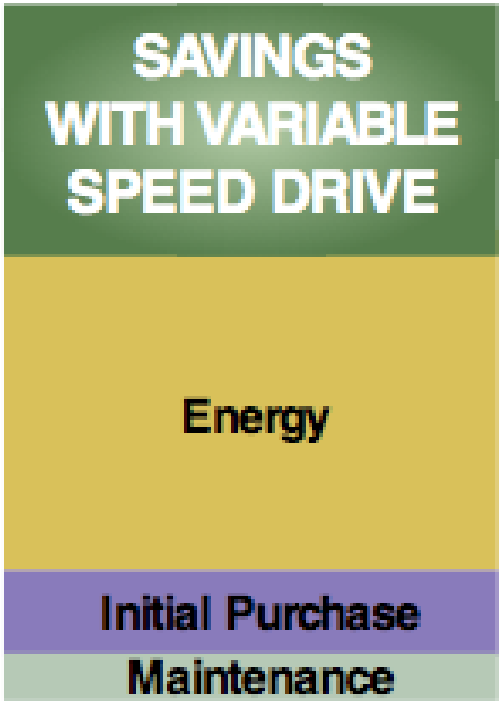
Your Compressed Air System Can Improve Your Bottom Line: 35% Energy Savings in the First Five Years

In just five years, the electrical power cost to operate a standard compressor can be more than six times greater than its purchase price.

Standard Compressors

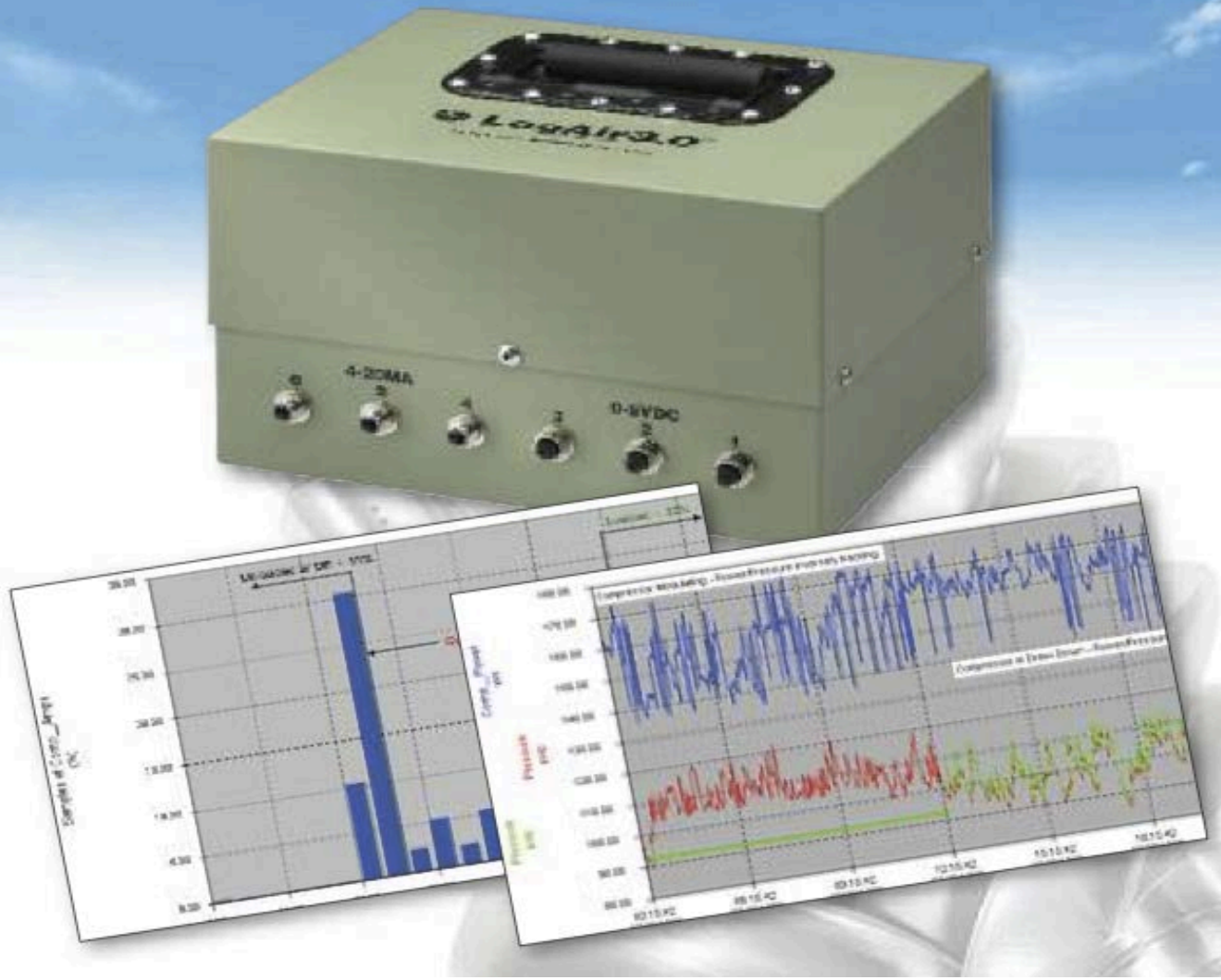


Sullair's VSD Compressors



Sullair Air Audits

Walk-Through ▪ Assessment ▪ Audit



The U.S. Department of Energy determined that on average up to 50%, or more, of the $40,000 a year in energy it takes to run one 100 hp air compressor is wasted.

