

**Trusting in experience.
Relying on expertise.
Focusing on solutions.**

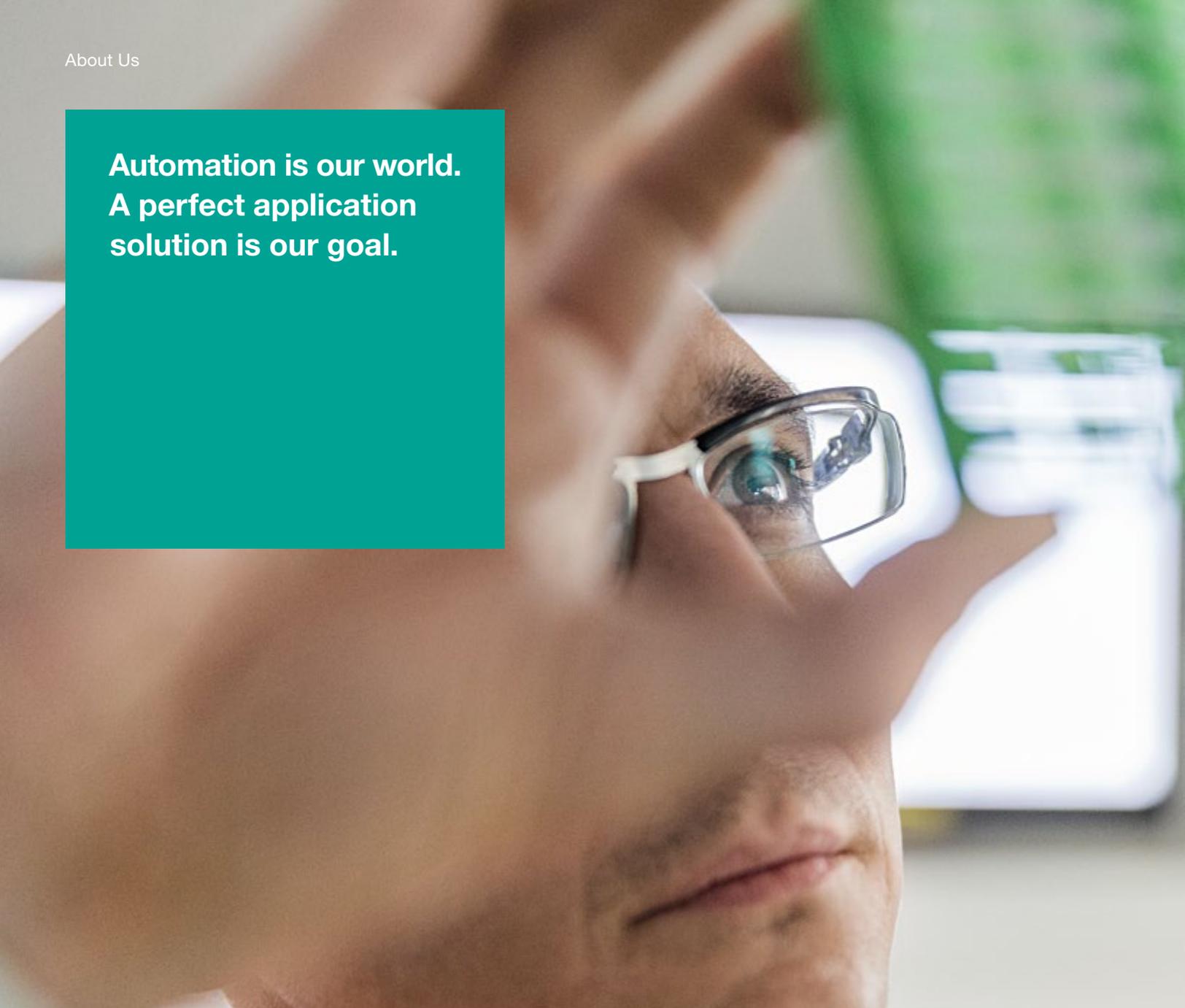
Bebco EPS® Purge+Pressurization
Product Overview



Your automation, our passion.

 **PEPPERL+FUCHS**

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com



**Automation is our world.
A perfect application
solution is our goal.**

A willingness to take entrepreneurial risks, a pioneering spirit, and a firm belief in their own inventive powers – these were the assets that Walter Pepperl and Ludwig Fuchs started out with when they opened their Mannheim radio repair shop in 1945. Their invention of the proximity switch a few years later proved their strength. It was also the starting point in a successful history defined by close customer relationships as well as innovative automation technologies and procedures.

Then as now, our focus is directed squarely on the individual requirements of each customer. Whether as a pioneer in electrical explosion protection, or as a leading innovator of highly

efficient sensors – the close communication with our customers is what allowed us to become the leader in automation technology. Our main objective is combining state-of-the-art technologies and comprehensive services to optimize our customers' processes and applications.

