Maximize Reliability and Reduce Maintenance Costs
Blower and Fan Health Monitoring
Blower or fan failures shutting you down?

Every year the global process industries lose an estimated five percent of their total production—about $20 billion—to unexpected slowdowns and shutdowns, often as a result of failed or malfunctioning equipment.

While it’s common to monitor critical assets on a continual basis, you might only periodically check blowers and fans. But if, for example, an induced-draft fan on a fired heater, furnace, or reformer develops a problem before the next scheduled inspection, the efficiency of your plant can suffer. The fan could fail unexpectedly, which could lead to a slowdown—or in the worst case—a shutdown.

This “run-to-fail” approach can have far-reaching effects. Studies show that the more reactive a plant’s maintenance program is, the greater its overall maintenance costs are. And on top of expensive repairs, wasted energy, and potential safety and environmental hazards, you’ll also risk missing production targets and letting your customers down.

In the past, automated monitoring was expensive and difficult to implement, but with Emerson’s solutions, monitoring your blowers and fans has never been easier.

### Common Threats to Blower and Fan Health

**HIGH VIBRATION AND BEARING TEMPERATURE**

High vibration and bearing temperature increase wear and tear on equipment. It is also a primary warning sign of imminent failure or incidents that cause slowdowns or shutdowns.

**BAD INSTALLATION**

Improper installation can lead to loose bolts, misalignment of belts or couplings, and imbalance that causes excessive vibration and noise, leading to equipment failure.

**BLOWER MALFUNCTION**

Low discharge pressure indicates a problem with the blower itself. It could be dust buildup on the blades or the fan running at a lower speed than designed. This will lead to low flow and reduced capacity.

**LOUVER OR VANE MECHANICAL DEFECTS**

Faulty position of dampers can result in incorrect amount of flow, leading to inefficient operation. Loose dampers can also lead to excessive vibration.

**RESTRICTION**

Low suction pressure is a sign of restriction in the inlet air ducts due to dirt, plugged strainer, or faulty louvre/vane positions. It will lead to reduced blower/fan capacity, which can cause equipment trips that lead to unit shutdowns, increased energy costs, reduced throughput, and environmental issues.
What if you could...?

Emerson offers a flexible, cost-effective monitoring solution that can alert your operators to abnormal conditions in real-time, allowing you to address mechanical issues before they impact throughput and your bottom line.

Reduce unplanned shutdowns
Minimize unplanned shutdowns and slowdowns by using Emerson’s monitoring solutions to automatically detect abnormal process conditions. Personnel can make intelligent decisions about developing situations and take action before they become more serious.

Get more from your maintenance budget
With predictive diagnostics and up-to-date, online health information on your blowers and fans, you can streamline your maintenance schedule, track alert data to analyze “bad actors,” and determine root causes of failure to improve asset reliability and maximize availability.

Protect your people and lower environmental risks
Emerson’s monitoring solutions can reduce risk by minimizing the time personnel spend in hazardous areas and by providing timely information on impending problems. This real-time asset health data can help to prevent equipment failure and the potential safety issues that may lead to emergency shutdowns.

Protecting your profit
Industry experts suggest that blower/fan failure and shutdowns are responsible for 0.34% of lost production capacity. Care to get that back?

**INPUT**
a. Plant capacity in tons per day 1,700  
b. Plant net margin per ton $200  
c. Operating time in days per year 365  
d. Capacity utilization 0.93  
e. Plant total annual maintenance spend (excluding turnarounds) $40,000,000  
f. % of production capacity lost due to process blower/fan failure 0.34%  
g. % of plant total annual maintenance attributable to process blowers/fans 0.06%  
h. Process blowers/fans not currently monitored 4

**OPERATIONAL BENEFITS**
i. % reduction in lost production with blower/fan monitoring 30%  
Annual Net Profit Improvement (=a x b x c x d x f x i) $117,721

**MAINTENANCE BENEFITS**
j. % anticipated reduction in process blower/fan maintenance cost with diagnostics 30%  
k. Annual maintenance budget per blower/fan (=e x g/h) $6,000  
Annual Maintenance Savings (=h x j x k) $7,200

**TOTAL ANNUAL PROFIT IMPROVEMENT** $124,921

Notes
This is an example for an olefin plant.
### SOFTWARE INTERFACE

**AMS SUITE: ASSET GRAPHICS FOR OPERATIONS**

Provides real-time graphical displays that indicate abnormal operation, including low differential pressure, resonance frequency detection, louver defects, plugged suction filter, and overall blower health. A pre-engineered algorithm delivers diagnostic information for alarms, process analysis, trending, historization, and key performance indicators.

### NETWORK INTERFACE

**SMART WIRELESS GATEWAY**

Connects IEC 62591 (WirelessHART®) self-organizing networks with any host system.

**CSI WIRELESS VIBRATION TRANSMITTER**

Provides early warning of excessive vibration in blowers. Helps determine root cause and corrective action. Optional functionality can identify premature bearing wear and predict failure.

### ADDITIONAL OPTIONS

**FISHER WIRELESS POSITION MONITOR**

Indicates equipment position with a percent of span plus on/off indication. Monitors louver position for mechanical defect detection.

**ROSEMOUNT WIRELESS PRESSURE TRANSMITTER**

Enables pressure measurements to monitor blower suction pressure and discharge pressure. Provides early warning of impending plugged suction filter.

**ROSEMOUNT WIRELESS TEMPERATURE TRANSMITTER**

Enables temperature measurements to monitor blower suction and discharge temperature limits, and optimize blower performance.

**ROSEMOUNT WIRELESS DP FLOWMETER**

Provides high performance flow measurements to give valuable insight into blower operation. Restrictions on inlet ducts can decrease gas flow.

**AMS SUITE FOR MAINTENANCE**

Aids early identification of asset problems using predictive diagnostics, allowing Maintenance to schedule repairs while reducing cost and downtime.

**ROSEMOUNT WIRELESS POSITION MONITOR**

Indicates equipment position with a percent of span plus on/off indication. Monitors louver position for mechanical defect detection.