An air audit can reduce this waste through the following examples:

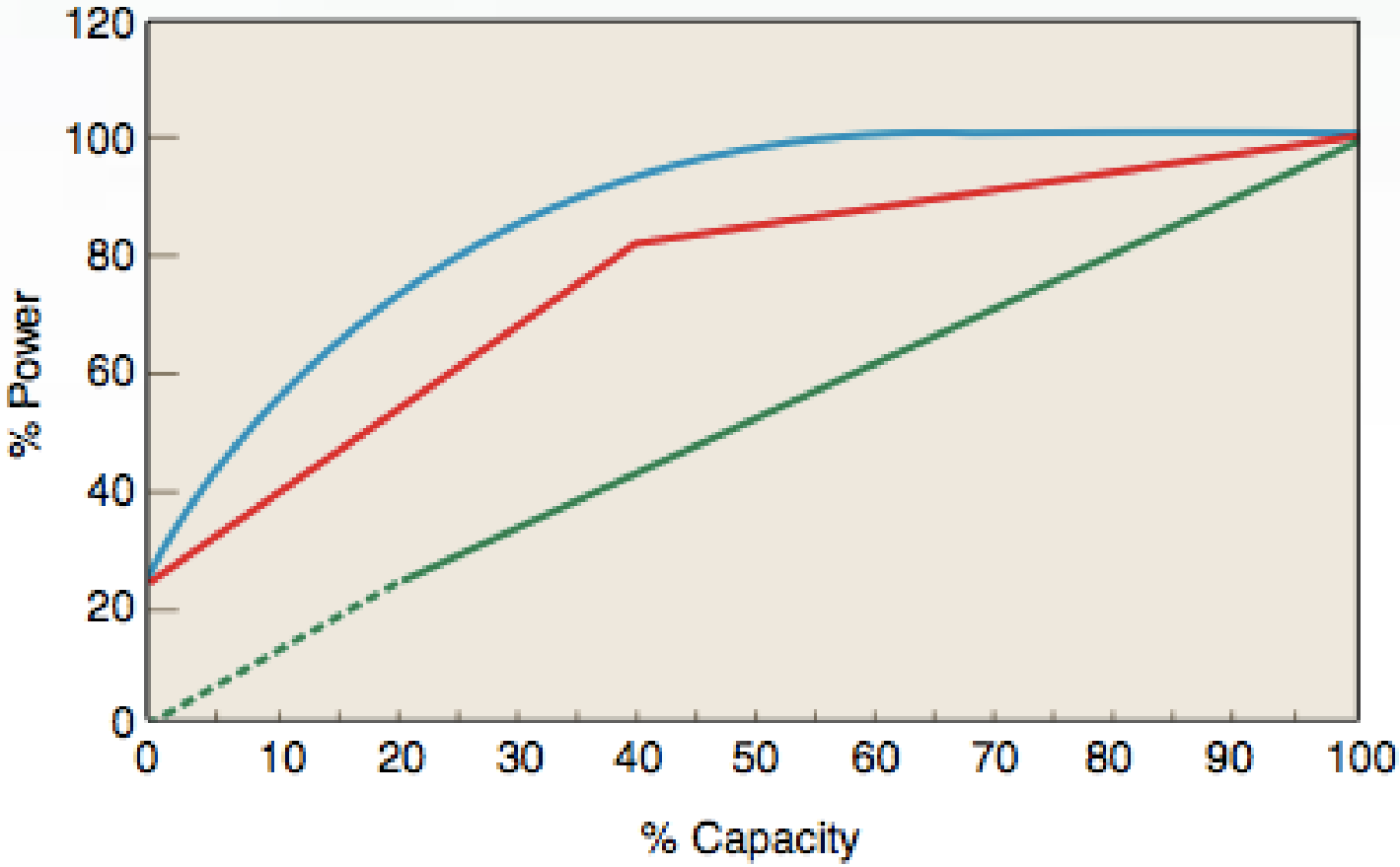
- Reduce operating costs 25% to 50%
- Reduce maintenance costs 10% to 80%
- Get the most accurate possible data on current system conditions
- Receive documentation on power usage and your system's interrelationships
- Can be conducted without downtime or disruption to productivity.

Total Compressor Flexibility

Sullair's **VSD** compressors provides the flexibility to vary both capacity and pressure. This flexibility makes it possible to "grow" your air system without adding more compressors.