For more information, please visit our website:
www.pepperl-fuchs.com

Table of Contents

Bebco EPS	4
Components	6
Advanced Purge Controls	8
6000 Series	10
5500 Series	12
5000Q Series	14
3000 Series	16
Selection of a System	18
SECs/Customized Solutions	20
Global Reach	22



Model 3003-WPS-CI-Type Y or Z
WORKING PRESSURE 3.5 CUBIC FEET MAXIMUM ENCLOSURE VOLUME
TYPE 304 STAINLESS STEEL ENCLOSURE
MAXIMUM OPERATING TEMPERATURE 100°F (38°C)
MAXIMUM WEIGHT 100 LBS (45 KG)

SYSTEM START-UP INSTRUCTIONS

1. WITH ENCLOSURE POWER DEENERGIZED AND PUMPING SYSTEM AIR SUPPLY OFF.
2. CAREFULLY TEST OPERATION OF ENCLOSURE PROTECTION UNIT AND SEAL ENCLOSURE.
3. REMOVE KEY FROM LOCKED POSITION ON MANE EXCHANGE CONTROL VALVE STEER.
4. OPEN ENCLOSURE PRESSURE CONTROL VALVE SLOWLY TO SET A SAFE PRESSURE.
5. RETURN KEY TO MANE EXCHANGE CONTROL VALVE STEER AND LOCK FIRST IN PLACE.
6. ENGAGE MANE EXCHANGE CONTROL VALVE FOR 1 MINUTE PER 1 CUBIC FEET OF ENCLOSURE OR 1 MINUTE PER 40 LITERS OF ENCLOSURE.
7. DEENERGIZE MANE EXCHANGE CONTROL VALVE UPON MANE EXCHANGE COMPLETION.
8. ENSURE THAT A SAFE PRESSURE IS MAINTAINED WITH ENCLOSURE ENCLOSURE POWER.
9. PRESSURE LOSS REQUIRES IMMEDIATE ATTENTION UNLESS POWER IS DEENERGIZED.

ENCLOSURE PRESSURE CONTROL VALVE
MANE EXCHANGE CONTROL VALVE
PRESSURE GAUGE
THIS VALUE ONLY

MANE EXCHANGE VALVE PRESSURE SET AT 40 PSIA (2.75 BAR)



Bebco EPS Purge+Pressurization: Confidence in Purging Technology from the Most Recognized Brand in the Industry

Known around the world for excellence, Pepperl+Fuchs Bebco EPS is the benchmark in purge and pressurization equipment. Our reputation as the global leader in purging technology and hazardous-area protection is unrivalled. With experience that spans decades, nobody knows more about purge and pressurization than we do. And we have the products to prove it!

Unmatched products and reputation

As leaders in purge technology, Pepperl+Fuchs pushes the bar on innovative solutions that bring purge and pressurization into the 21st century. Keeping ideas simple and user-friendly, our purge solutions incorporate the best elements of our field-proven systems with the innovation of today's automation technology. Internationally approved for use anywhere in the world, the Bebco EPS portfolio provides reliable safety for Zones and Divisions applications, with a full range of Type X, Y, Z, Ex px, and Ex pz.

Custom solutions made easy

Today's hazardous location areas call for increasingly demanding solutions. That is why at Pepperl+Fuchs, our services to meet your needs go beyond our standard product offering. Our global Solution Engineering Center (SEC) offers customers a full-service supplier of custom solutions to get your application up and running with a wide range of industry-recognized certifications:

- ATEX and IECEx rated solutions
- ISO9001:2008 certified
- UL certified panel manufacturer
- Industrial controls UL-508A and UL-698A
- Control panels and assemblies for use in hazardous locations NNNY
- CSA certified manufacturer

Dedicated service and support

Nobody knows a product better than the manufacturer. While many suppliers offer purge and pressurization systems, not all provide service and support after the sale.

We're committed to working together with you as a partner. We understand the demands of your markets. We know how to develop specific solutions, how to easily integrate them into your applications, and we guarantee reliability throughout your entire manufacturing process.

