Food and Beverage

Sterile Air & Gas in Dairy

Adding value to your dairy process from compressor to point-of-use.

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

M·FILTER

The experts in sterile gas filtration

Since 1963, Parker domnick hunter have continually innovated filtration solutions to support dairy food producers and packagers worldwide. The range of solutions has been designed to deliver optimum operational performance and maintain our commitments to the dairy industry of; protecting food quality, reducing processing costs and providing specialist support.

01

Who is Parker domnick hunter?

Parker domnick hunter specializes in filtration and separation technology for gas purification and sterilization in critical industries such as food and pharmaceutical.

02

What value can Parker domnick hunter bring to your business?

As a customer of Parker domnick hunter you have access to leading technologies to control specific contamination hazards to defined standards, protecting food quality at the lowest cost of ownership.

03

How can Parker domnick hunter support you?

With technical experts represented at industry organisations and scientific, engineering and sales staff operating in 50 countries, we can support your global operations.

We can provide technical support around system design and operation, to ensure maximum protection and a high level of food safety in your process.

04

What experience does Parker domnick hunter have?

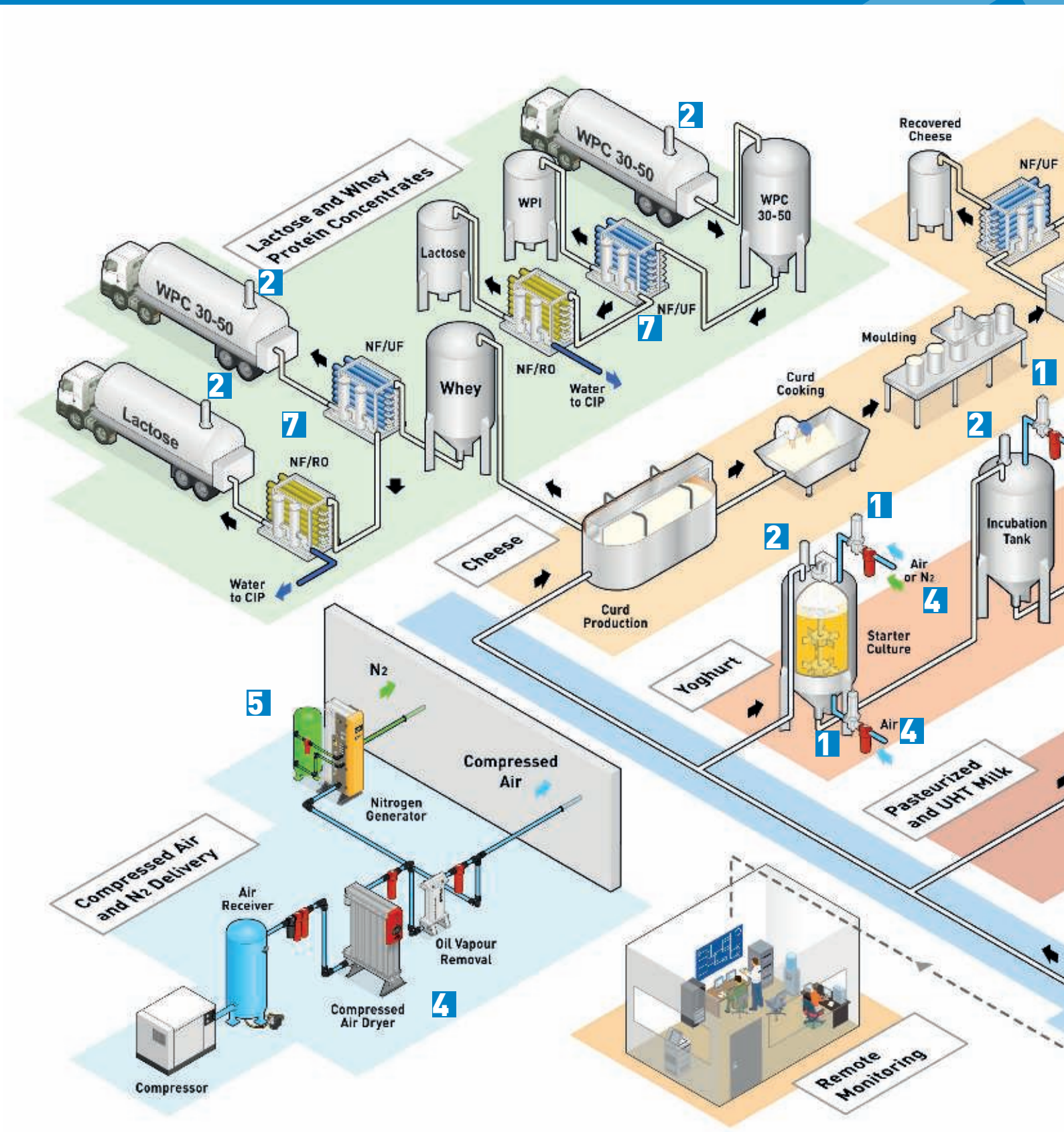
With over 50 years of experience supporting leading brands in critical industries, Parker domnick hunter is the perfect partner for gas purification and sterilization solutions.