FOR TODAY, TOMORROW, AND THE FUTURE

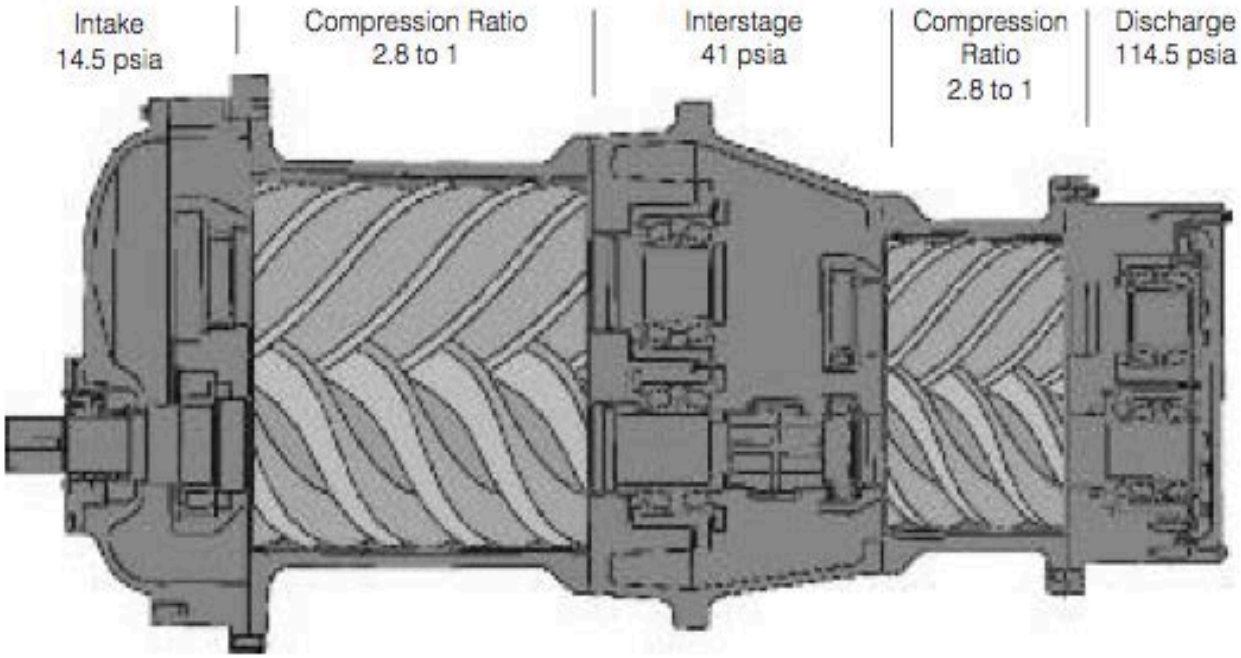
PART-LOAD PERFORMANCE ASSESSMENT



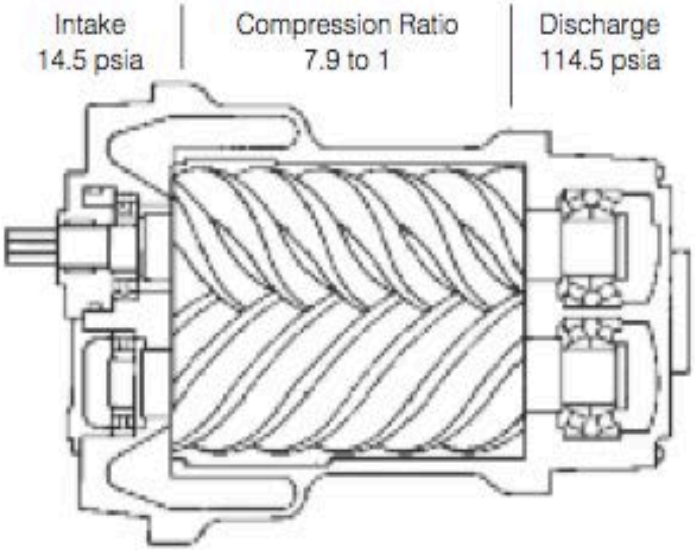
Single-Stage Lubricated Load/Unload
(The graph represents one gallon of storage per cfm.)
Single-Stage Lubricated Inlet Modulation with Blowdown
Single-Stage Lubricated Variable Speed

Reference: Compressed Air and Gas Handbook, 6th Edition, pages 221-223.

Two-Stage



Single-Stage



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

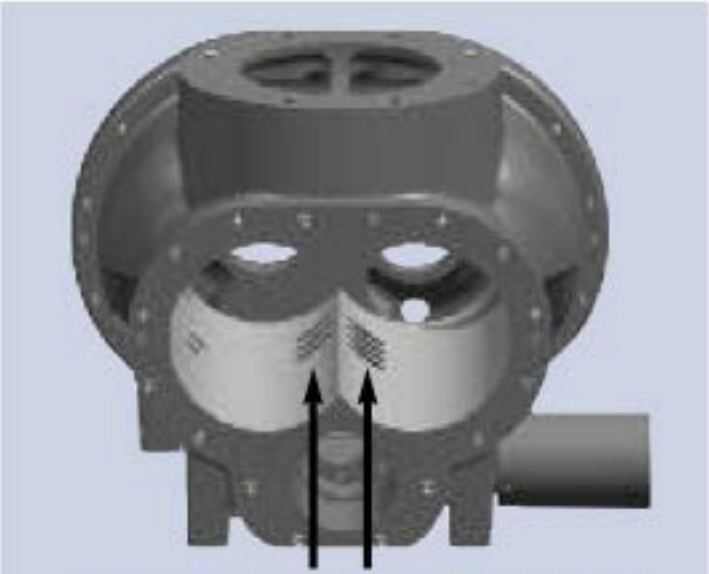
How the Spiral Valve Operation Works

The compression volume varies to suit the air demand by progressively opening or closing internal bypass ports on the air end.

Capacity is matched to system demand, reducing cycling time and extending component life.

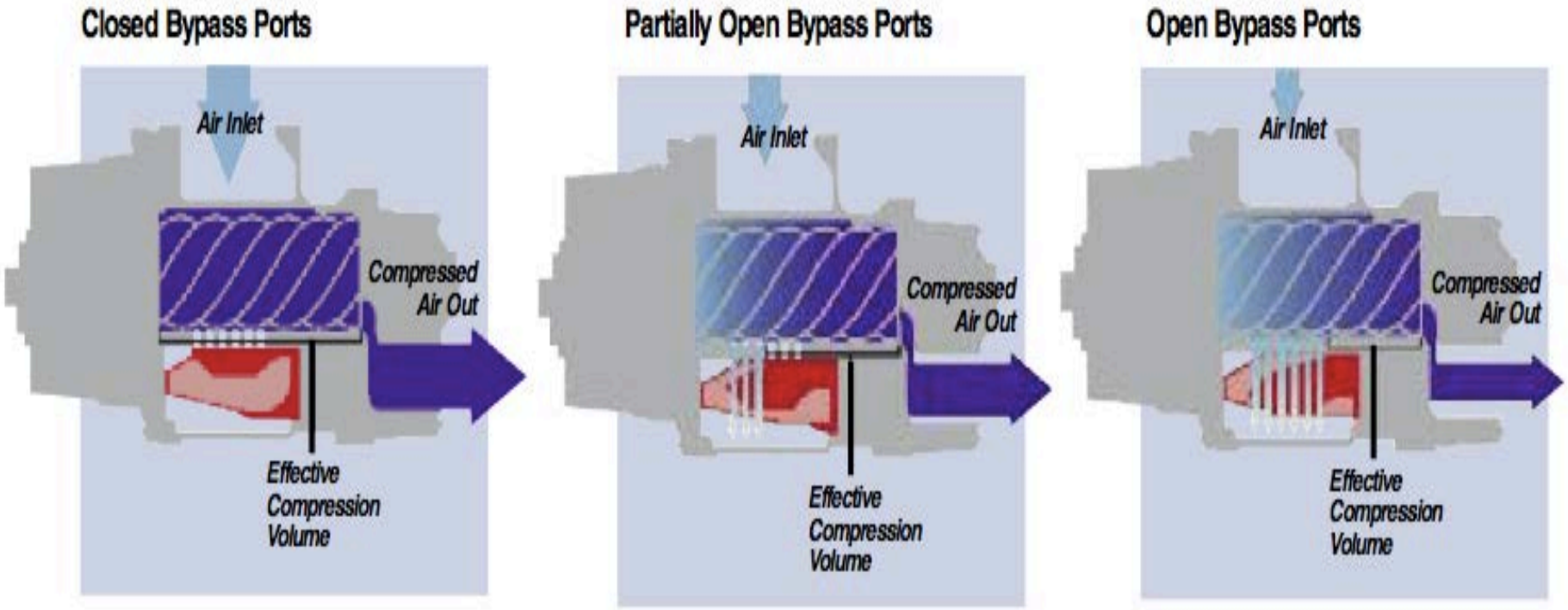
Part-load capacity and efficiency can produce energy savings up to 17%.