Industries

- Oil & Gas
- Pharmaceutical
- Chemical/Petrochemical
- Power Industry
- Pulp, Paper
- Grain



Purge+Pressurization: Simple and Reliable Protection for Today's Global Automation Market

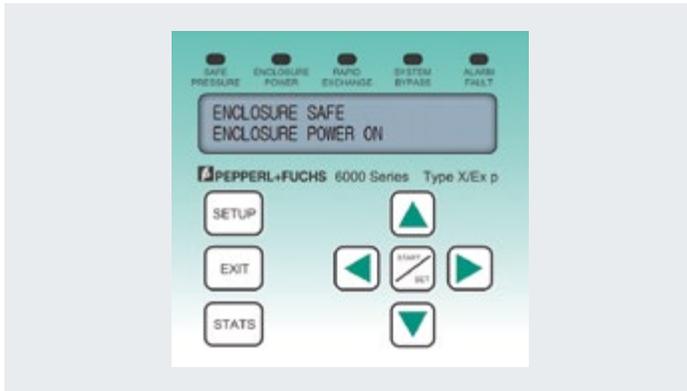
Several protection methods can be used when placing equipment into hazardous locations, but none match the versatility, reliability, and efficiency of purge and pressurization. With its straightforward method of protection, purge and pressurization delivers a truly simple and cost-effective solution for placing general-purpose equipment in hazardous locations.

Purge and pressurization protection

Unlike containment or prevention protection, purge and pressurization separates general-purpose electrical devices from the surrounding hazardous atmosphere by placing them inside a common, lightweight enclosure. This enclosure is then purged

with industrial-grade air, or an inert gas, and maintained at a pressure higher than the dangerous external atmosphere, preventing the flammable mixture from coming in contact with the internal components.

System Components – Performance in Every Detail



Control unit

The control unit is the main component in a purge and pressurization system. Available in either an internal or external mounted component, the control unit provides the essential functions to operate the purge and pressurization of the enclosure. The Bebeco EPS portfolio includes both fully automatic and legacy manual systems. Our automatic solutions provide an innovative design for automatic monitoring and control of purging, temperature, leakage, alarming, and system power. For an economic solution, our manual systems provide proven purge and pressurize protection with the use of a straightforward needle valve and regulator.



Vent

The vent functions as a simple pressure-relief device that allows gas to exit the enclosure during a purge cycle and provides a seal when the enclosure is pressurized. Our vent is gravity controlled and works based on the mechanical movement of springs in response to flow rate pressure. We offer the only vent in the industry that digitally monitors the flow rate and uses the flow rate values to automatically calculate the purge time.



Valve/Manifold

A valve or manifold controls the flow of air or protective gas to the enclosure by setting a safe reading on the enclosure pressure gauge. An automatic system allows the use of a manifold to control purging flow, pressurization flow, and cooling flow, and can compensate for pressure loss flow.



Enclosure

The enclosure is simply the container that houses the general-purpose equipment in which purging and pressurization takes place. Enclosure volumes are possible up to 450 ft³. You can choose to have a single enclosure or multiple enclosures for your system with interconnecting pipe or wire way. A typical enclosure consists of the following:

- Alarm, indicator, or cut-off switch
- Protective gas supply from enclosure pressurizing system
- Optional pressure-relief device

System Components – Performance in Every Detail

Pepperl+Fuchs purge and pressurization technology brings more than simplicity to your operating floor; it takes hazardous area protection to a new level of confidence and protection. The technology in our systems not only provides purge and pressurization, it also continuously monitors the conditions in the enclosure, makes automatic adjustments, and provides output alarms for reliable protection. No other protection method can do this.

