



Your Partner in Industrial Biotechnology Filtration

Adding value to your business

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



ENGINEERING YOUR SUCCESS.

Clear thinking. Clear results.

Whether producing healthcare products, food additives, enzymes, biofuels or industrial chemicals, Parker domnick hunter Process Filtration are committed to improving the productivity of your fermentation while minimizing contamination risks.

From class-leading sterile gas products to innovative off-gas control solutions, we can provide a total package of filtration and separation solutions to meet all your fermentation requirements.



Focused on adding value to your process

Commitment to improving productivity

With innovative products, state-of-the-art technical facilities and an international team of specialists, Parker domnick hunter understands and supports the specific needs of your process.

Total fermentation solutions

With over 40 years experience in providing dedicated filtration and separation products to the leading names in industrial biotechnology, Parker domnick hunter is committed to improving the productivity of your process. Our range features novel and innovative fermentation solutions specifically designed to increase capacity, improve yields and reduce contamination risks.

Dedicated technical services

Parker domnick hunter's commitment to customers goes beyond the supply of high quality products. We work closely with you to ensure the smooth operation of your process, continually improving your process efficiency. Our unique and customizable Purecare support packages are designed to improve productivity, and increase process control while guaranteeing product quality.

Global support

Wherever you are in the world, Parker domnick hunter is there to help you get the most out of your filtration and separation systems. With a dedicated international support team, multiple laboratory and manufacturing facilities, and a network of customer support centres operating in more than 50 countries worldwide, Parker offer you quality support locally.



Assuring system sterility

Maintaining batch quality

Parker domnick hunter’s extensive experience within industrial biotechnology applications allows us to provide you with a high level of assurance of fermentation system integrity, ensuring that batch quality is maintained.

Maintaining a sterile barrier around industrial fermentation systems is critical to ensuring batch quality and maximizing production yield. These concerns were raised by a customer producing food additive enzymes where the incumbent gas filtration system was not qualified to provide sustained system integrity over an extended service period at an elevated

operating temperature. This could potentially result in system contamination and product batch loss.

Parker domnick hunter were able to provide assurance against this eventuality by implementing regular *in-situ* contract integrity testing in order to provide documented confirmation of the ongoing

integrity of the gas filtration system. In conjunction with the installation of HIGH FLOW TETPOR II filter cartridges, qualified to provide sterile gas flows and long service life at elevated operating temperatures, this process ensured that system integrity could be maintained with a high degree of assurance.



Inlet air sterilization

Demonstrating capability

Proven expertise and extensive experience in large-scale fermentations of antibiotics enables Parker domnick hunter deliver the most appropriate inlet air filtration system first time, every time.

Compressed air supplied to a fermentation culture must be sterile filtered as it enters the fermenter to prevent contamination. A penicillin manufacturer’s inlet air filter specified by the incubent supplier failed to withstand the temperature conditions during the fermentation.

We were able to use our considerable experience to propose a more suitable system using our HIGH FLOW BIO-X which has greater resistance to high temperatures preventing system contamination and associated costs.



Maximizing fermentation capacity

For greater productivity

The Parker domnick hunter TURBOSEP effectively controls foaming and aerosol release to increase fermenter capacity while eliminating product loss attributed to excessive foaming.

It is common for industrial biotechnology companies to operate their fermenters at a reduced volume to compensate for excessive foaming. A manufacturer of the food additive

monosodium glutamate (MSG) had adopted this approach to minimize product loss through the off-gas outlet. The installation of the TURBOSEP mechanical separator enabled the

customer to increase the capacity of their fermenters by 30%, greatly increasing the productivity of the facility.

Reducing antifoam usage

Through effective foam control

As well as increasing working fermenter volume, the TURBOSEP can also reduce antifoam usage to a minimum lowering costs and preventing fouling of downstream purification equipment.