Bypass Ports in Stator

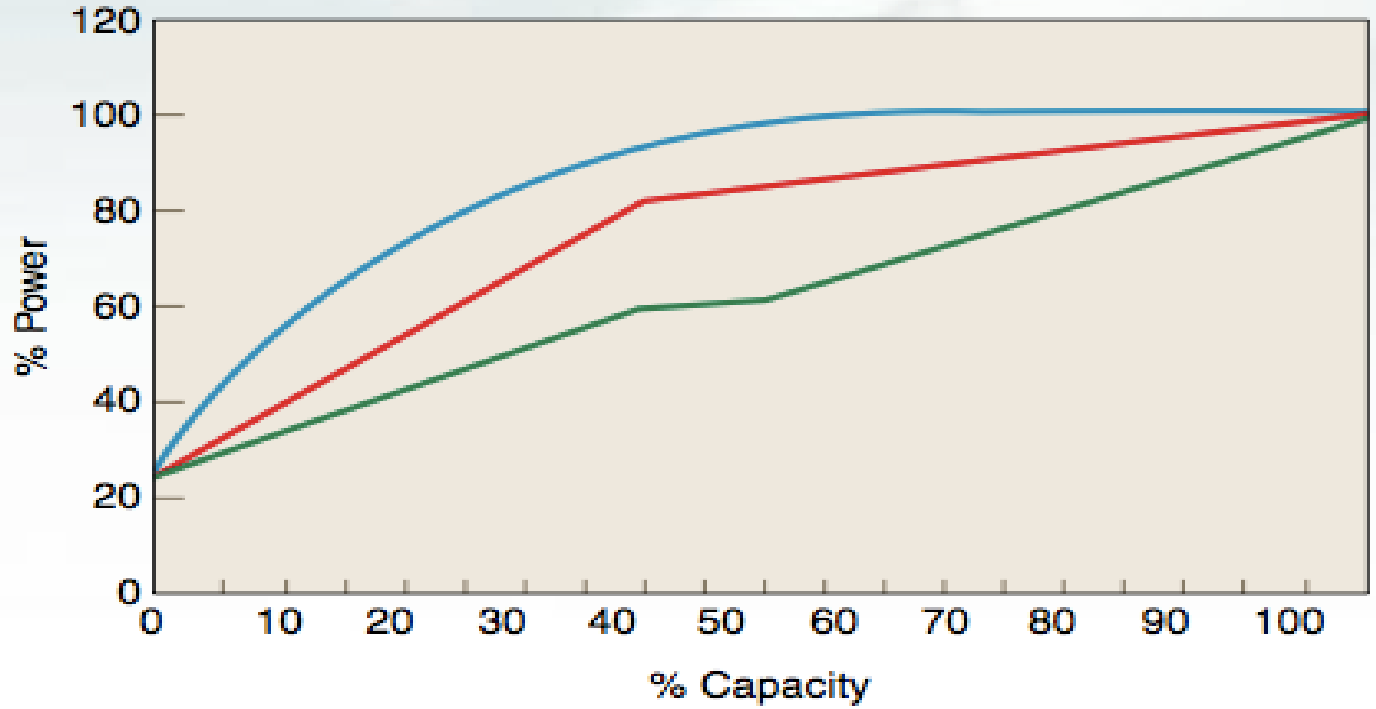


Rotors Removed to Show Bypass Ports

Examples of Changes in Air Demand



PART-LOAD PERFORMANCE ASSESSMENT



Single-Stage Lubricated Load/Unload
(The graph represents one gallon of storage per cfm.)
Single-Stage Lubricated Inlet Modulation with Blowdown
Single-Stage Lubricated Variable Displacement

Reference: Compressed Air and Gas Handbook, 6th Edition, pages 221-223.

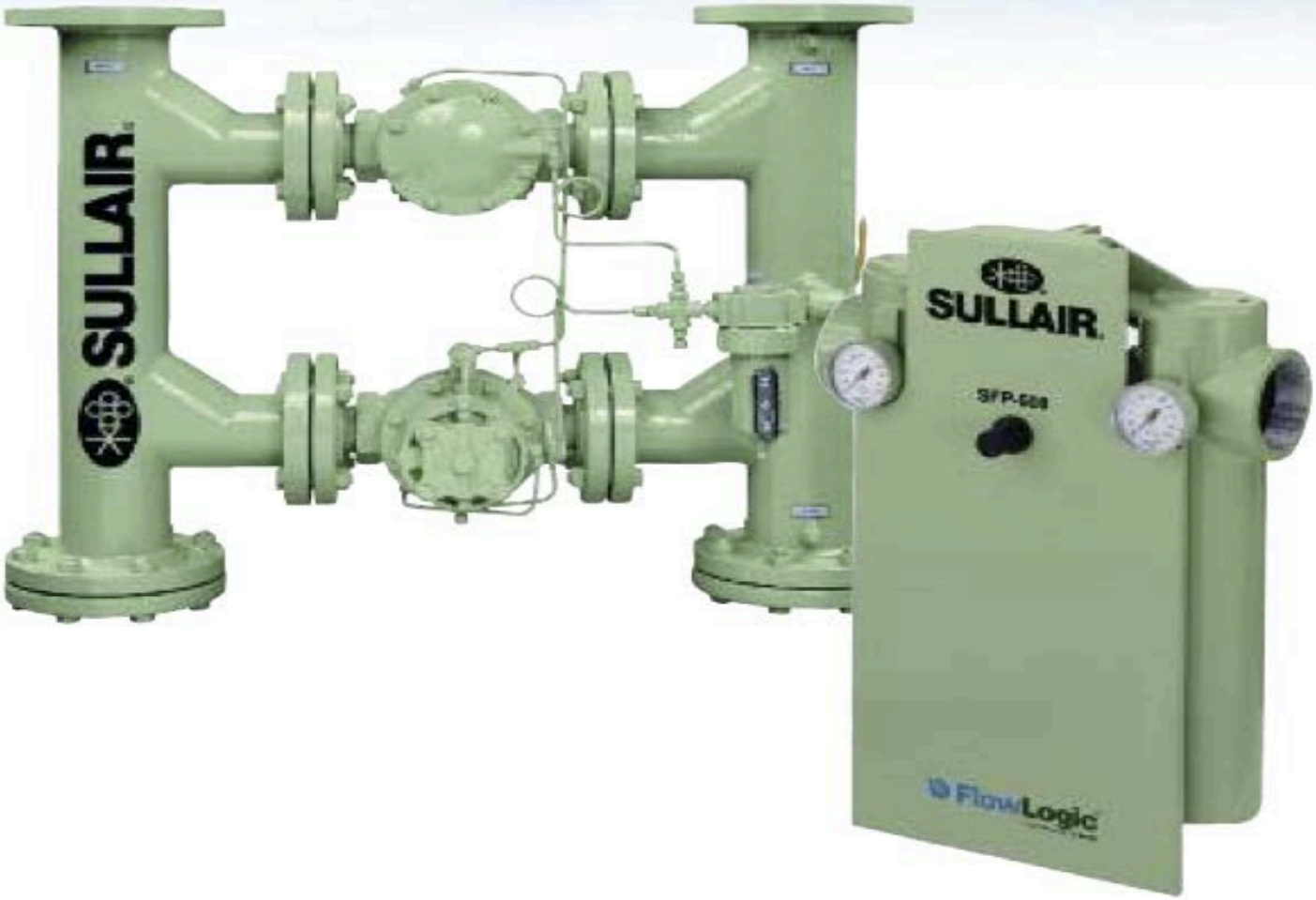
Improved air filtration translates to:

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

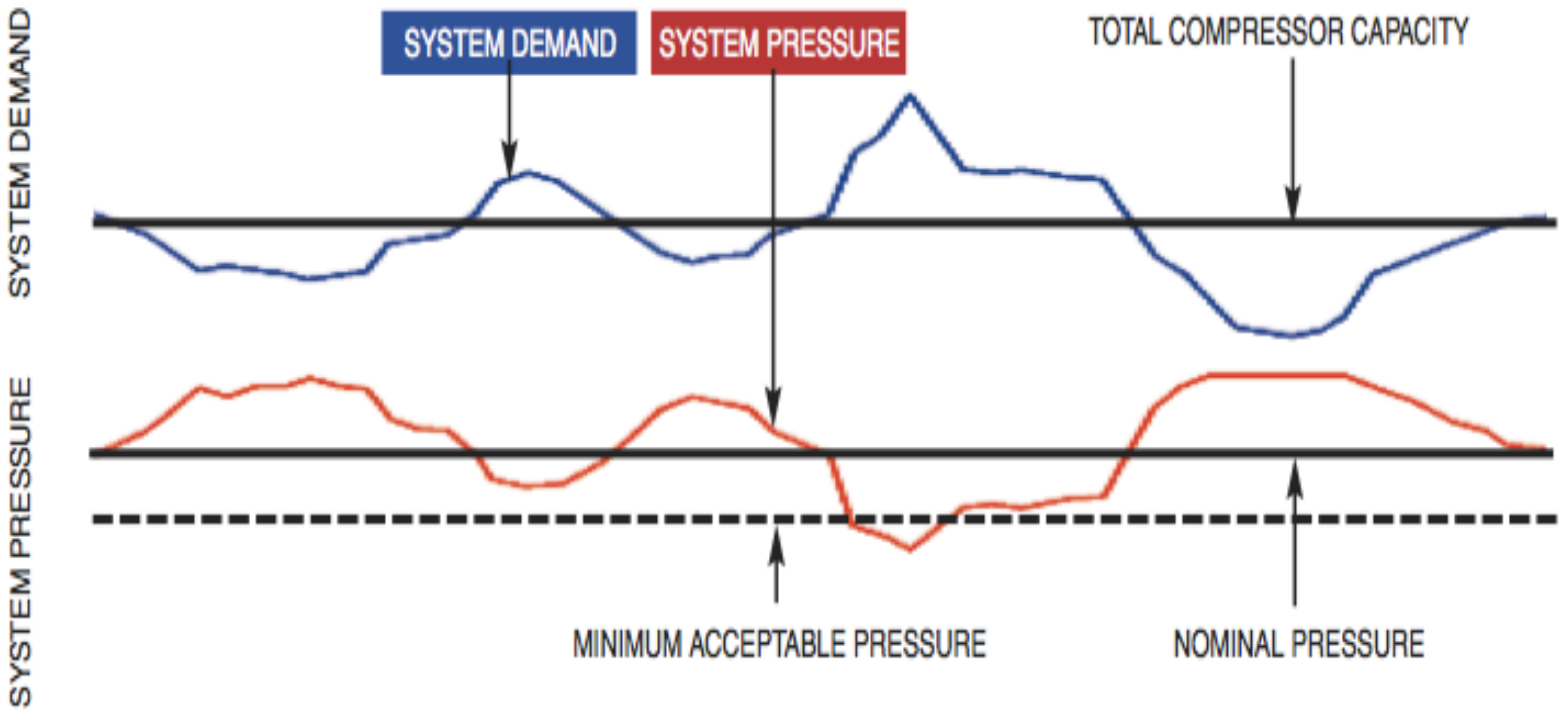
Significant Compressed Air System Pressure Changes Lead to:

- Wear and fatigue on compressor and air-using equipment
- Decreased productivity
- Poor product quality
- High operational costs
- Compressed air-related complaints
- Wasted energy

Flow Pressure Controllers
150–5500 SCFM



Compressed air system without Sullair's ***FlowLogic™*** *flow pressure controller*