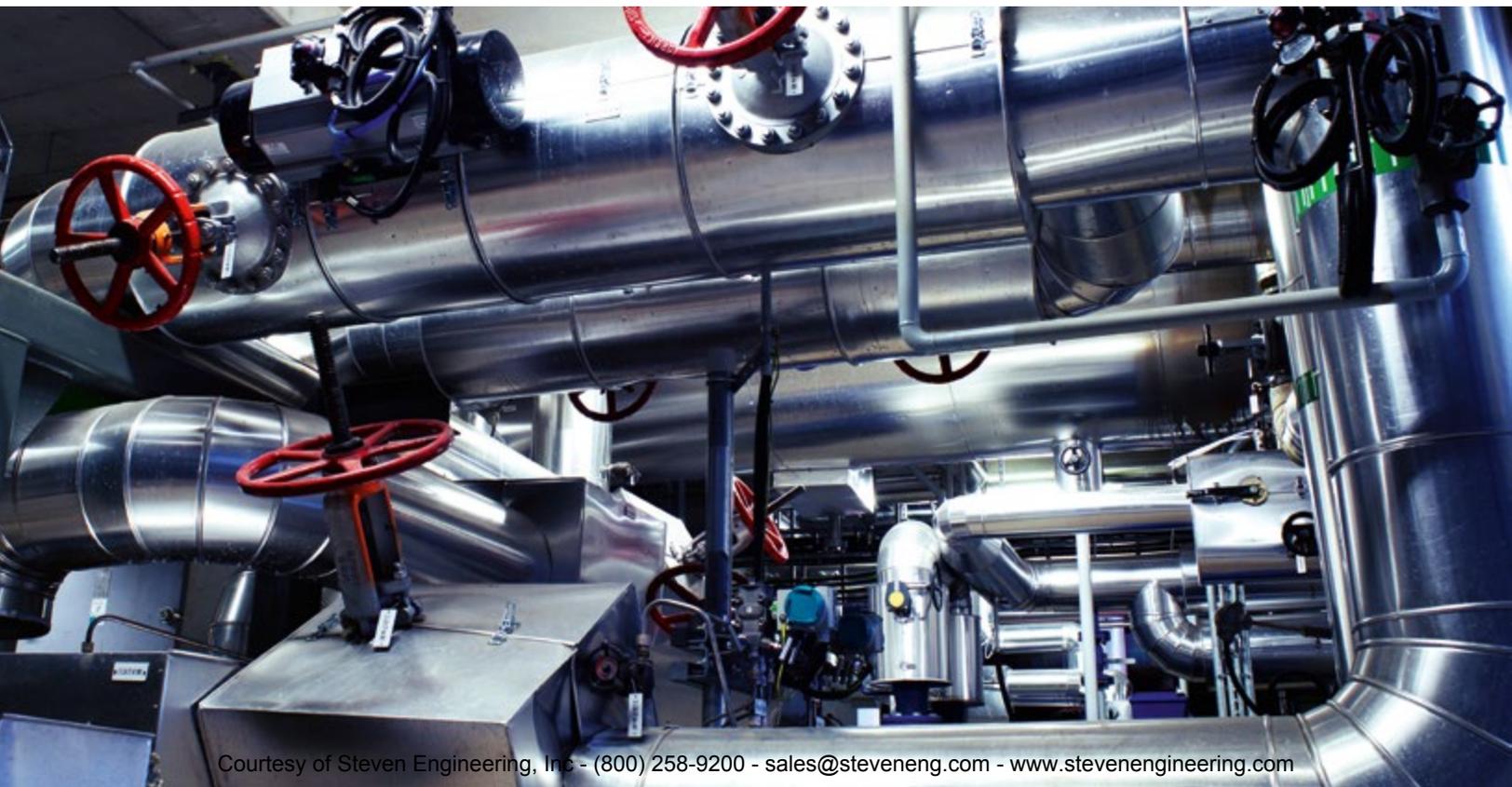
Unrivalled versatility

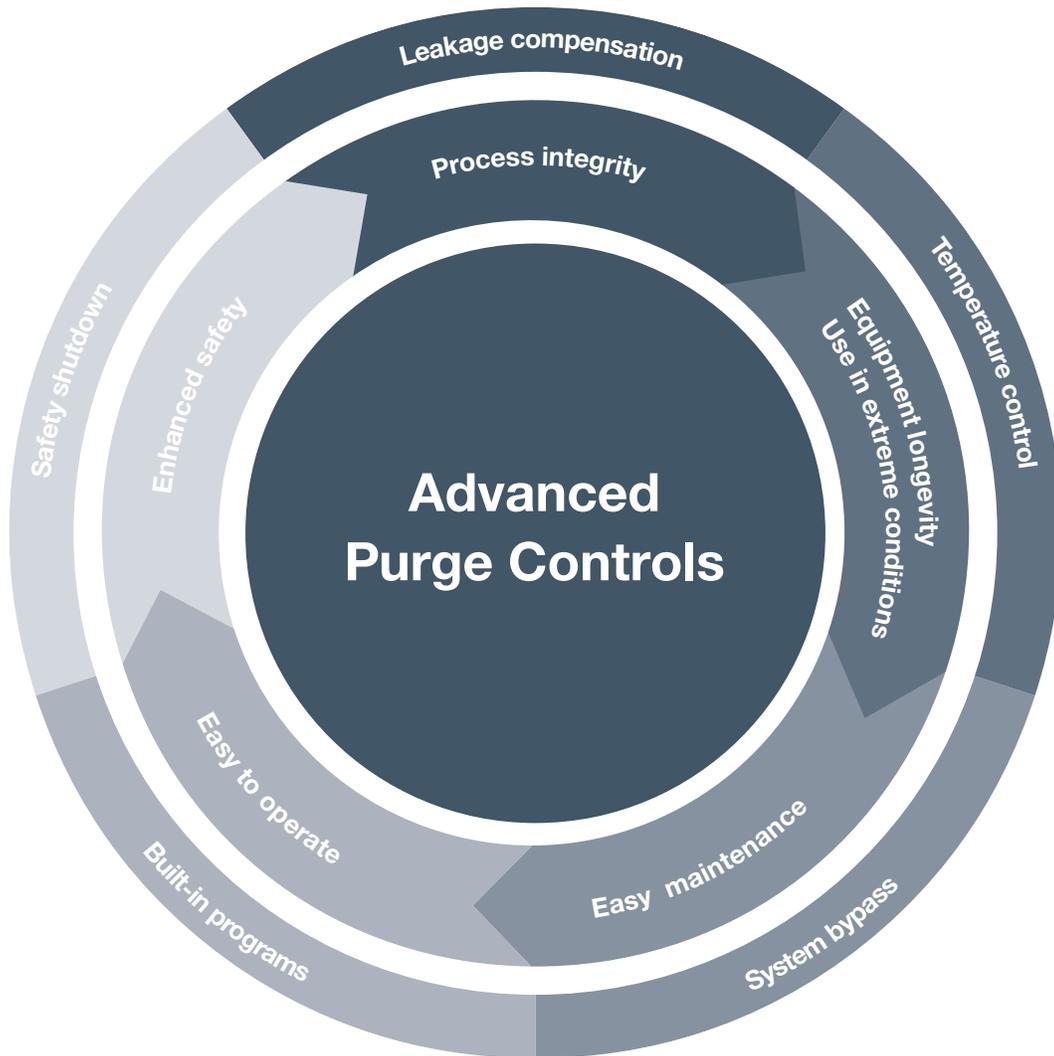
The purge system is easily integrated, internally or externally, into an enclosure suitable for purging pressurization. Because it is not required to contain an explosion, but only to minimize leakage of the inert gas, it saves money, weight, and space over explosion-proof methods and provides greater design flexibility. Enclosures can be made of stainless steel, aluminum, or cast iron for a variety of industry applications. They can be designed in any shape for your specific requirements, with a footprint up to 450 ft³ and, if required, one purge and pressurization system can purge multiple enclosures in series.