Parker domnick hunter is committed to adding value by:

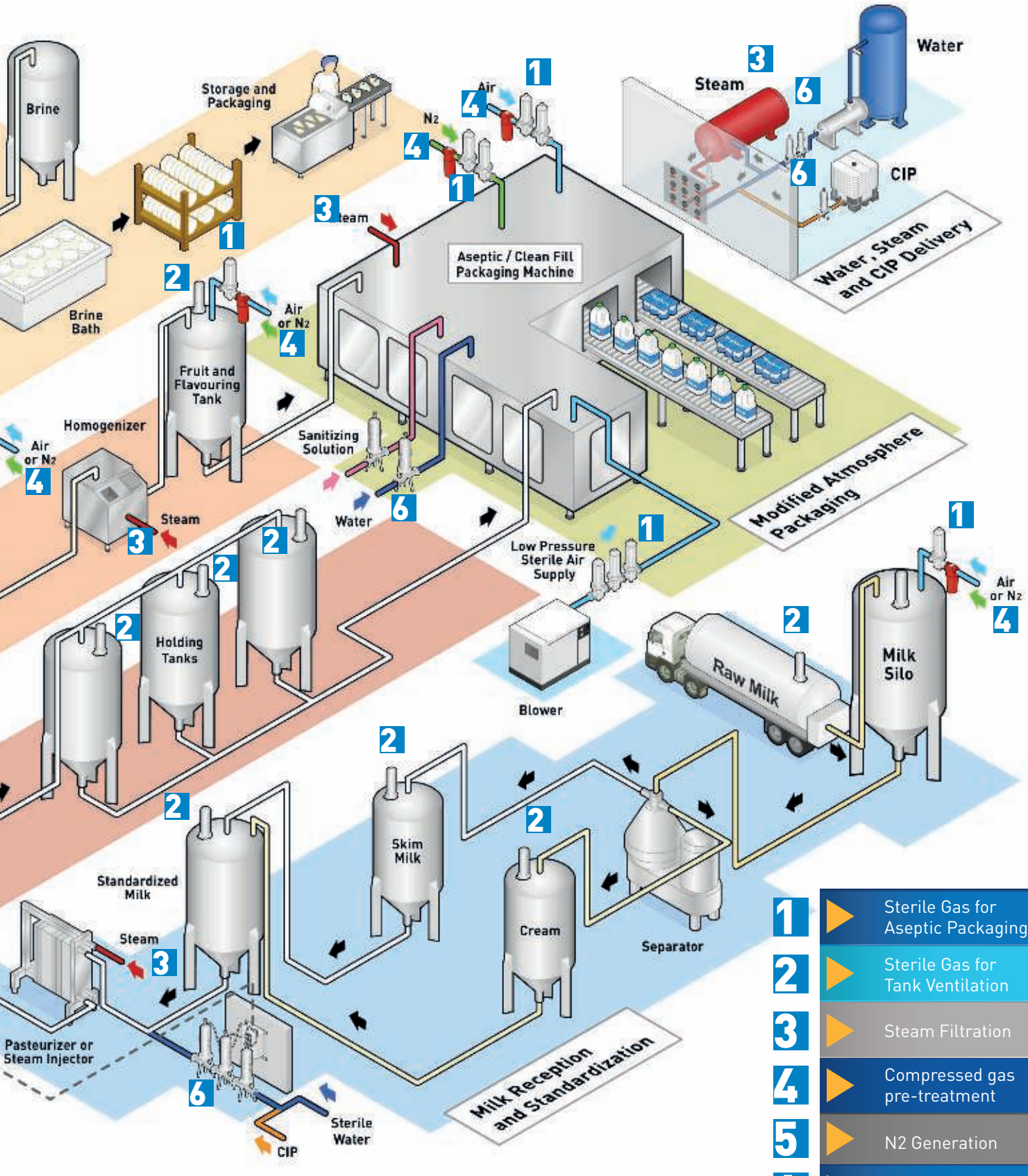
The Parker domnick hunter commitments

Protecting your dairy process

Parker domnick hunter offers a range of technologies for controlling physical, chemical and microbial hazards in dairy production. With a total solutions capability, Parker domnick hunter can deliver gas treatment and sterility solutions from compressor to point-of-use. Process gases carry a range of contaminants which pose significant hazards to sensitive dairy products.



With over 50 years experience supplying critical process industries such as pharmaceutical, food and beverage, Parker domnick hunter's range of gas treatment products have been designed to the highest regulatory standards for food safety. Class leading contaminant removal is now offered at the lowest cost of ownership.



Why is sterile gas critical?

Dairy products are very susceptible to bacterial contamination as they provide an ideal environment for cell growth. Most food manufacturing processes are warm, humid environments, offering perfect conditions for the proliferation of bacteria and bacteriophage organisms. It is for these reasons why careful control of microbial contamination is required in order to protect the products during processing and to deliver the required shelf-life once packaged.

To maintain product quality, any gas which comes into contact with the food either in storage or in final packaging is deemed critical and should be sterile filtered to prevent contamination.

HACCP

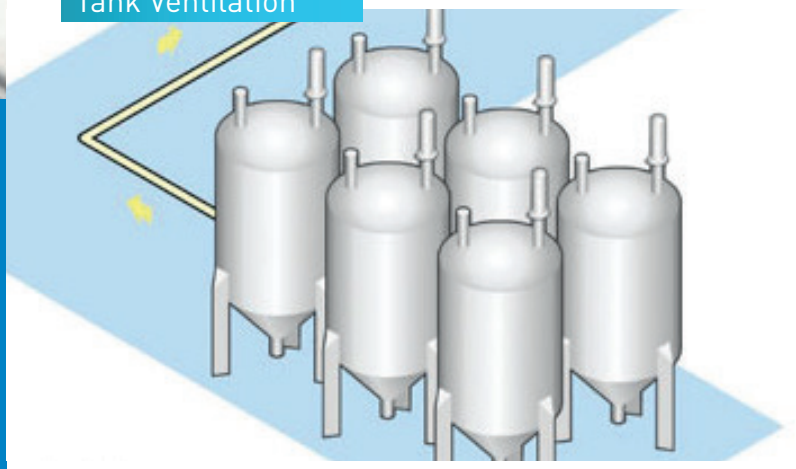
Hazard Analysis of Critical Control Points.

Sterile filtration of gases which come into direct contact with the product or packaging are highlighted as Critical Control Points (CCP) in the HACCP plan.

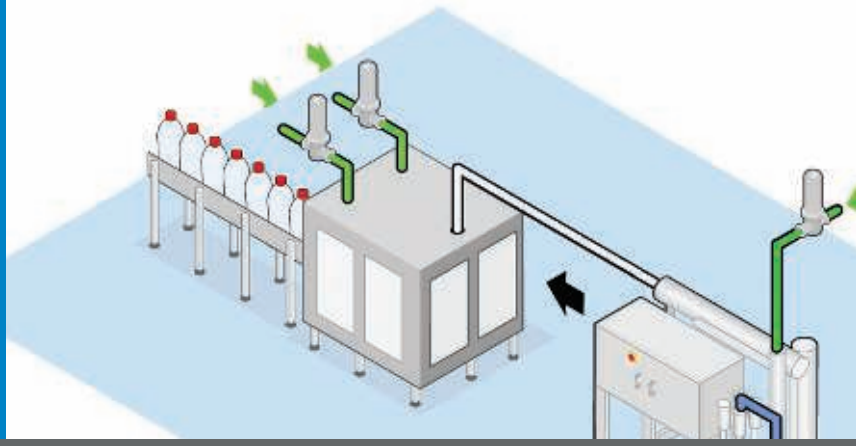
Two examples of CCPs which require the use of sterilizing gas filters are

Tank Ventilation and Aseptic Packaging.