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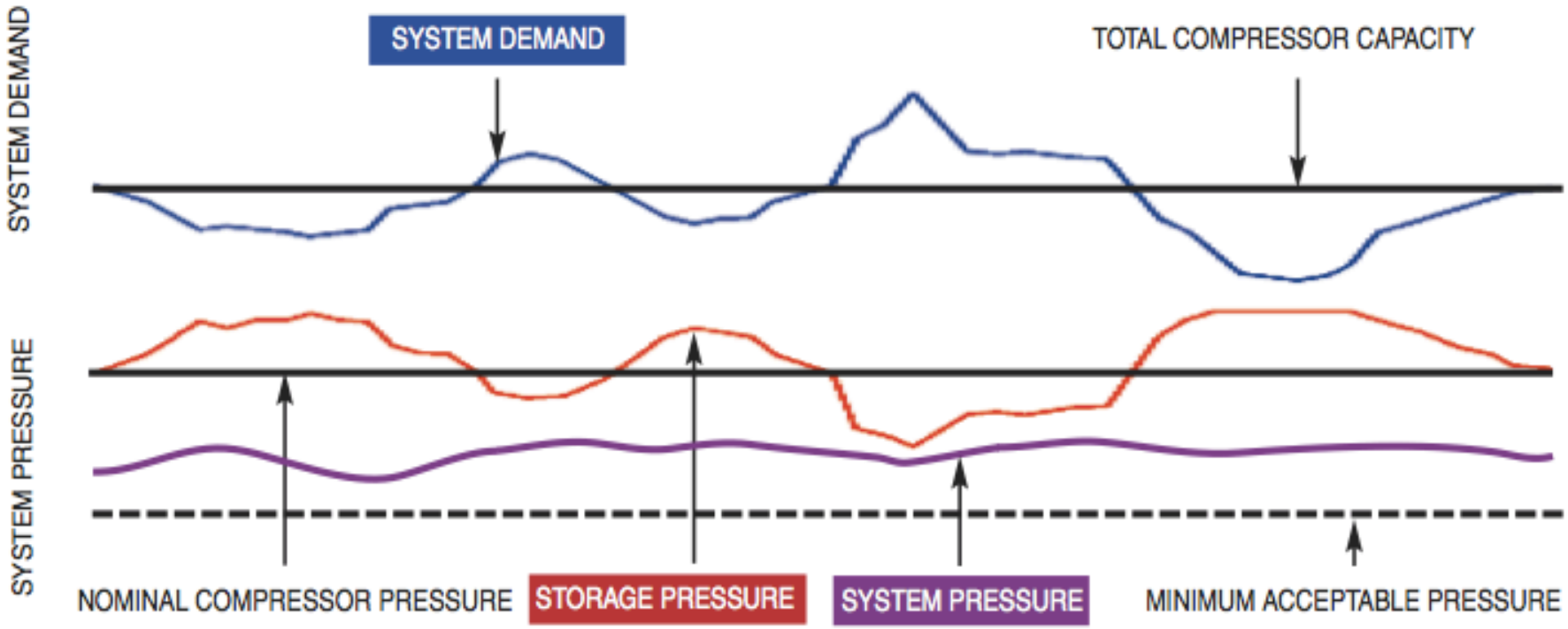


The Importance of Clean, Dry Compressed Air

How much water is too much?
Any amount of water is too much.

Water jeopardizes everything you want your compressed air system to do. It ruins product and fouls processes.

- Relative humidity is the amount of water vapor in air relative to what it could hold at a given temperature
- Moisture in compressed air remains in a vapor state through the compression cycle, so it is not a problem until it leaves the compressor
- Air discharged from a compressor is approximately 150°F to 450°F
- At 75°F and 75% relative humidity, a 75 hp compressor takes in 46 gallons of water vapor in 24 hours. When this air is cooled to approximately 35°F at 100 psig, the water vapor condenses into 46 gallons of liquid!

Liquid remaining after the aftercooler: 14.7 gallons (32%)

Liquid remaining after a refrigerated dryer: 1.8 gallons (4%)

High Temperature Dryers
RH Series: 15-100 scfm

- Inlet temperature up to 240°F
- Independent air cooled after-cooler
- Moisture separator
- Two independent timer drains
- Easy removable panels and maintenance
- Rated at 50°F dew point

Refrigerated Digital Cycling Dryers
RD Series: 400-6,000 scfm

- Optimum dew point levels for the highest system performance
- Cycling control for increased energy savings
- Energy efficient scroll compressor
- Low operating cost
- Optional communication package
- Consistent dew point

Refrigerated Cycling Dryers
RC Series: 150-3,000 scfm

- Stainless steel pump and cold storage tank
- Thermal expansion valve
- Programmable temperature controller
- Energy savings at low loads
- Intermittent compressor operation
- Simple refrigerant circuit
- Thermal mass storage medium
- Accurate dew point control

Refrigerated Non-Cycling Dryers
RN Series: 5-325 scfm

- No dew point swings
- Compact footprint
- Variable flow capacity from 10% to 100%
- High inlet temperature (up to 150°F)
- Counter-current, variable flow heat exchanger
- Non-velocity sensitive demister/separator
- Consistent dew point

