



LIFE
SCIENCES
APPLICATIONS



ENGINEERED FILTRATION

LIFE SCIENCES APPLICATIONS



OXYGEN CONCENTRATORS

Oxygen concentrators employ pressure swing absorption (PSA) technology, a molecular sieve bed media, to sift nitrogen out of the unit's compressor air. This normally results in oxygen supplies that are 90-97% concentrated on a continuous basis. Unfortunately, not all sieve beds have a useful lifetime. That life cycle can be severely limited when the sieve bed is saturated with particulate matter, oil or other aerosols, or feeding humidity does not allow that portion of the molecular sieve to retain the nitrogen necessary for reliable oxygen production. In some cases, this can lead to a complete breakdown of the sieve bed resulting in poor oxygen supply. This requires urgent maintenance or intervention rather than standard preventative maintenance.

Since many of these sieve bed systems are deployed in a standard design to cover a broad range of atmospheric and environmental conditions, effective pretreatment and membrane air drying are critical to their function and reliability. Furthermore, protecting oxygen concentrator equipment with filtration solutions specifically designed for that application can help manufacturers to differentiate their product from competitive options, help capture consumable revenue streams, and additional aligned product income.

Pentair offers a wide range of filtration and separation solutions to protect compressor operation and, patient safety, as well as customize designs to help our customers capturing after market consumables. In addition to oxygen concentrators used in medical, single patient care applications, this technology is also being applied to whole hospital, clinic supply, sports therapy, and residential systems in some international markets.



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VENTILATORS

Ventilator technologies are used to assist in treating patients who suffer from respiratory ailments such as asthma and chronic obstructive pulmonary disorder (COPD), by inhaling oxygen into the lungs and the exhalation of carbon dioxide. A ventilator delivers gas to the patient through flexible tubes, typically called a patient circuit. The exhaled gas of a ventilated patient may contain hazardous particles, including bronchodilators, antibiotics, steroids, antiviral agents, antiprotozoal agents, and mucolytic agents, as well as potentially hazardous bacterial and viral particles, of which all can pose a potential threat to care givers, patients, and visitors. From maintaining heat and moisture to optimal control of bacterial and viral contaminants, Pentair has a wide range of standard patient and water trap filters, as well as customer OEM solutions, to aid customers in providing optimal patient outcomes through the device designs.

MEDICAL COMPRESSORS

Medical compressors are devices used to pressurize room air, which can then be used to power other devices for respiratory purposes, as well as supplying instrumentation air in dental applications. Ventilators need clean, dry air through the system to ensure continuous flow to the patient. In order for a medical compressor to supply clean, dry compressed air to ventilators, free of oil traces, a membrane air dryer is placed in the air stream to ensure the removal of moisture effectively. The compressor can be either the primary source of compressed air or it can be utilized as a stand-by compressor in case the central source fails.



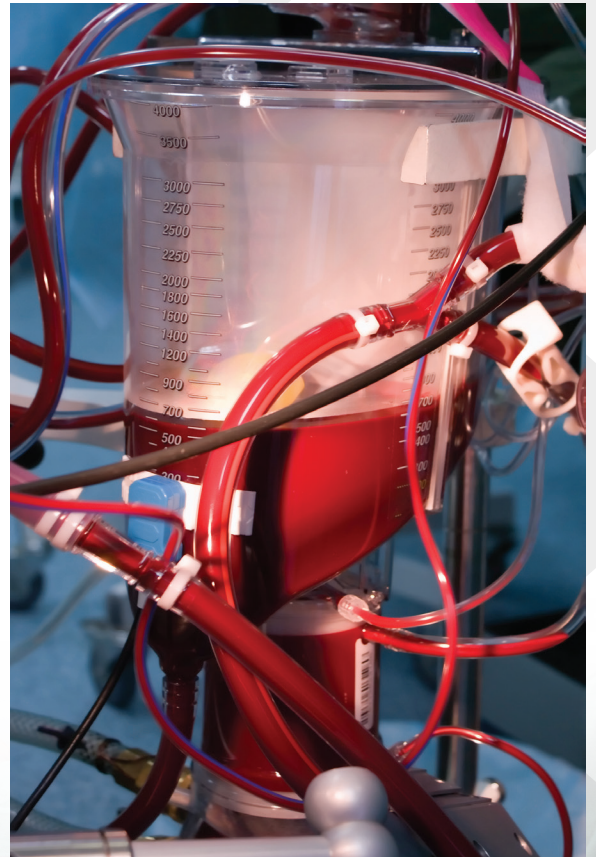
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CARDIOVASCULAR MEDICAL DEVICES

Pentair's Engineered Filtration business has been a steadfast partner to the cardiovascular medical device market for over a decade and continue to help our partners innovate and focus on better patient outcomes with cost-effective, differentiated filtration and separation solutions.

Blood reservoirs are used in cardiomy, venous and prenatal applications and collect blood from patient circuit, filter clots, and emboli. When reservoir systems are optimized using filtration, minimal levels of hemolysis and emboli are achieved and other negative outcomes such as dynamic holdups can be effectively managed and also minimized. Many blood reservoir manufacturers seek to defoam blood within the reservoir itself in order to reduce bubbles from aspirated blood and decrease gaseous micro-emboli being carried through the system. Pentair's unique filtration processes and coatings can be applied toward achieving the optimal defoaming objectives that medical device manufacturers are targeting.

