

EFC™

Electronic Flow Control minimizes compressed air use for blow off, drying, cooling, conveying and static elimination operations!

Dramatically reduces compressed air costs by turning off the air when no part is present!

What Is The EFC?

EXAIR's EFC is a user-friendly electronic flow control for compressed air that is designed to minimize compressed air use on blow off, drying, cooling, conveying and static elimination operations. The EFC combines a photoelectric sensor with a timing control that limits compressed air use by turning it off when no part is present. The timing control permits easy tuning to the application requirements while providing flexibility in sensing distance. The EFC also has eight programmable on and off modes.

Why The EFC?

For most companies, the air compressor uses more electricity than any other type of equipment. One simple operation that uses compressed air can easily waste thousands of those electricity dollars per year if not properly controlled. The EFC has been designed to improve efficiency by minimizing compressed air use and, as a result, reduce compressed air costs. It turns on the air only when a part is present and provides just enough air to complete a specific task or operation. The EFC has an easy electrical connection for voltages from 100 to 240VAC, 50/60Hz making it suitable for applications throughout the world. The compact photoelectric sensor has a sensitivity adjustment and detects objects up to 3' (1m) away. The sensor has superior immunity to noise and inductive loads that are common to industrial environments and installs easily in tight spaces with the supplied mounting bracket. The control system provides flexibility with numerous valve operating modes and timing delays. The polycarbonate enclosure is suitable for use in a wide range of applications including those located in wet environments.



Applications

- Auto body blowoff
- Package cleaning
- Part drying after wash
- Dust removal
- Scrap removal
- Filling operations
- Cooling hot parts
- Neutralizing static
- Cleaning molded parts

Advantages

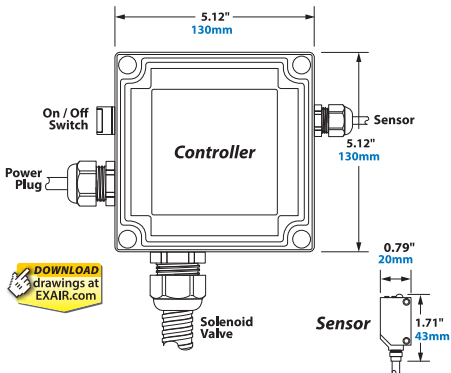
- Easy electrical hook-up; 100-240VAC, 50/60Hz
- NEMA 4/IP66 environments
- Compact sensor for mounting in tight spaces
- Eight function analog timer for on/off, pulsing and delay control
- Timer setting from 0.10 sec. to 120 hrs.
- Sensor withstands water and dust for accurate readings
- Sensor has superior immunity to noise and inductive loads
- Sensor has long distance sensing up to 3 feet (1m)



Photoelectric sensor withstands water and dust.

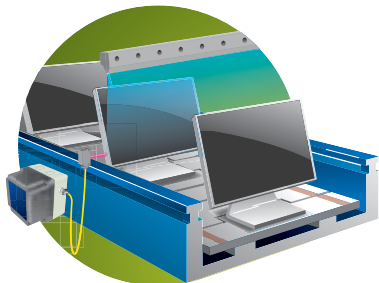
Electronic Flow Control

Model #	Description
9055	EFC Electronic Flow Control, 40 SCFM (1,133 SLPM), solenoid valve, 1/4 NPT
9056	EFC Electronic Flow Control, 100 SCFM (2,832 SLPM), solenoid valve, 1/2 NPT
9057	EFC Electronic Flow Control, 200 SCFM (5,664 SLPM), solenoid valve, 3/4 NPT
9064	EFC Electronic Flow Control, 350 SCFM (9,911 SLPM), solenoid valve, 1 NPT



\$2,045.22 Annual Air Savings On A Flat Panel Display Blowoff

A flat panel display manufacturer runs 3 shifts. It takes a 40 second cycle to produce one fully assembled display. Prior to packaging, they use EXAIR's 12" (305mm) Super Ion Air Knife at 40 PSIG (2.8 BAR) to blow across the display to remove any static electricity, dust, debris and plastic flash from the panel surface. The air ran constantly. The displays are under the airflow only 10 seconds. Thirty seconds pass until the next display is in position. They manufacture 675 displays per shift (7.5 hrs.) for a total of 2,025 displays manufactured per day.



The timer was set to the "interval" setting when detecting the flat panel displays. The sensor was mounted 1" (25mm) prior to the Super Ion Air Knife blowoff station. When it detected the flat panel, it turned the air on immediately and started the 10 second timing sequence for closing the valve (shutting the air off). In the event the conveyor stopped, the air would no longer cycle on again until the next flat panel was detected.

The timing control unit and the photoelectric sensor are equipped with a 9' (2.74m) power cord. The timing control unit is housed in a polycarbonate NEMA 4 / IP66 water tight enclosure.

There are four models of the EFC. Each includes the timing control unit and photoelectric sensor with a choice of solenoid valve sizes of 40, 100, 200 and 350 SCFM (1,133, 2,832, 5,664 and 9,911 SLPM).

Specifications	
Power Supply Input	100-240VAC, 50/60Hz, 0.25 - 0.45A
Power Supply Output (To Sensor)	24VDC at 0.65A
Sensor	12-24VDC input, consumes 30mA
Sensing Range	Diffuse reflective to 3' (1 meter)
Enclosure Rating	NEMA 4 / IP66
Temperature Rating	-13°F to 131°F (-25°C to 55°C)
RoHS Compliant	Yes
CE Compliant	Yes

Old Method

EXAIR's 12" (305mm) Super Ion Air Knife was supplied at 40 PSIG to clean the displays.