Antifoams added to the fermenter to reduce the level of foaming are not only an additional material cost, but can also be detrimental to downstream purification operations. The TURBOSEP control system detects the optimum moment to deliver precise doses of

antifoam, thus reducing consumption. A leading producer of amino acids installed TURBOSEP as the primary foam control system and as a result was able to reduce antifoam usage by 70%.



Antifoam filtration

Reliable and cost-effective sterilization

As the cost of energy consumption increases, filtration is becoming an ever more attractive option over heat treatment for the sterilization of antifoam prior to injection into the fermenter.

Parker domnick hunter has a close long-term relationship with a company that produces biopharmaceuticals by large-scale fermentation and, as such, were their first port of call when they were looking to reduce costs by changing their method of antifoam

sterilization. Using our PROPOR SG product, we were able to propose a filtration system to effectively sterilize antifoam being fed into five fermenters in place of their current heat treatment sterilization method.



Downstream liquid sterilization

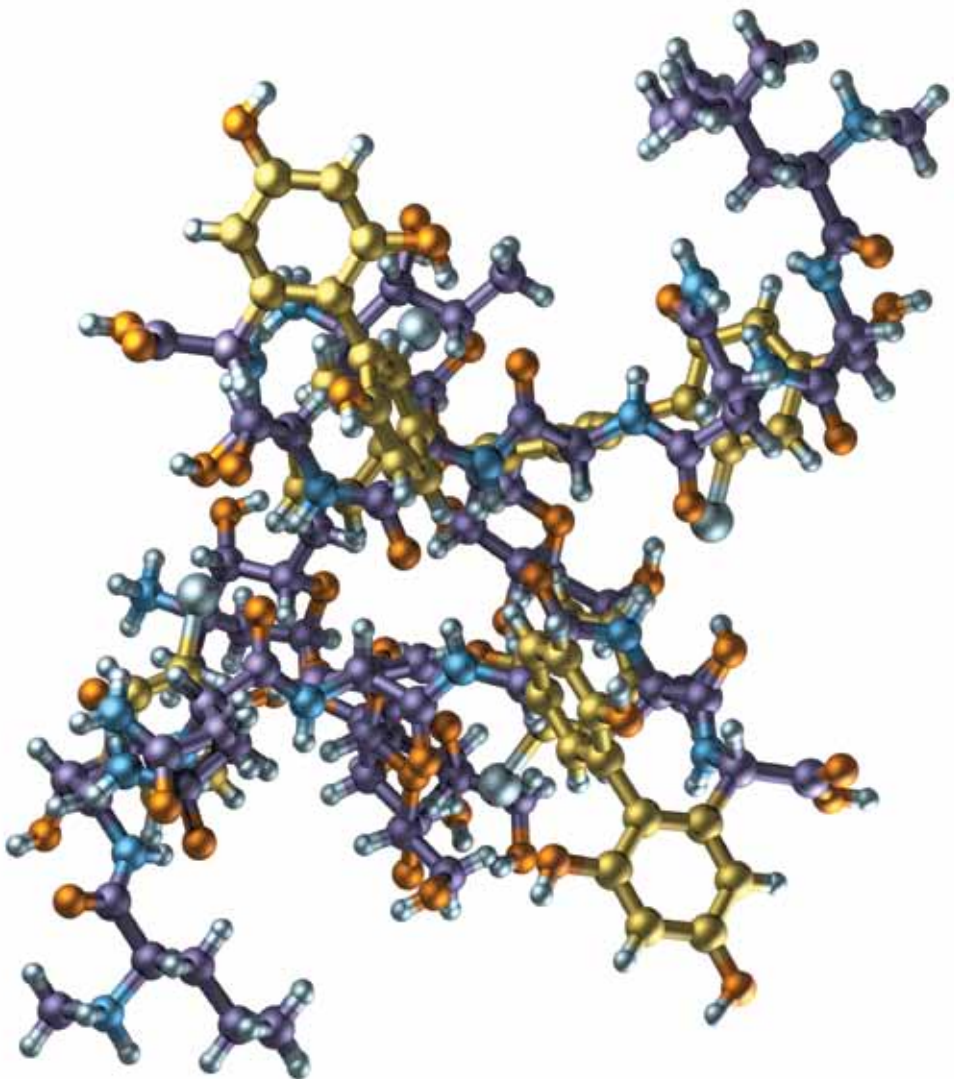
The importance of quality

With increasing quality standards for export into Europe and North America, manufacturers of pharmaceuticals in other areas are relying more heavily upon regulatory support from their suppliers.