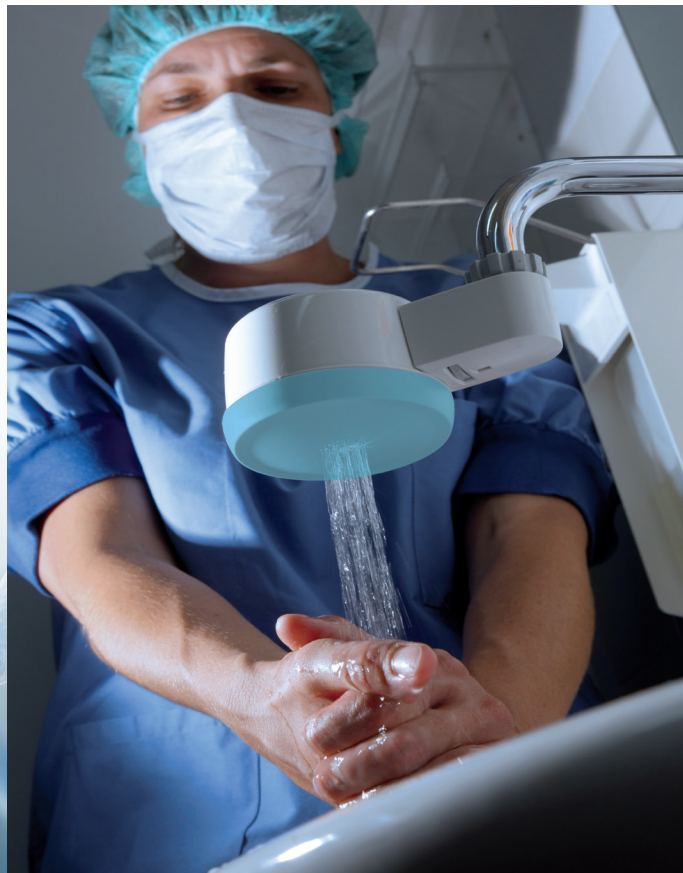
To complete the blood reservoir process, a pre-bypass filter is typically used to reduce micro emboli and other particles which could remain in the circuit for improved patient care during critical operations. The boundaries of what was once considered "sterile" filtration have dramatically changed in recent years with newer filtration technologies that have been validated to provide multiple log reductions of even the smallest viruses.



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DURION

DURION™ Hollow Fiber technology is the future of compressed air systems for a wide range of applications, including the laboratory market. The durability of DURION™ is attributed to its high chemical resistance and mechanical strength. Strong and effective, the technologically advanced material is ideal for use as a sensor dryer that selectively allows high transport rates of water vapor. Watch for many exciting new product releases based on this novel technology!



INFECTION CONTROL

Patient safety in hospitals is of vital importance, especially in high-risk areas such as hematology, oncology, burn units and intensive care units. One of the main concerns is the risk of bacterial infections which can be caused by microbiologically contaminated shower and tap water. Waterborne pathogens can accumulate in biofilm located within the plumbing system, even if a hospital disinfects water at the point-of-entry (POE). The pathogens can then be transmitted to patients when the water is used for their care. Pentair, a specialist in water purification solutions, developed a new generation of point-of-use (POU) membrane filters for shower heads and water faucets designed specifically for use in medical facilities. The ShowerFilter and the TapFilter provide easy and reliable protection at the last possible moment before patient contact.

LIFE SCIENCES FEATURED PRODUCTS

MEMBRANE HUMIDIFICATION

Certain air applications require humidity control. Pentair membrane humidifiers draw moisture from the ambient air for a silent, nearly invisible, and maintenance free operation.

ASSURE DDF SERIES

This high efficiency filtration element helps to protect the patient from concentrator sieve contamination, as well as protect the concentrator from patient bacterial and viral transmission.

ASSURE DBF SERIES

The DBF series bacterial intake filters provide true HEPA filtration for patient protection. The DBF series of filters are used to remove bacteria from the ambient air stream, remove atmospheric dust and debris found in typical oxygen concentrator environments, and to reduce noise levels. The high efficiency filtration helps not only to protect the patient, but also to extend compressor life by reducing contamination.

ASSURE DFC SERIES

This compressor outlet/filter silencer element removes potentially harmful contamination from air compressors. Sources of contamination include carbon and other debris generated during operation. These contaminants can cause critical valves to malfunction. The DFC series filters provide HEPA filtration for the valves and help improve the operation of the concentrator.

WATER TRAP FILTER

Pentair's water trap collects any fluids from the patient and drains away through the filter when a certain level is reached. This type of filter is a single patient use.



LIFE SCIENCES FEATURED PRODUCTS

MEMBRANE AIR DRYERS

The compression of ambient air increases the dew point leading to the condensation of water vapor. Pentair membrane dryers effectively remove moisture from air using our industry leading hollow fiber technology.



BLOOD RESERVOIRS

Pentair optimizes cardiovascular filtration through foam management, removal of particulate debris and bacterial contamination, minimizing pressure drops, and maximizing high flow rates.



PRE-BYPASS FILTERS

The preferred choice of perfusionists during critical operations, Pentair offers high efficiency capsules and devices which provide bacteria-free air, gas, and fluid delivery to patients to help promote a complication-free recovery. These devices effectively reduce microemboli and other potentially harmful particles.



DURION

New technology engineered for durability and selectivity in numerous harsh environments. DURION™ is effective for dehydration of gases. This membrane formulation is customizable and can be adjusted to meet multiple applications.



TAPFILTER AND SHOWERFILTER

Pentair Medical Water Filters use proven membrane technology as a solution to solve the challenge of water purification in hospitals. The cartridge inside contains hollow fiber microfiltration membranes with billions of microscopic pores. The pores form an ultra-fine filter which retains any bacteria or fungi present in the water resulting in clean and safe water for patients.



For more information on Pentair Engineered Filtration, please contact us at EFCustomerService@pentair.com



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1350 HAMMOND RD., ST. PAUL , MN 55110, USA . +651.653.2000 MAIN, +651.653.2230 FAX, EFCUSTOMERSERVICE@PENTAIR.COM

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