Intelligent programming for process reliability

With advanced programming options for switch inputs, temperature modules, enclosure power contacts, auxiliary outputs, and various operational functions, our solutions offer simple access to essential control and monitoring day or night, 24/7. System outputs can provide different alarm signals as preventive error messages and can be programmed to automatically perform a variety of functions including:

- Automatic purge cycling for leakage compensation
- Automatic temperature control (output signal for cooler or external A/C unit)
- Automatic power shut-off in the event of complete pressure loss





Continuous status information

Analog pressure gauges are a thing of the past with these units. All information on flow, pressure, and status of the system is displayed on the LCD screen. With continuous system status indication, it's easy to monitor the system, identify any issues, and quickly make adjustments.

Increases equipment longevity

One of the greatest benefits of purge and pressurization is the continuous flow of protective gas, which can be specifically used to eliminate problems with equipment inside the enclosure due to heat exposure, moisture buildup, dust, and corrosion. Eliminating these problems significantly increases equipment longevity and reduces excess inventory.



6000 Series – Type X/Ex px: Cutting-Edge Technology for Dependable Protection

The 6000 series is the most advanced Type X/Ex px purge system on the market. Designed as the complete solution for Zone/Division 1 hazardous operations, this stainless steel unit contains the controller, pneumatics, electrical I/O, and programming interface in one sleek, fully automatic package. With a straightforward user interface that allows easy setup and operation, the 6000 series provides reliable protection for the most demanding applications.

Product details

- Global certification conforms to ATEX, NFPA 496, and ISA 12.4 standards
- Single unit certified for gas and dust applications provides simple integration
- Completely automatic setup with menu-driven configuration
- Automatic Rapid Exchange® for temperature control and leak compensation
- Bypass feature for easy maintenance and commissioning
- Digital pressure relief vent with flow and pressure monitoring
- User interface rotates for horizontal or vertical mounting
- 2-line, intrinsically safe backlit LCD programming screen
- Automatically controls power shutdown to enclosure during system failure
- Password protected
- Available in a component kit for easy integration into existing enclosures

Responsive monitoring and control

The optional temperature hub and sensor works seamlessly in conjunction with the 6000 control unit to provide automatic temperature monitoring and control to the inside of the enclosure. With the ability to power up to three external sensors, this intrinsically safe accessory allows the control unit to easily purge the inside of the enclosure or activate an external component such as an air cooler or heater.

Technical information	
Hazardous environment	CL I & CL II, Div. 1 to non-hazardous Zone 1/21 to non-hazardous
Approvals	DEMKO, UL, cULus, IEC Ex
Size	7.2 x 14.45 x 6 in (183 x 367.5 x 152.5 mm)
Max. enclosure size	250 ft ³ (7.2 m ³)
Weight	25 lb (11.4 kg)
Material/degree of protection	316L Stainless Steel/Type 4X, IP66
Operating temperature	-4 ... 140 °F (-20 ... 60 °C)
Inputs/outputs	4/3
Rated voltage	AC: 100 ... 250 V AC DC: 20 ... 30 V DC



5500 Series – Type z/Ex pz: Maximum Protection in a Compact Size

The 5500 series was engineered to provide a global, all-in-one solution for Type z/Ex pz purge applications. With many of the same features as our 6000 series, the 5500 provides a complete solution for Zone/Division 2 hazardous operations in a small, compact design. Combine this with the fully automatic temperature and pressure control of the 5500 and it befits the most versatile purge systems on the market.