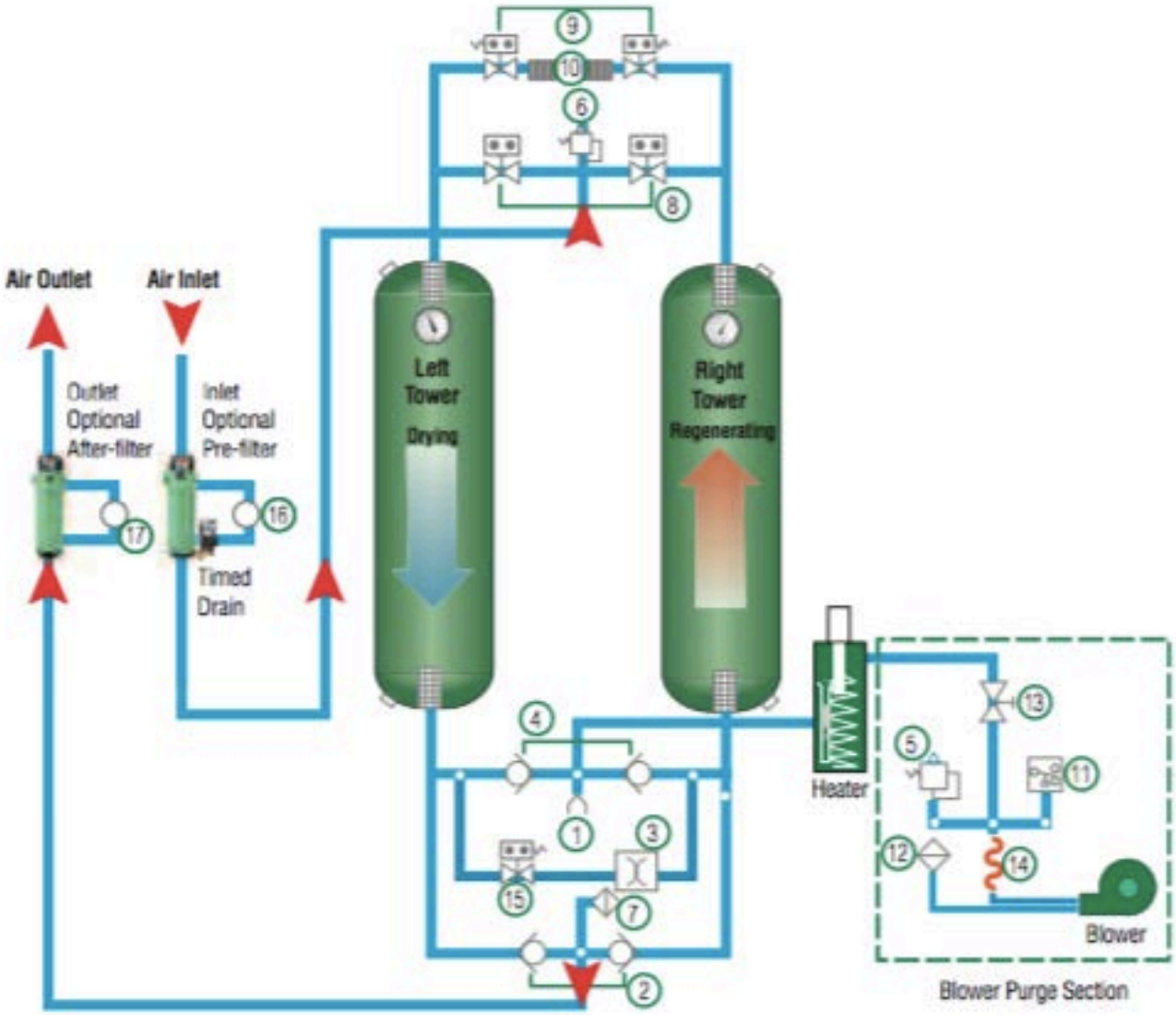
Desiccant Regenerative Dryers

Desiccant Dryer Features

The Sullair desiccant regenerative dryer family is ideal for outdoor compressed air piping and operations that require an extremely low dew point to -40°F (-4°F or -100°F optional).

By combining the proven benefits of desiccant drying with the most advanced designs, Sullair offers a reliable system to clean and dry compressed air for the most critical applications.

DBP Heated


Air Outlet
Air Inlet
Outlet
Optional
After-filter
Inlet
Optional
Pre-filter
Timed
Drain
Left
Tower
Drying
Right
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Regenerating
Heater
Blower
Blower Purge Section
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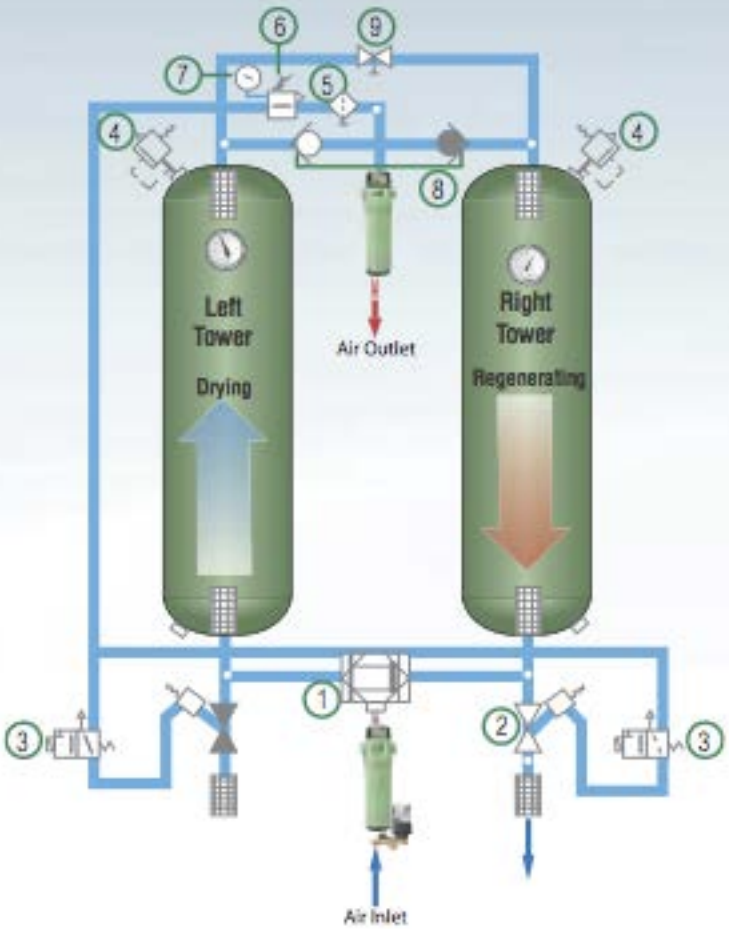
Desiccant Heatless



DHL drawing description:

1 Bi-directional inlet piston valve
2 Angle body purge exhaust valve
3 Purge pilot valve
4 Pressure relief valve
5 Control air filter
6 Control air pressure regulator
7 Pressure gauge
8 Outlet check valve
9 Purge adjustment valve

FILTRATION

Sullair filters protect your plant equipment and processes, improve your product quality and reduce your energy costs. Sullair offers filtration products in an application range from general purpose air to the most stringent food and pharmaceutical applications. Sullair filters are available from 25 to 17,700 scfm, 15 to 725 psig, 36°F to 350°F, ISO 8573.1 quality classes (ASME/CRN approved).

- Filtration equipment includes pre-filters, high efficiency filters, high pressure high temperature and odor-removal filters.
- The type, number, and placement of filters depend on the applications and the degree of contaminant removal required.

