

Ingersoll Rand Automation

Advanced Air System Control



Energy Savings – on Demand!

Ingersoll Rand

As much as 20% to 60% of the energy used to operate compressed air systems is wasted. This is primarily due to operating more compressors than necessary, operating the wrong combination of compressors or maintaining elevated system pressure.



Ingersoll Rand X8I System Automation can help reduce operating costs, while maintaining confidence in a sufficient and efficient air supply at all times.

Now You Can Cut Operating Costs... with Your Existing Equipment!

Ingersoll Rand X8I System Automation can manage up to eight positive displacement compressors – including compressors of different capacities, different types (fixed speed, variable speed and variable capacity), and in any combination or configuration.

Through advanced control functionality and universal connectivity the X8I will work with your existing compressors, from Ingersoll Rand or any manufacturer, to improve operating efficiency and reduce energy costs.

Here's how the X8I delivers a unique combination of efficiency and reliability:

- Operate compressors only as needed, bringing standby compressors on-line incrementally during periods of increased demand.
- Dynamically match the most energy-efficient compressor or combination of compressors with compressed air demand.
- Operate one or more variable-speed compressors to minimize wasted energy due to unloaded compressor run on time or short cycle operation.
- Manage the compressed air system at your minimum required pressure without compromising the reliability of your compressed air supply.

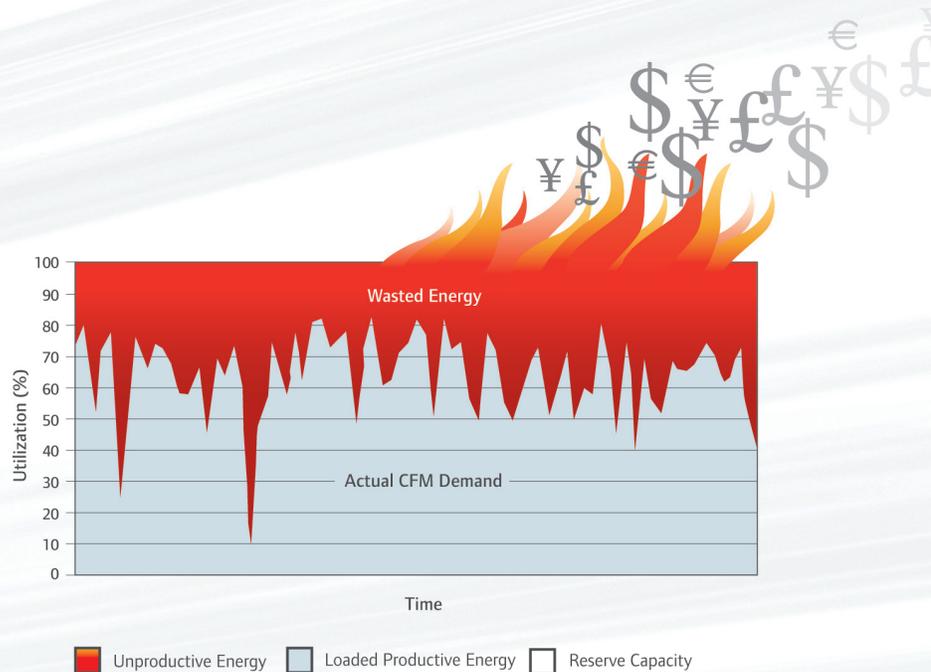
The Big Picture at a Glance

Be Energy Efficient While Increasing Your Reliability

Running a compressor in standby mode (unloaded), to ensure maximum capacity when needed, uses approximately 30% or more of the energy required to run that same compressor fully loaded. Systems with multiple compressors of varying sizes, types and configurations further complicate the task of manually coordinating and maintaining the correct compressor settings. The larger the system, the more that 30% of unproductive energy will cost!