Tank Ventilation



Aseptic Packaging

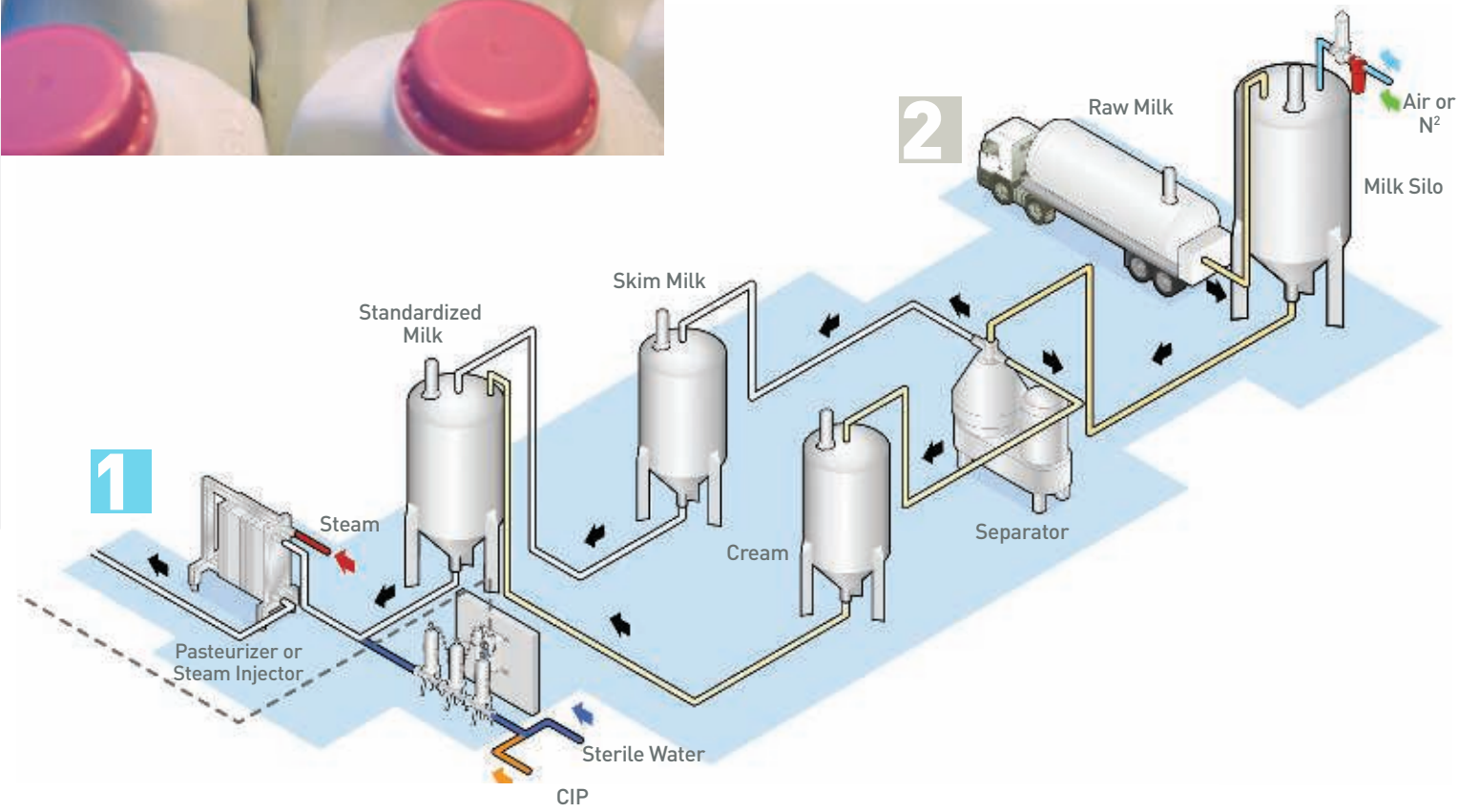


In food production and packaging factories, microorganisms can be transmitted by aerosols consisting of particles dispersed in air. The particles are solid or liquid and may have microorganisms inside, or on their surfaces. Mould and bacterial spores may be airborne without being attached to dust or water droplets, however their viability without moisture may be limited.