Element Features

- 7 Element types
- Superior construction
- Efficient drainage layer
- Hydrophobic micro fiber
- Deep pleats
- Stainless steel cores
- Special disruptive pattern
- PVC impregnated layer
- End cap key fit
- Color coded elements

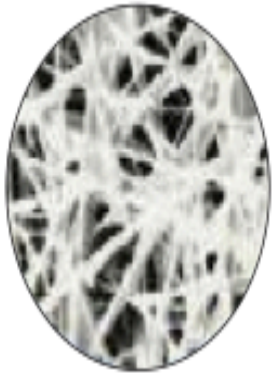
The Filtration Process

Deep Bed Pleating

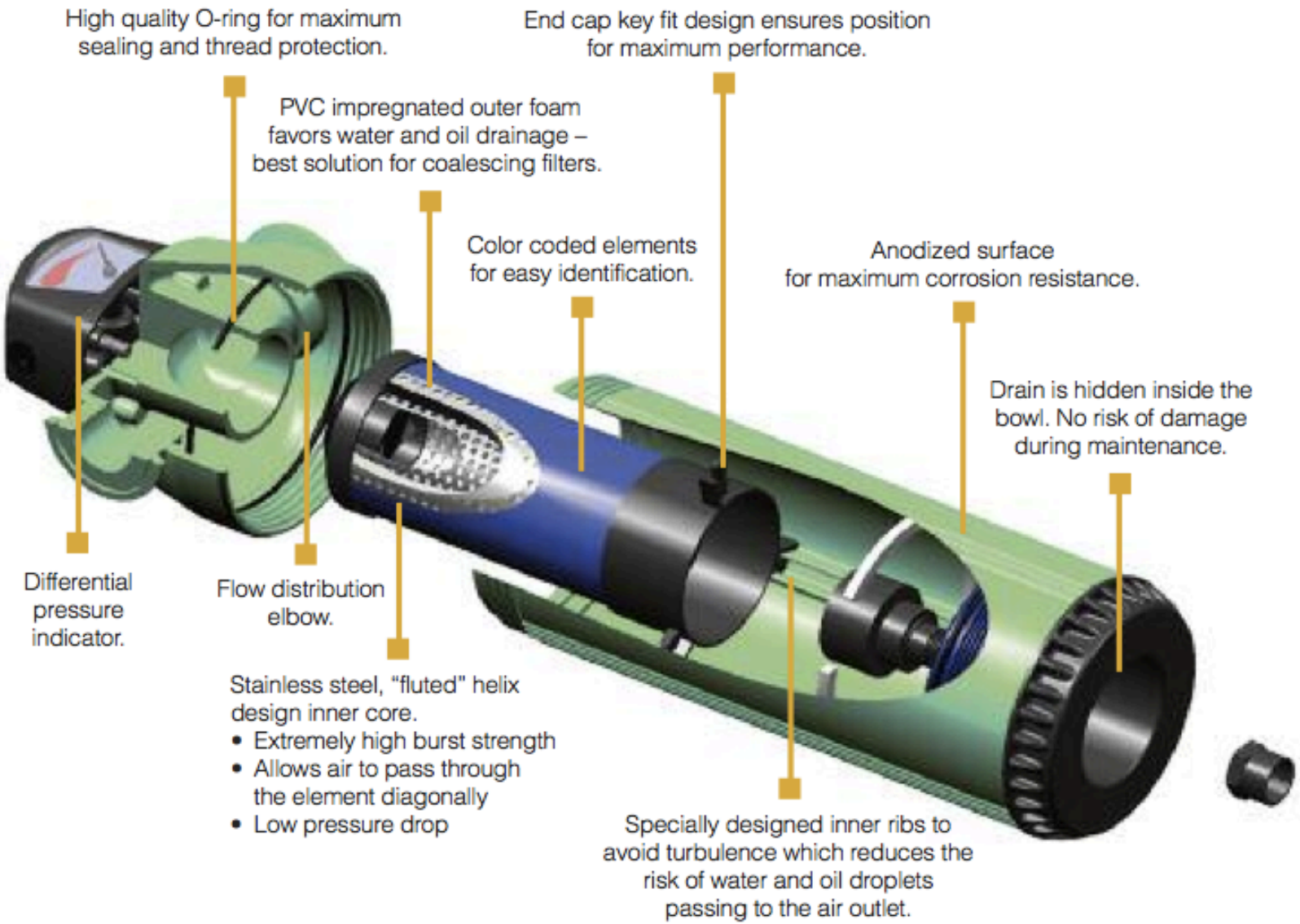
For particle and aerosol removal, deep bed pleating provides 450% more filter media than an ordinary element, giving a larger filtration area, lower flow velocities, increased dirt holding capacity, lower running costs and a more compact filter element. Graded density further improves filter life and overall performance.

Oil Vapor Removal

While mechanical filtration is capable of removing extremely fine liquids and solid particles, it cannot remove gaseous contaminants such as oil vapor or odors. To efficiently remove these vapors, Sullair FXC and FWC filters employ absorption techniques.



Micro-glass filter media


High quality O-ring for maximum sealing and thread protection.
End cap key fit design ensures position for maximum performance.
PVC impregnated outer foam favors water and oil drainage – best solution for coalescing filters.
Color coded elements for easy identification.
Anodized surface for maximum corrosion resistance.
Drain is hidden inside the bowl. No risk of damage during maintenance.
Differential pressure indicator.
Flow distribution elbow.
Stainless steel, "fluted" helix design inner core.
• Extremely high burst strength
• Allows air to pass through the element diagonally
• Low pressure drop
Specially designed inner ribs to avoid turbulence which reduces the risk of water and oil droplets passing to the air outlet.

Sullair PristineFG™

A Longer Life Food Grade Lubricant

Benefits

- ***Up to 6,000 hours of lubricant life***
- Longer fluid change-out periods
- Reduced lubricant consumption
- Wider range of operating temperatures
- Extended compressor life

The Industry's Most Comprehensive Warranties

Emerald Five-Year Compressor Health Assurance

The Emerald Five-Year Warranty is available on nearly every Sullair Industrial compressor when one of Sullair's recommended compressor fluids is used. This unmatched warranty covers all major components: the air end, motor, air-fluid receiver, fluid cooler, and aftercooler. *Uniquely, this warranty includes all parts and labor.*

Sullair Oil-Free and Critical Air Guarantee

Sullair matches the ideal combination of compressor, dryer, and filters to remove atmospheric particulate, aerosols, and other pollutants to provide two levels of air quality—from general purpose to the most critical air applications.