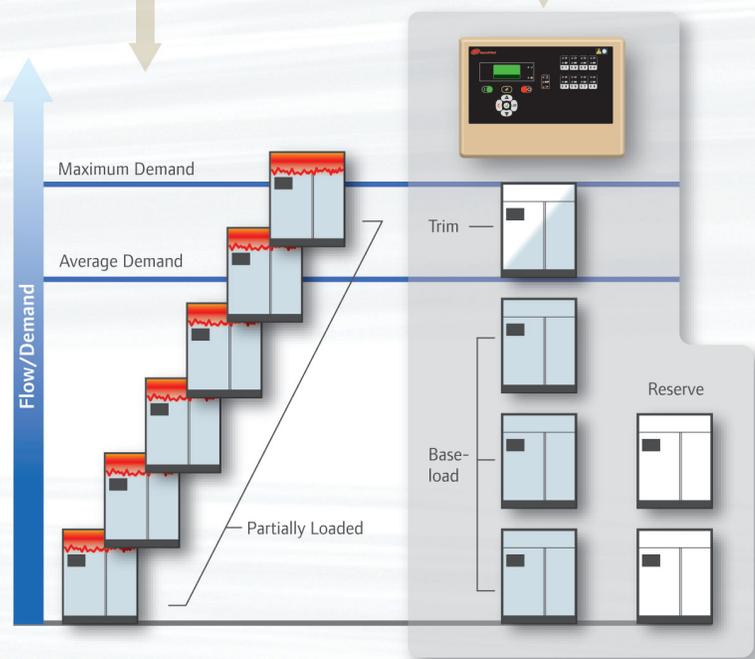
The X8I eliminates the complexity of compressor control coordination and increases energy efficiency. With the X8I in control, only the appropriate compressors operate at the proper time. Unnecessary compressors previously used for normal operations will be kept offline and available for emergency requirements or primary equipment upset. This ability to tap existing resources to maintain system operation even in emergency situations means greater system reliability.

In addition to optimizing energy use, efficient compressor utilization reduces costs due to less downtime...not only is the time between scheduled preventive maintenance extended, but with fewer compressors operating, fewer repairs will be necessary!



Typical Uncontrolled System
Compressors running inefficiently at partial loading.

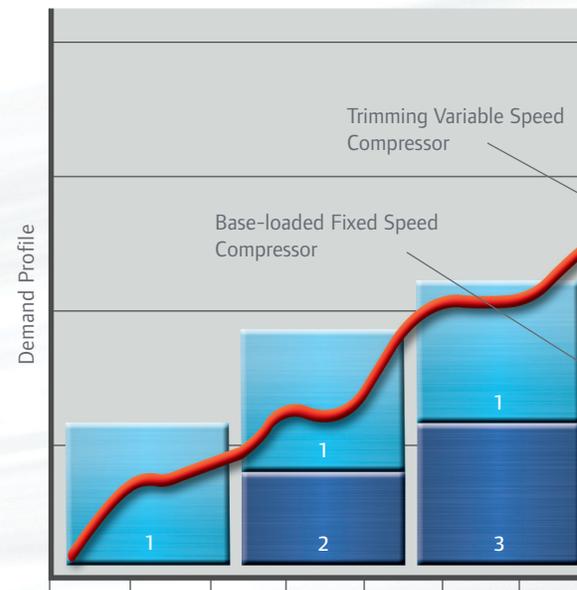
Efficiently-controlled X8I System
Base-load compressors at full capacity; efficient use of trim and reserve capacity.



Using the Ingersoll Rand X8I System Automation to manage a multi-compressor system creates opportunities for savings and increased reliability. Keeping compressors off-line until needed eliminates unloaded running costs and creates reserve capacity.

Tailoring Supply to Demand

The X8I continuously monitors and “learns” the demand requirements of the system by comparing pressure dynamics with compressor operating capabilities and control reaction. Adaptive control logic and advanced control algorithms are used to implement a “best fit” compressor combination and configuration strategy. The X8I is designed to effectively and efficiently manage your air compressors’ capabilities to meet and match the dynamic demand variations common to almost all systems.