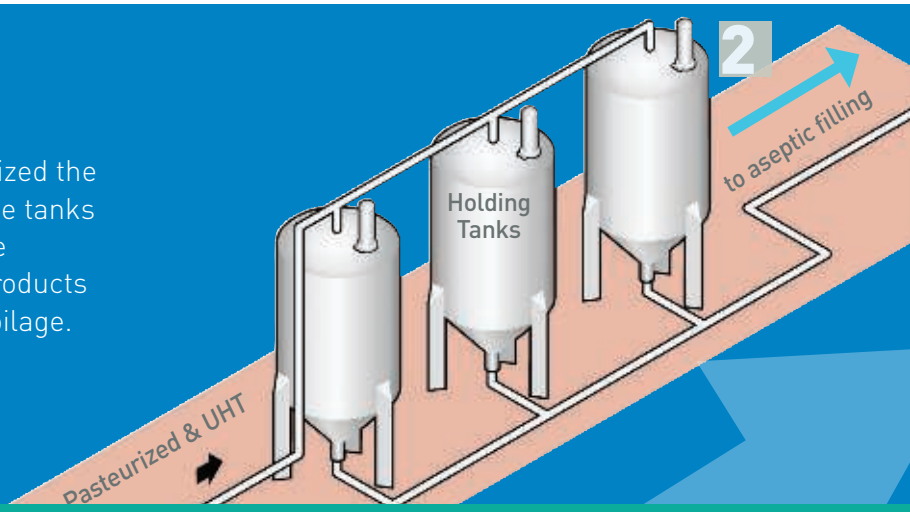
FACT

Milk reception and standardization

1 Typically, most milk is heat treated before it is used in a processing plant. Whilst pasteurization will eliminate any food poisoning organisms present in the milk and considerably reduce the numbers of potential spoilage organisms, processed milk can still support the abundant growth of microorganisms and must be protected from any post process recontamination.



2 Leading dairy companies have recognized the need to ensure air entering the storage tanks should be sterile filtered to protect the vulnerable sterilized or pasteurized products from microbial contamination and spoilage.