Product details

- Global certification conforms to ATEX, NFPA 496, and ISA 12.4 standards
- Single unit certified for gas and dust applications provides simple integration
- Completely automatic control unit provides purge, power, and monitoring to enclosure
- Automatic Rapid Exchange® for temperature control and leak compensation
- 2 RTD inputs for simple temperature monitoring and control
- 5 preset programs allow easy implementation without extensive technical knowledge
- User interface rotates for horizontal or vertical mounting
- 2-line intrinsically safe backlit LCD programming screen
- 100% mechanical vent, no cable required
- Internal and external mounting options

Global performance in one design

The 5500 is specially design to handle all Type Z/Ex pz applications with one simple design. Both the control unit and vent conform to the same form factor whether they are internally or externally mounted, making it easy to specify and install anywhere in the world.

Flexible vent design

When it comes to specifying a solution, knowing that one component can be used for any application provides great peace of mind. This is why the 5500 purge was designed to use the same vent design for any application. Available in models with high flow rates for large enclosures and low-flow models for bottled gas applications.

Technical information	
Hazardous environment	CL I & CL II, Div. 2 to non-hazardous Zone 2/22 to non-hazardous
Approvals	UL, cULus, IEC Ex, ATEX
Size	6.5 x 8 x 4.2 in (165 x 203 x 105 mm)
Weight	3.1 lb (1.4 kg)
Material/degree of protection	316 Stainless Steel/Type 4X, IP66
Operating temperature	-4 ... 140 °F (-20 ... 60 °C)
Inputs/outputs	2/3
Rated voltage	AC: 100 ... 240 V AC DC: 20 ... 30 V DC



5000Q Series – Type Ex pz: Reliable Operation for Specialized Markets

The 5000Q series provides a reliable and simple solution for Type Ex pz applications. Designed specifically for use in ATEX and IECEx Zone 2/22 locations, this compact system allows full control of protection in hazardous locations. The robust polyester housing and menu driven-interface provides a dependable solution that is easy to implement in a variety of applications.

Product details

- Global certification conforms to ATEX and IECEx approvals
- Strong, durable polyester housing withstands extreme conditions
- Completely automatic setup with menu-driven configuration
- Automatic Rapid Exchange® for temperature control and leak compensation
- LCD programming screen with external viewing window
- 3 RTD connections for temperature monitoring
- 5 LEDs for system status
- 5 preset programs for gas and dust applications
- Mechanical vent can be internally or externally mounted

Technical information	
Approvals	ATEX, IECEx, KOSHA, NEPSI
Size	5.5 x 4.7 x 3.5 in (140 x 120 x 90 mm)
Weight	3.1 lb (1.4 kg)
Material/degree of protection	Polyester/IP65
Operating temperature	-4 ... 140 °F @T4 -4 ... 104 °F @T6 (-20 ... 60 °C @T4) (-20 ... 40 °C @T6)
Inputs/outputs	3/3
Rated voltage	AC: 115 V AC, 230 V AC DC: 24 V DC



3000 Series – Type Y/Z/Ex pz: Proven Protection for Global Applications

The 3000 series purge and pressurization system provides field-proven protection for Types Y, Z, and Ex pz applications. As the core legacy product of the Bebcos EPS portfolio, the 3000 system provides a straightforward manual solution to Zones/ Division 1 and 2 hazardous locations. Available in a wide range of mounting options, the 3000 series allows easy specification, installation, and use in hazardous location applications across the globe.

Product details

- Global certification conforms to ATEX, NFPA 496, and ISA 12.4 standards
- Certified for gas and dust applications
- Optional alarm output indicates air lock failure
- Optional differential pressure switch for Class I, Group A-D, ATEX certified hazardous area locations
- Large pressure gauge for visual status indication
- Multiple mounting options for completely versatile solution
- Simple, cost-saving manual operation

Technical information	
Hazardous environment	<p>Type Y: CL I & CL II, Div. 1 to Div. 2</p> <p>Type Z/Ex pz: CL I & CL II, Div. 1 to non-hazardous Zone 1/21 to non-hazardous</p>
Approvals	UL, cULus, FM, ATEX
Weight	10 lb (6.8 kg)
Material	Mounting Flange: 316L Stainless-Steel Regulator Body: Zinc w/ enamel finish Manifold Body: Anodized Aluminum
Operating temperature	-20 ... 120 °F (-29 ... 49 °C)