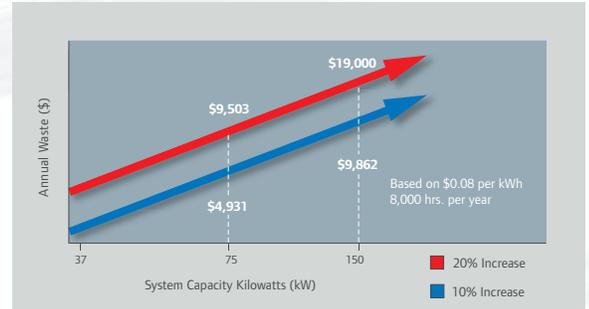


Available Compressor Capacity Supply

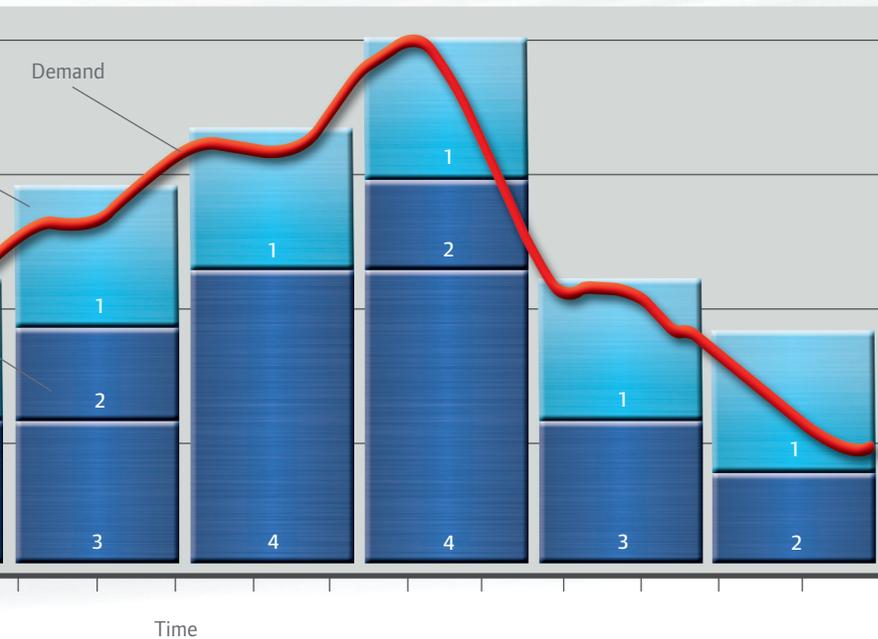
1	75 kW Variable Speed Compressor
2	55 kW Fixed Speed Compressor
3	75 kW Fixed Speed Compressor
4	160 kW Fixed Speed Compressor

Finally...You Can Eliminate the Artificially High Cost for "Comfort"

Maintaining system pressure above the actual pressure required for your process, in order to provide a comfort factor for periods of sudden demand, not only requires more energy, but also exaggerates artificial demand resulting from the increased air consumption of leaks and poorly regulated air outlets. The X8I lets you avoid those inefficiencies.



These comparisons show the impact on annual costs of operating your air system at elevated pressures. Compensating for artificial demand is costly work. Considering a system pressure requirement of 90 psig (6.2 bar), the annual operating costs increase by 10% and 20% to accommodate pressure increases of 10 psig (0.7 bar) and 20 psig (1.4 bar), respectively.



Manage Your Air Efficiently

The primary function of Energy Control Mode in Ingersoll Rand X8I System Automation is to:

- Match compressed air supply to compressed air demand, dynamically.
- Utilize the most energy-efficient combination of air compressors to satisfy that demand.

The X8I is designed to manage air systems comprised of multiple compressors of different capacities and different types (fixed-speed, variable-speed and variable-capacity) from different manufacturers in any combination or configuration.

Minimize Wasted Energy and Costs

Connectivity, Communication and Control at The Heart of Your Air System

Ingersoll Rand X8I System Automation is one air system control solution that quickly pays for itself, without compromising any of your previous compressor or air system capital investments. It is uniquely configurable and customizable to meet the specific needs of some of the most complex compressed air systems. Additionally, the X8I network can be expanded to include monitoring and control of additional compressed air system components. And beyond paying dividends in energy savings, it also provides ancillary savings in terms of labor, maintenance and resource utilization – here's how:

Versatile Networking

Manages up to eight positive displacement air compressors from any manufacturer, located up to 4,000 feet away from the controller!

Energy Control Mode

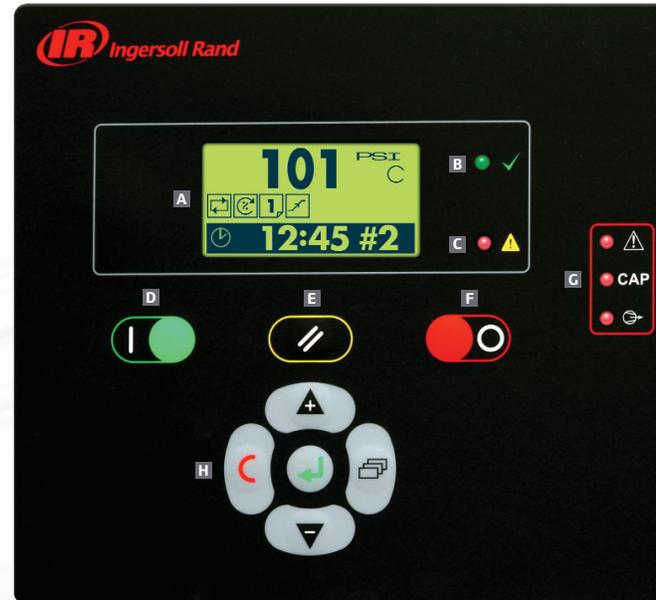
Adaptive control logic dynamically selects and utilizes the most efficient set of compressors to meet air system demands.