To minimize cost, some eastern industrial biotechnology companies have utilized local filter manufacturers for critical applications; however, for manufacturers of pharmaceutical products that are increasingly looking

to export to Europe and North america, this can result in a loss of export business through lack of quality certification. Parker domnick hunter were able to help an antibiotics manufacturer in China obtain a

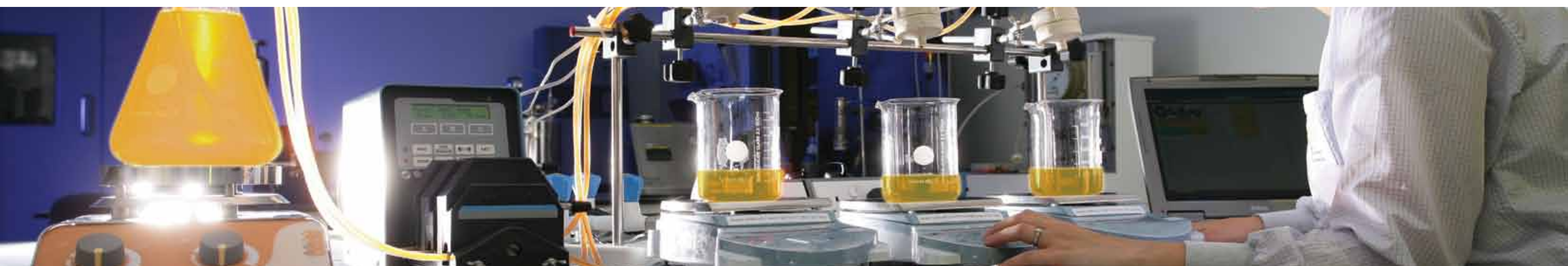
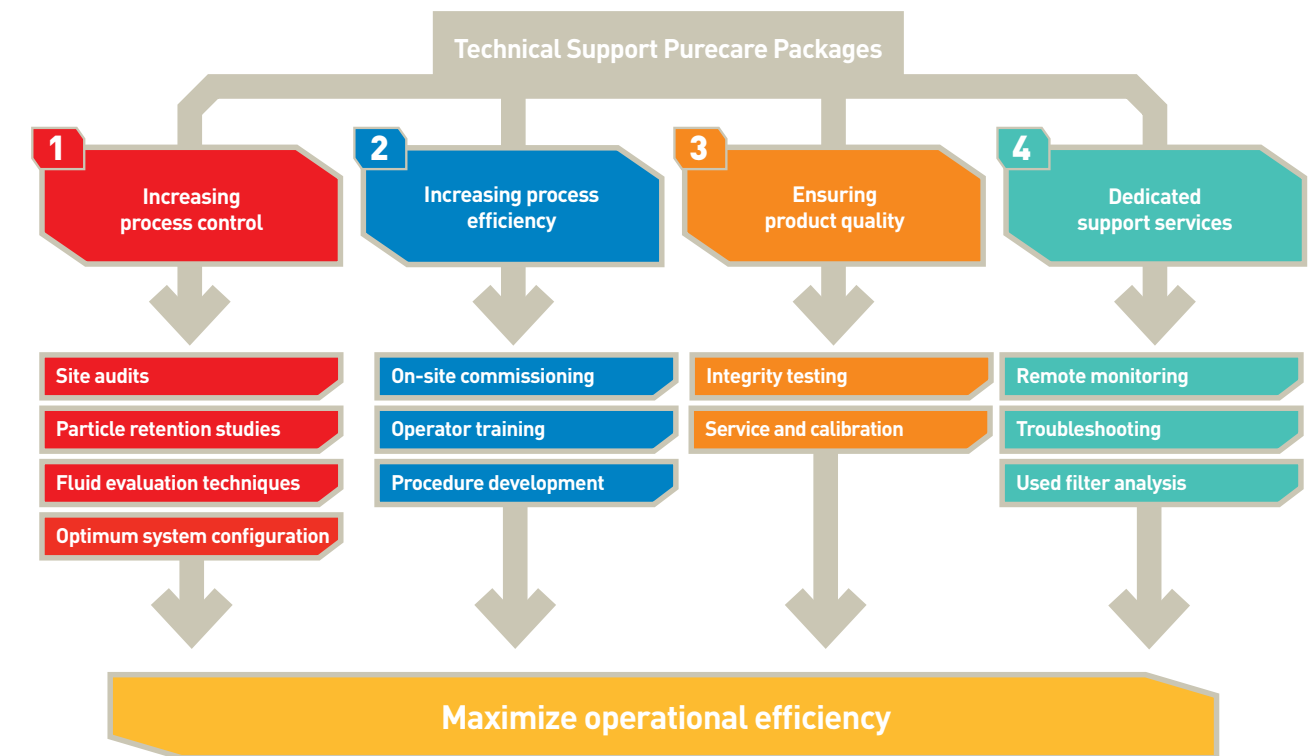
certificate of suitability to export to Europe by supplying fully validated TETPOR LIQUID filters for the sterilization of solvent containing process streams used in downstream processing with full regulatory support.