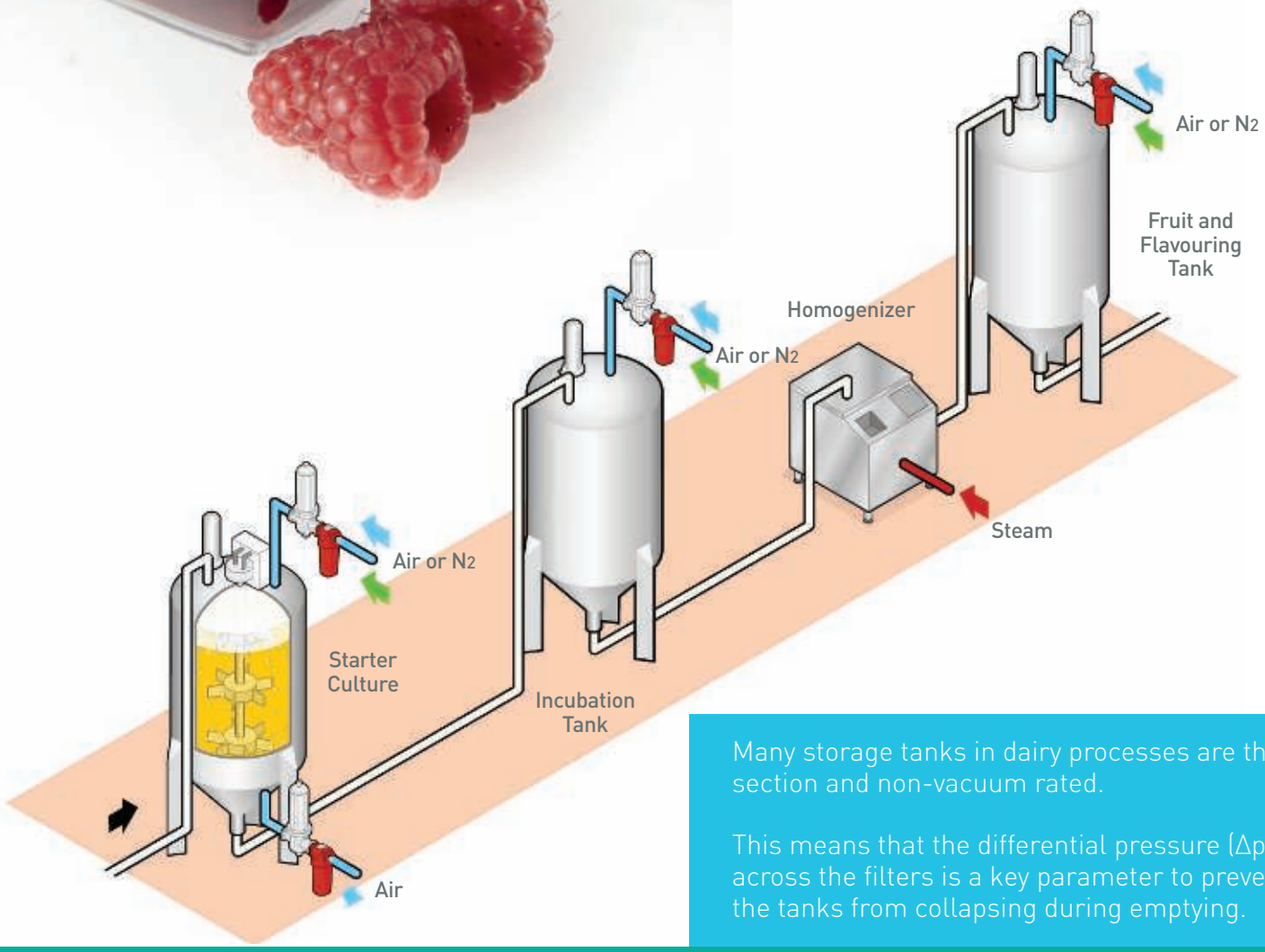


Yoghurt

As many dairy products such as yoghurt and cheese rely on certain bacterial strains for fermentation, bacteriophage (or phage) contamination and control represents a significant threat to the process.

Phage are virus particles which can infect and kill bacteria. Due to the use of specific bacterial strains to produce these products, there is a requirement to control phage in the process, which would otherwise destroy the bacteria.