Purge Selection Process: Simplifying the Process to Get Your Application Up and Running

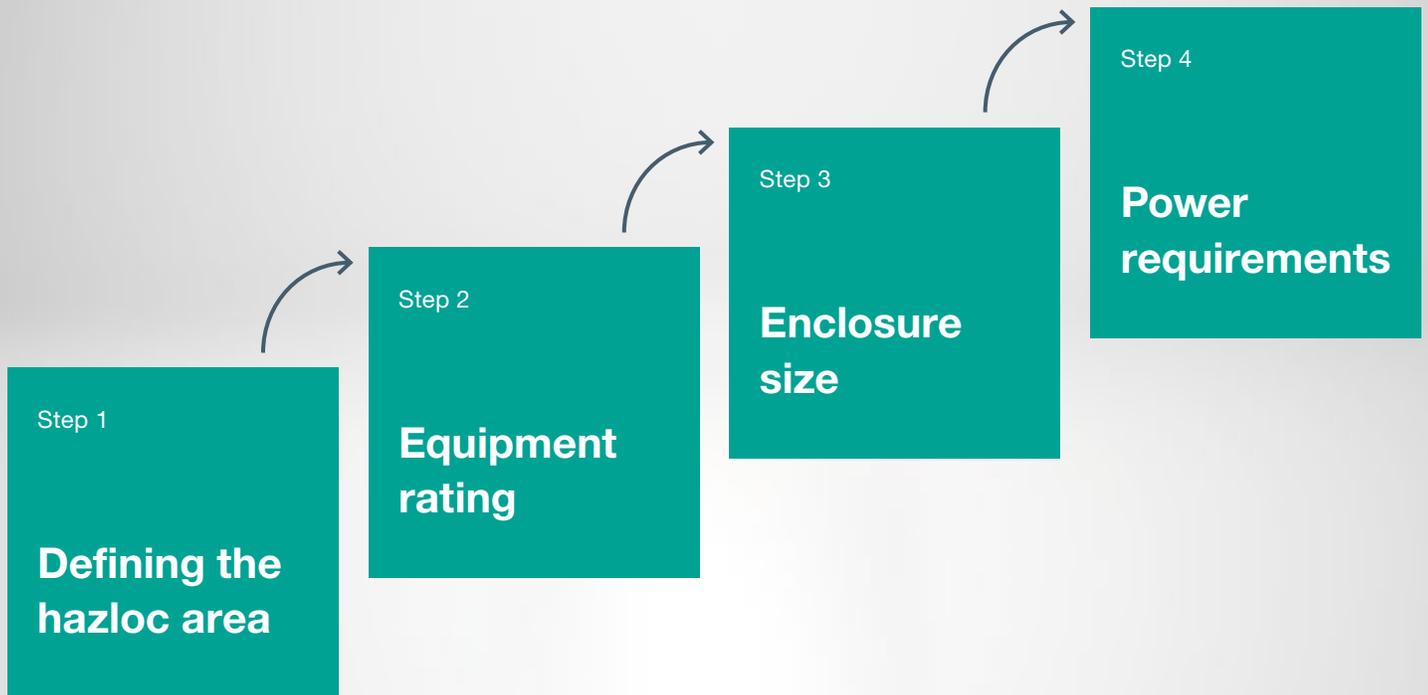
When it comes to selecting a purge and pressurization solution for today's demanding hazardous area applications, choosing the right system can save users both time and money. With Pepperl+Fuchs straightforward product offering of globally certified purge systems, we make it easy to specify and select the right solution to get your process up and running.

Zone applications									
Cert*	Zone	Type	Group	Equipment	Enclosure < 90 ft³ (2.54 m³)	Enclosure < 250 ft³ (7.0 m³)	Model	Vent	
1, 3	2	EX pz	IIC	General purpose	3003 series	3004 series	3003	EPV-X-SA-XX	Gas/ Dust
1, 3	2	EX pz	IIB+H2	General purpose	3003 series	3004 series	3004	EPV-X-SA-XX	Gas/ Dust
2	2/22	EX px	IIC	General purpose	5000Q series	5000Q series	5000Q	EPV-5000Q	Gas/ Dust
2, 3	2/22	EX pz	IIC	General purpose	5500 series	5500 series	5500	EPV-5500-XX-XX	Gas/ Dust
2, 3	1/21	EX pz	IIC	General purpose	6000 series	6000 series	6000	EPV-6000	Gas/ Dust

Class I applications						
Cert*	Div.	Type	Group	Equipment	Enclosure < 90 ft³ (2.54 m³)	Enclosure < 250 ft³ (7.0 m³)
1, 3	2	Z	A-D	General purpose	3003 series	3004 series
3	2	Z	C-D	General purpose	3003 series	3004 series
2, 3	2	Z	A-D	General purpose	5500 series	5500 series
2, 3	1	X	A-D	General purpose	6000 series	6000 series
1, 3	1	Y	A-D	Div. 2	3003 series	3004 series
3	1	Y	C-D	Div. 2	3003 series	3004 series