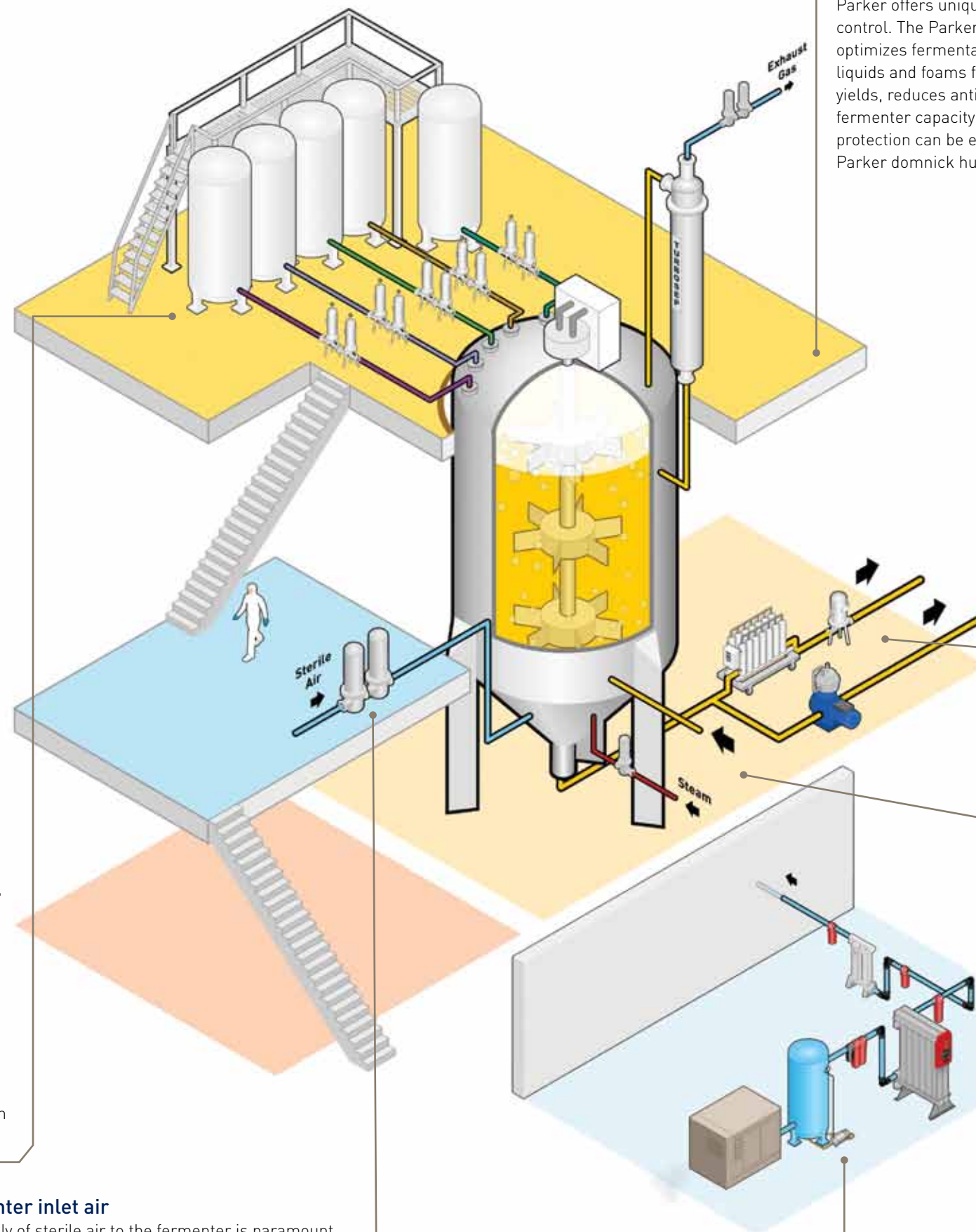


Dedicated technical support services

Tailored to your individual needs

Parker domnick hunter's global network of technical support personnel are specifically trained to help improve your productivity and process control, while minimizing contamination risks. We deliver this support through our range of unique Purecare packages, which can be customized to your requirements.





Fermenter additions

Sterilization of fermenter additions is essential to maintain optimum growth conditions in the fermenter and to prevent batch contamination.

Antifoam

Traditional heat stabilization of antifoam can not only affect its efficacy but is also very difficult, if not impossible to validate. Parker has experience in providing fully validated filtration solutions for the sterilization of antifoam using the Parker domnick hunter PROPOR range.

pH adjusts - acids and bases

pH adjusts require sterilization in order to remove bacterial spores which can be activated once introduced into fermentation media. Parker's product range includes both PES and PTFE filters for compatibility with a range of liquid acids and bases, as well as ammonia gas additions.

Nutrient feeds

Heat sterilization of nutrient feeds can reduce their efficiency and exacerbate chemical corrosion of stainless steel pipework. An excellent alternative is to utilize Parker domnick hunter PEPLYN PLUS and PROPOR SG to provide sterile filtration of nutrient feeds, thereby eliminating these issues.

Sterile water