Another major spoilage issue will arise from yeast growth within the products, which can cause product spoilage through gas formation and 'blowing' of the yoghurt pack.



Many storage tanks in dairy processes are thin section and non-vacuum rated.

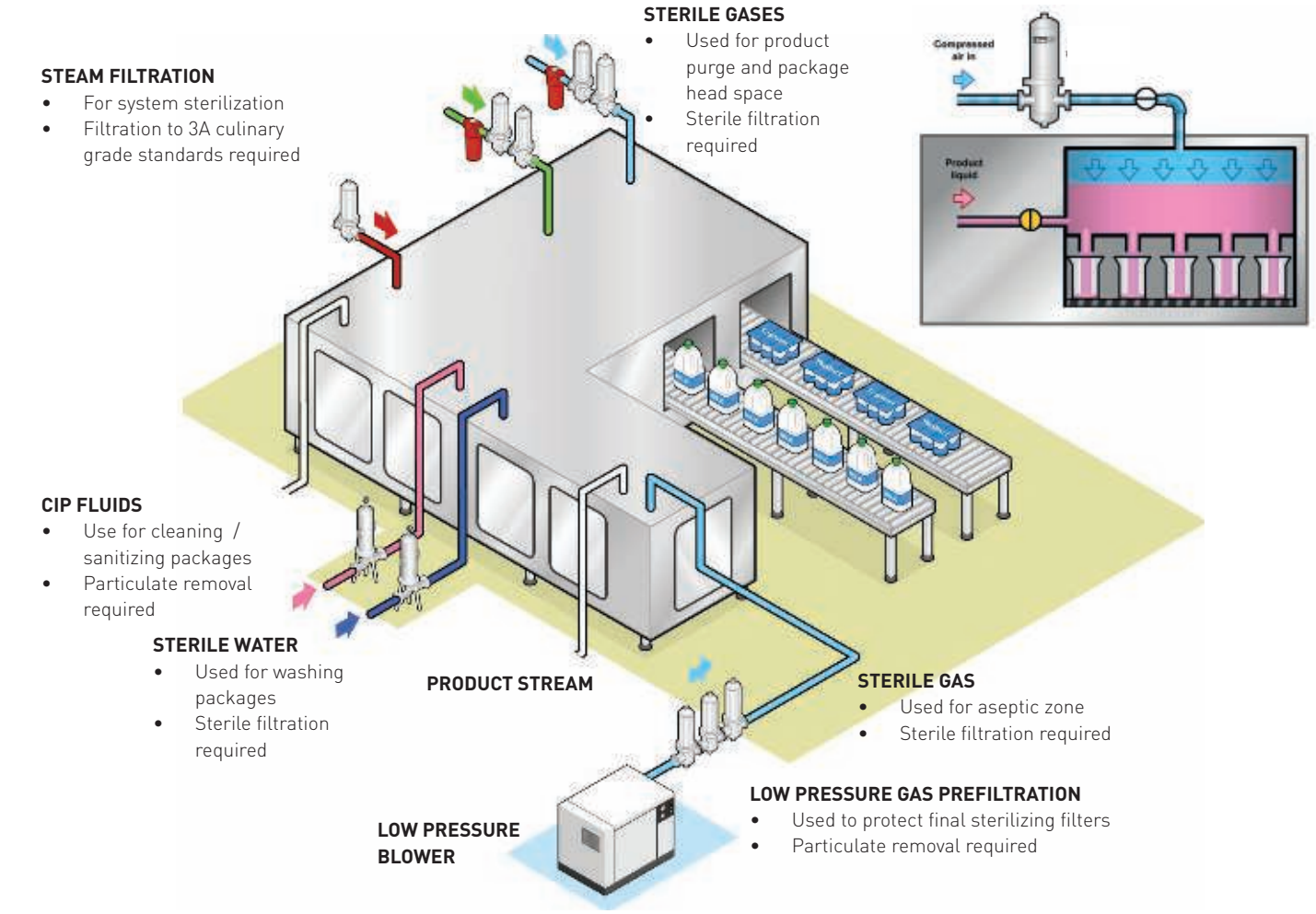
This means that the differential pressure (Δp) across the filters is a key parameter to prevent the tanks from collapsing during emptying.