Class II applications							
Cert*	Div.	Type	Group	Equipment	Enclosure < 10 ft³ (3 m³)	Enclosure < 90 ft³ (2.54 m³)	Enclosure < 250 ft³ (7.0 m³)
3	2	Z	E-G	General purpose	1001A series	1001B series	1001C series
2, 3	2	Z	E-G	General purpose	5500 series	5500 series	5500 series
2, 3	1	X	E-G	General purpose	6000 series	6000 series	6000 series
3	1	Y	E-G	Div. 2	1001A series	1001B series	1001C series

* 1 Zone: Atex 2 Zone: Atex & IECEx 3 Class/Div: UL, cULus, CSA



Hazardous location rating of area

The area classification determines the type of purge protection level needed and specifies which system is correct for the given applications.

Equipment inside the enclosure

The rating on the equipment inside the enclosure is important in evaluating which purge system to use in a certain application. Furthermore, temperature specifications on the equipment will play a vital role in determining which functions of control and monitoring your purge system will need.

Specification of enclosure

Depending on the size of the enclosure and whether there will be doors, windows, and accessories will determine how the purge system will need to be mounted (internally/externally). The use of multiple enclosures will need to be considered when calculating the air volume and flow needed for the overall solution.

Power requirements

Based on the power requirements needed for a given application, evaluation of required voltage (AC/DC) and contact ratings are required. Furthermore, certain area classifications require systems that shut off enclosure power in the event of system or pressure failure.

Purge+Pressurization Solutions: Custom Solutions Tailored for Your Needs

At Pepperl+Fuchs, we offer much more than just products. As the world market leader in intrinsically safe interface components, our Solution Engineering Centers (SEC) also offer our customers around the globe customized system solutions for explosion protection.

While it's true that customers can obtain their own certification for the Ex p products that we provide, having us do this for you saves you time and money, and gives you peace of mind. Our Solutions Engineering Center (SEC) can provide all you need for your certified solution. It's all about making our explosion protection solutions convenient to you.



Custom solution 6000 series



Custom solution 5500 series

Comprehensive range of services

End customers such as major industrial firms, automation companies, engineering and planning firms, and even system suppliers for large-scale facilities can count on the SECs to supply the right answer, anytime. The centers' services cover everything from conventional interface control cabinet solutions to remote I/O controls, field bus solutions, and beyond, including terminal boxes as well as controls and distributors in ignition protection classes Ex d, Ex e, and Ex p.

Going the distance by being there

The SEC works closely with the sales team during the quotation phase through feasibility studies, calculations, and offering ideas regarding solutions. Once the order is placed, the center takes over full responsibility for the project. This is the point where Pepperl+Fuchs is able to leverage its big advantage: solid knowledge regarding technical approvals. All over the world, the company holds certifications that cover a wide range of requirements for explosion protection and also meet different requirements at regional level. What the SECs supply to the customer is ready to assemble, install, and use – without any additional testing.



Custom solution 5000Q series



Custom solution 3000 series

Staying in touch. The world over.

Good customer relationships need care and attention. They are an indication of genuine interest, trust, and a cooperative spirit: the foundation of Pepperl+Fuchs' strengths. No matter where you might be, we are always nearby. And we speak your language – in more than 140 countries the world over.



At home on all continents

Our customers are at the center of all our activities. Our world-wide network ensures that we provide them with the best possible service and support. Our world headquarters in Mannheim services Europe through a network of more than 40 affiliates. Asia is handled by our office in Singapore, with more than 1,000 employees in manufacturing, service, and sales. And our North American headquarters in Twinsburg, Ohio, is responsible for a comprehensive network of offices and sales partners in the USA, Canada, and Mexico.

No matter where in the world you may be, Pepperl+Fuchs is right nearby – and always there for you.



Mannheim

Singapore

Your automation, our passion.

Explosion Protection

- Intrinsically Safe Barriers
- Signal Conditioners
- Fieldbus Infrastructure
- Remote I/O Systems
- HART Interface Solutions
- Wireless Solutions
- Level Measurement
- Purge and Pressurization Systems
- Industrial Monitors and HMI Solutions
- Electrical Explosion Protection Equipment
- Solutions for Explosion Protection

Industrial Sensors

- Proximity Sensors
- Photoelectric Sensors
- Industrial Vision
- Ultrasonic Sensors
- Rotary Encoders
- Positioning Systems
- Inclination and Acceleration Sensors
- AS-Interface
- Identification Systems
- Logic Control Units