Cost-effective sterile filtration of make-up water can be achieved using Parker domnick hunter PROPOR SG sterilizing grade filters. Additional sterile water is required to replace any fermenter volume lost through evaporation.

The alternative method of water replacement through steam injection can result in damage to the fermentation organism.

Fermenter inlet air

The supply of sterile air to the fermenter is paramount in preventing costly contamination that could lead to lower yields or even total product batch loss. The Parker domnick hunter gas purification range can ensure the quality of fermenter inlet air from compressed air systems to final sterilizing grade filters from the TETPOR and BIO-X ranges.

Fermenter off-gas

Parker offers unique solutions for complete off-gas control. The Parker domnick hunter TURBOSEP optimizes fermentation by separating aerosols, liquids and foams from off-gas. This improves yields, reduces antifoam consumption and increases fermenter capacity by up to 10%. Environmental protection can be ensured through the class-leading Parker domnick hunter sterile gas range.



Integrity testing

In addition to the PORECHECK IV instrument for liquid-based integrity testing, Parker can offer a unique solution specifically developed for fast and efficient testing of sterile gas filters with the Parker domnick hunter VALAIRDATA II aerosol challenge tester.

Downstream processing

Parker offers a range of microfiltration solutions for downstream processing applications including water sterilization and chromatography column protection.

