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# Using Master Controls to Improve the Performance and Efficiency of Industrial Air Compressors

Advanced control capabilities minimize equipment run times, maintain stable air pressures, and deliver rapid payback in operational and energy savings.

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When it comes to plant air systems, the fundamental needs of facilities are usually quite similar. The biggest requirements are to meet specific pressure, flow, and air quality targets to ensure that the quality of the end-products remain predictably high at all times.

Beyond this, air system reliability is also critical so as to avoid costly process line maintenance or unscheduled shutdowns.

Last but certainly not least, optimizing energy consumption is important at a time when cheap energy is a thing of the past.

In most industrial plant applications, multiple compressors rather than a single unit are supplying the total air flow. Lower efficiencies can occur when compressors that are part of multi-unit air systems operate on their own individual control settings, rather than operating in concert to deliver maximum performance at the highest level of efficiency.

When compressors are operating independent of one another, system pressure is likely to be inconsistent. Independent control also leads to energy being wasted in a number of ways:

- Running more machines than are necessary at a given period of time
- Running compressors at higher pressures than are needed
- Excessive idling or modulating

In addition to the operational inefficiencies and unstable pressure, there is the likelihood of increased maintenance requirements (and the related costs) due to excessive valve cycling and motor starts.

## Individual Compressor Unit vs. Compressor System Controls

The purpose of any compressor control system is to match the compressed air supply to the demand as efficiently as possible. There are two levels of control: controls for individual compressor units; and master controllers that support an entire air system installation of compressors plus ancillary components like filters, dryers, and drains.

Both types of controls are important to optimizing the efficiency of your facility's compressed air function.

Individual compressor controls have come a long way over the past two decades. The most advanced types combine safe and efficient internal supervision of the machine with important maintenance-related information, such as:

- Airend discharge temperature
- Direction of rotation
- Motor temperature
- Internal pressure
- Electrical overload status
- Oil filter differential pressure