Anti-cycling

Continuous monitoring of system pressure and rate-of-change; uses advanced control algorithms to prevent unnecessary compressor cycling.

Single-point Control

Manage multiple compressors to one optimal control band or target.



Priority Compressor Selection

Minimize energy use by programming units or groups for optimum utilization and/or operations planning – including equalized usage.

Custom Pressure Selection

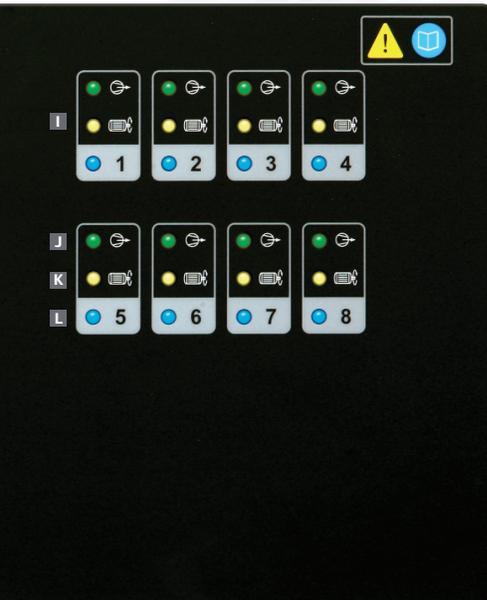
Four programmable pressure profiles – optimize system operation for specific production requirements.

Controlled Operations

Fully-adjustable time parameters help implement smooth, controlled schedule changes from one "target" pressure level to another.

Real-time System Scheduling

Configure control features including system standby and system prefill based on a real-time schedule.



- A** User Interface Display
- B** Unit Run Indicator
- C** Unit Fault Indicator
- D** Start Keypad
- E** Reset Keypad
- F** Stop Keypad
- G** System Alarms
- H** Navigation Keys
- I** Compressor Status Indicators
- J** Load Status
- K** Run Status
- L** Compressor Availability

Network Expandability

Integrate new compressors and distributed control through networked, intelligent I/O.

Easy Set-up/Operation

Improve your ability to optimize air system savings with an intuitive graphical interface for configuration and system information.

X8I Specifications

Max. # Units

8 Compressors

Dimensions (LxWxD)

13.4" x 9.45" x 6.0"
340 mm x 241 mm x 152 mm

Weight

16.5 lbs (7.5 kg)

Mounting

Wall, 4 x screw fixings

Enclosure

IP65, NEMA 4

Power Supply

230 VAC +/- 10% (50 Hz)
115 VAC +/- 10% (60 Hz)

Temperature

32°F to 115°F (0°C to 46°C)

Humidity

0% to 95% Rh Non-condensing

In addition to making economic sense, Ingersoll Rand X8I System Automation makes environmental sense as well, by helping to reduce CO₂ emissions created by the generation of electricity. For example, a 75 kW reduction will save you 650,000 kWh per year...which translates into a 450,000 kg reduction in CO₂ emissions!

Progress is *greener* with Ingersoll Rand

Ingersoll Rand offers industry-leading products and solutions that enable businesses around the world to reduce energy consumption and costs and decrease harmful environmental emissions. From air compressors that reduce energy consumption to electric-powered golf cars with near-zero emissions, Ingersoll Rand provides the knowledge, experience and solutions to help our clients achieve their sustainability goals.



Ingersoll Rand Industrial Technologies provides products, services and solutions that enhance our customers' energy efficiency, productivity and operations. Our diverse and innovative products range from complete compressed air systems, tools and pumps to material and fluid handling systems and environmentally friendly microturbines. We also enhance productivity through solutions created by Club Car®, the global leader in golf and utility vehicles for businesses and individuals.

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