Steam generation utilities

Parker domnick hunter steam filters have been specifically designed to protect process equipment and pipework from particulate contamination during steam-in-place sterilization of process lines.

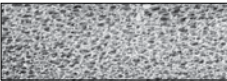
Compressed gas utilities

Parker domnick hunter is market leader in compressed gas purification and nitrogen generation solutions with a range of technologies and services to guarantee the efficient and trouble-free operation of your compressed gas utilities.

Products

Filtration solutions

PROPOR SG



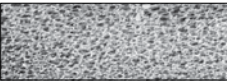
Polyethersulphone

0.1 - 0.45 micron

- Up to 3.5 times higher flow rates than competitive sterilizing grade filters
- Fully validated and integrity testable membrane for assurance of sterility
- Low binding for minimal product loss
- MURUS and DEMICAP's can be gamma-irradiated and autoclaved

PROPOR SG sterilizing grade filters feature a patented, microbially retentive polyethersulphone membrane for fast, reliable and cost-effective sterile filtration of pharmaceutical fluids.

PROPOR HC



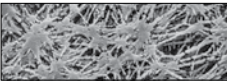
Polyethersulphone

0.2 micron

- Optimized membrane configuration allows up to ten times the throughput compared to single layer membrane products
- Integral prefilter layer can condense filter trains for greater processing economy
- Incorporates a fully validated and integrity testable 0.2 µm membrane for assurance of sterility
- Low binding for minimal product loss

PROPOR HC sterilizing grade filters have been specifically designed for the effective and economical processing of difficult to filter solutions.

HIGH FLOW TETPOR II



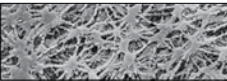
PTFE

0.2 micron

- Steam sterilizable up to 225 cycles at 142 °C (287.6 °F)
- Unrivalled flow rates combined with low pressure drops
- Fully validated to ASTM 838-05 for liquid bacterial challenge
- Fully validated to aerosol and viral challenge

HIGH FLOW TETPOR II gas sterilization filters have been developed to benefit from technological advances within the manufacture of PTFE membranes. This new generation of filter sets the standard with an unrivalled combination of efficiency, flow rate and strength.

TETPOR AIR



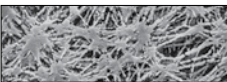
Expanded PTFE

0.2 micron

- Assured biosecurity with absolute rated filtration
- High flow rates with low pressure drops
- High voids volume PTFE membrane
- Steam sterilizable to 142 °C (287.6 °F)
- Unique prefilter layer

TETPOR AIR sterilization filter cartridges offer exceptional filtration performance whilst providing the highest levels of biosecurity throughout the process industry.

TETPOR LIQUID



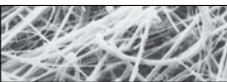
PTFE

0.1 - 1.0 micron

- Superior chemical resistance of PTFE membrane combined with polypropylene hardware
- Integrity tested prior to despatch
- Validated to ASTM 838-05 methodology
- Comprehensive range of end cap configurations for retrofitting

TETPOR LIQUID filters are particularly suitable for sterilization of particulate removal from aggressive chemicals (including acids, bases and solvents) within a wide range of critical processing industries

HIGH FLOW PREPOR GFA



Glass Microfibre

1.0 micron

- High surface area and voids volume filter media
- Exceptionally high flow rates with low pressure drops
- Reliable efficient protection of final sterilization filters
- Heat stabilized componentry to allow operation to elevated temperatures

HIGH FLOW PREPOR GFA is a high capacity glass fibre prefilter specifically designed for the removal of bulk particulate from compressed air and gases.

PEPLYN AIR



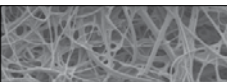
Polypropylene

1.0 - 25 micron

- Cost-effective prefiltration
- High flow rates and long life
- Steam sterilizable
- Graded density for excellent particle retention
- No release of particles even during system pressure fluctuations

PEPLYN AIR filter cartridges have been specifically designed to guarantee removal of particulate from gas streams.