At 40 PSIG, EXAIR's 12" (305mm) Super Ion Air Knife consumes 20.4 SCFM (577 SLPM)

Non-stop blowing of 1,440 minutes (24 hours) per day x 20.4 SCFM = 29,376 SCF (831,341 SL) air usage per day.

EFC Solution

The EFC was installed to shut off the compressed air for 30 seconds of the 40 second cycle. (Turns air off for 75% of the cycle.)

Cost Difference

Most large plants know their air cost. If the actual cost is unknown, \$0.25 per 1,000 SCF (28,329 SL) is reasonable.

Before the EFC installation:

29,376 SCF/1,000 = 29.38 x \$0.25 = \$7.34 air cost per day.

With the EFC installed:

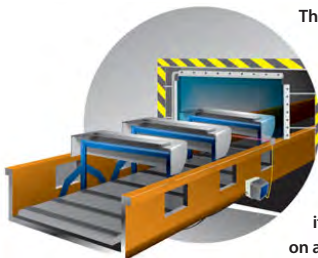
The EFC shut the air off during the three 30 minute shift changes. Upon sensing the display, the timer turned on the compressed air for only 10 seconds of each 40 second cycle (25% of the time).

1,440 minutes per day – 90 minutes between shifts =
1,350 minutes of operation per day.
1,350 minutes x 25% = 337.5 minutes of air per day
337.5 minutes x 20.4 SCFM = 6,885 SCF (194,846 SL) air usage per day.
6,885 SCF/1,000 = 6.89 x \$0.25 = \$1.72 air cost per day
\$7.34 (old air cost) – \$1.72 (new air cost) =

\$5.62 savings per day x 7 days a week =
\$39.33 savings per week x 52 weeks a year =
\$2,045.22 savings per year.

\$5,012.28 Annual Air Savings For Pre-Paint Bumper Cleaning

A manufacturer of car bumpers installed a 60" (1524mm) Super Ion Air Knife in the down draft cleaning area prior to their paint booth. The bumpers enter that area in the same orientation as they would when mounted to the automobile, moving at 10' (3m) per minute with a 12" (305mm) space between bumpers. The bumpers are under the blow off for 10 seconds. 6 seconds pass with no bumper in the ionized airflow. The operation runs around the clock with three shifts.



The timer was set to "interval" and the sensor mounted next to the Super Ion Air Knives. When it detected a bumper, it immediately turned on the air for 10 seconds. If the conveyor stopped, it would not turn the air on again until it detected the next bumper.

Old Method

EXAIR's 60" (1524mm) Super Ion Air Knife was supplied at 40 PSIG to clean the bumper.

At 40 PSIG, EXAIR's 60" (1524mm) Super Ion Air Knife consumes 102 SCFM (2,887 SLPM).

Non-stop blowing of 1,440 minutes (24 hours) per day x 102 SCFM = 146,880 SCF (4,156,704 SL) air usage per day.

EFC Solution

The EFC was installed to shut off the compressed air for the 6 seconds where no bumper was present - an on cycle reduction of 37.5%. 1,440 minutes x 37.5% = 540 minutes of off time per day

Cost Difference

Most large plants know their air cost. If the actual cost is unknown, \$0.25 per 1,000 SCF (28,329 SL) is reasonable.

Before the EFC installation:

146,880 SCF/1,000 = 146.88 x \$0.25 = \$36.72 air cost per day.

With EFC installed: 146,880 SCF x 62.5% on cycle = 91,800 SCF/1,000 = 91.8 x \$0.25 = \$22.95 air cost per day.

\$36.72 (old air cost) - \$22.95 (new air cost) =

\$13.77 savings per day x 7 days per week =

\$96.39 savings per week x 52 weeks per year =

\$5,012.28 savings per year.

\$3,393 Annual Air Savings On A Tank Blowoff Operation

A company that refurbishes large tanks runs the tanks through an oven on a conveyor line to burn off old paint. Only one tank at a time can be processed and each takes 6 minutes to complete the journey. Super Air Knives are used for blowoff at the exit of the oven.

However, the tank travels through the oven for 5 minutes before it reaches the knives for blowoff. At 80 PSIG (5.5 BAR), the four knives consume 348 SCFM (9,854 SLPM). Once the tanks have been blown off, the conveyor stops, the air is shut off, and a new tank is loaded at the other end. The operation runs 30 tanks per day, 5 days a week.



The timer was set to "on/off delay". The sensor was mounted at the oven exit (1 minute away from the blowoff station). When the sensor detected a tank, the timer turned the air on for one minute, just as the next tank reached the blowoff station.

Old Method

It takes 6 minutes to complete the process.

6 minutes x 348 SCFM =

2,088 SCF (59,090 SL)

2,088 SCF x 30 tanks =

62,640 SCF (1,772,712 SL)

EFC Solution

The EFC was installed to shut off the compressed air for the 5 minutes where no tank was present (one minute of air on).

1 minute x 348 SCFM =

348 SCF x 30 tanks =

10,440 SCF (295,452 SL)

Cost Difference

Most large plants know their air cost. If the actual cost is unknown, \$0.25 per 1,000 SCF (28,329 SL) is reasonable.

Before the EFC installation:

62,640 SCF/1,000 = 62.64 x \$0.25 = \$15.66 air cost per day.

With the EFC installed:

10,440 SCF/1,000 = 10.44 x \$0.25 =

\$2.61 air cost per day.

\$15.66 (old air cost) - \$2.61 (new air cost) =

\$13.05 savings per day x 5 days per week =

\$65.25 savings per week x 52 weeks per year =

\$3,393 savings per year.