Applications in Detail

MAP

Modified Atmosphere Packaging

Modified Atmosphere Packaging is a way of extending the shelf-life of fresh food products. The technology substitutes the atmospheric air inside a package with a combination of gases (typically nitrogen, carbon dioxide and air) to surround the product, protect against oxidation and inhibit microbiological growth.



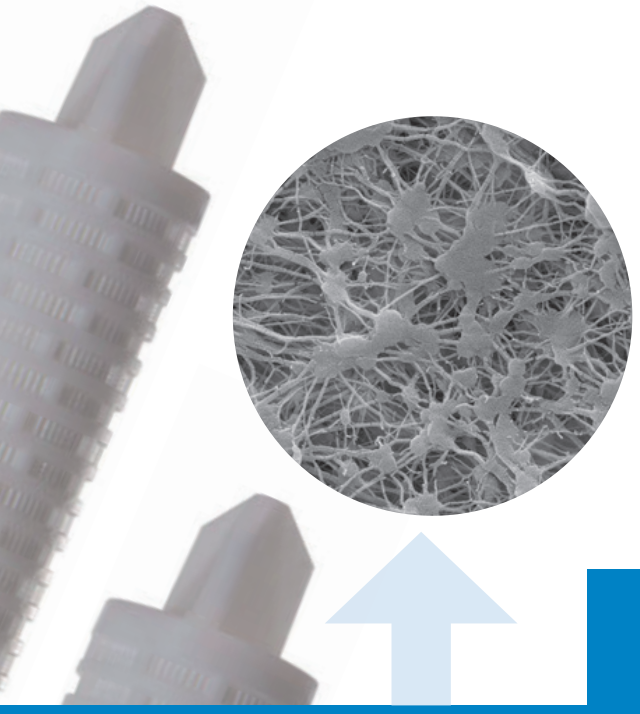
Aseptic systems are required to operate to very high standards of microbiological safety to ensure minimum probability that the product will be contaminated. In aseptic and clean fill packaging sterile gas is used for the following functions:

1. Formation of containers
2. Drying of containers
3. Product transfer into containers or packaging (conveying)
4. 'Laminar flow' over filler heads