HIGH FLOW BIO-X



PTFE impregnated borosilicate glass microfibre

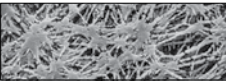
0.2 micron

- 94% voids volume PTFE impregnated microfibre
- Wide bore cartridge construction to maximize flow rate
- Stainless steel inner core
- Exceptionally high flow rates with low pressure drops
- Fully validated by aerosolized bacterial and viral challenge

HIGH FLOW BIO-X combines proven depth filter technology and pleated construction to provide retention down to 0.01 micron in gas.

Products

HIGH FLOW TETPOR H.T.



Expanded PTFE

0.01 micron

- Long service life even at elevated temperatures 100°C (212 °F)
- Assured biosecurity with absolute rated filtration
- Stainless steel inner core
- Steam sterilizable to 142 °C (287 °F)

HIGH FLOW TETPOR H.T. gas sterilization filter cartridges provide unrivalled performance in process industry applications where continuous cartridge operation of up to 100 °C (212 °F) is a requirement.

PEPLYN PLUS



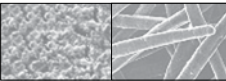
Polypropylene

0.6 - 100 micron

- Pleated media for high flow rates and long life
- Graded density for excellent particle retention
- Wide range of end caps to provide retrofitting of existing systems
- All polypropylene construction

PEPLYN AIR liquid filter cartridges are utilized for the clarification and prefiltration of a wide range of products in the pharmaceutical, beverage, ultrapure water and fine chemical industries.

Steam Filters

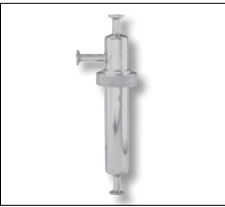


316L Stainless Steel

- 316L stainless steel filter cartridges
- Exceptionally high flow rates
- Available in culinary grade 1 micron
- High dirt holding capacity
- 'JUMBO' filter configuration ensures maximum utilization of pipework capacity

Parker domnick hunter steam filters are designed to provide high quality steam whilst maintaining optimal system performance via low pressure drops / high flow rates and high dirt holding capacity.

TURBOSEP



- Highly efficient removal of liquid and foam from off-gas
- Protection of off-gas filters
- Can improve process efficiency by increasing usable fermenter capacity
- Reduces antifoam usage

TURBOSEP is a mechanical separation device designed to remove foam and aerosol from fermenter off-gas thereby improving the overall efficiency of the fermentation process and facilitating effective operation of the final sterile filters.

Products

Housings

HSA

- Flow efficient sanitary range of air / gas housing
- Sanitary tri-clamp, vent and drain connections as standard
- Sanitary tri-clamp body closure as standard



HSV

- Industrial vent housing
- Direct connection to tank boss allows housing to be self supported
- Corrosion resistant 316L stainless steel
- Easy assembly and maintenance



HSAHP

- Sanitary range of air / gas housing
- Pharmaceutical surface finish
- A choice of easy to use sanitary vent and drain options



VSL

- Multi-element sanitary liquid housing
- Designed specifically for the pharmaceutical industry
- Electropolished internal finish



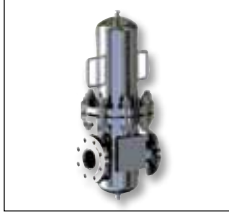
HSL

- Single-element sanitary liquid housing
- Sanitary vent, tri-clamp connections as standard
- Sanitary tri-clamp body closure as standard



VIS

- High efficiency steam filter housing
- Compatible with JUMBO element to maximize steam capacity



Integrity testing equipment

VALAIRDATA II

- Aerosol challenge testing
- Integrity testing of gas filters



PORECHECK 4

- Water intrusion, pressure decay & bubble point testing
- Integrity testing of liquid & gas filters
- Designed to 21 CFR Part II & Annex II compliant environments



Compressed air pre-treatment

OIL-X

- The most energy efficient filters available
- High quality ISO8573.1:2001 compressed air
- Running costs that start low and stay low



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