The Optimum Solution

HIGH FLOW BIO-X

Delivering Sterile Gas



Using advanced PTFE impregnated filter material

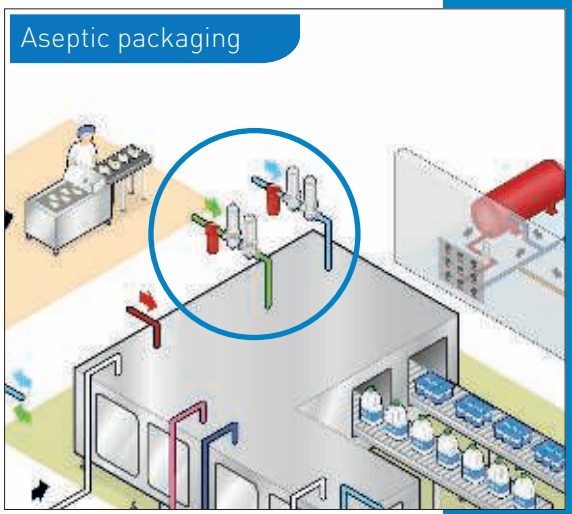
Leading **dairy companies** and **packaging machine** suppliers worldwide have chosen **HIGH FLOW BIO-X** filters for **gas sterilization** in food & beverage operations.

HIGH FLOW BIO-X filters set the standard for sterile gas filtration for critical food contact gases.

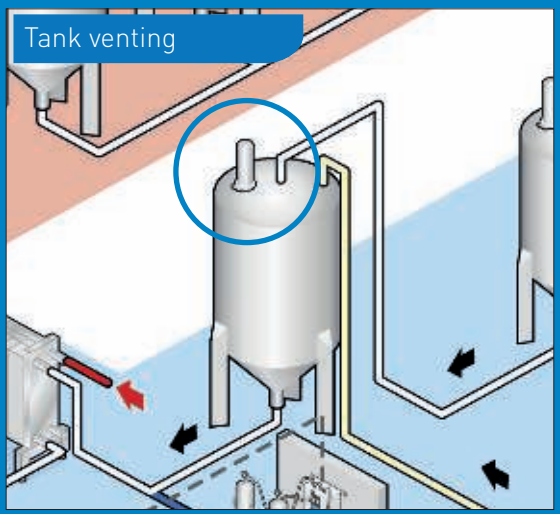
Sterilizing performance across the HIGH FLOW BIO-X range has been independently validated against high challenge levels of *Brevundimonas diminuta* and MS-2 coliphage organisms.

This qualifies the products to provide leading microbiological control to critical or sensitive foods perfectly matched to the needs of the dairy industry.

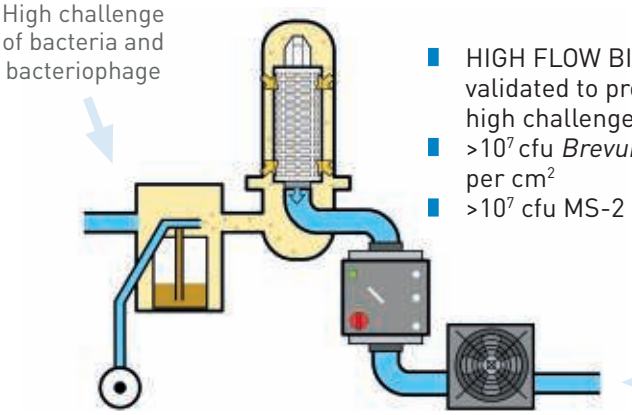
Aseptic packaging



Tank venting



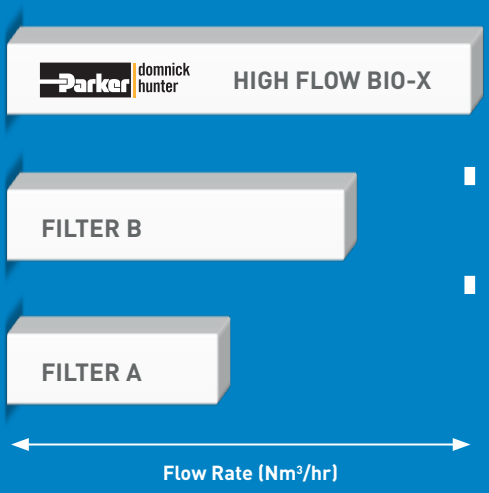
High challenge of bacteria and bacteriophage



- HIGH FLOW BIO-X filters have been validated to provide sterile gas under high challenge conditions.
- $>10^7$ cfu *Brevundimonas diminuta* per cm^2
- $>10^7$ cfu MS-2 coliphage per cm^2

Sterile gas for critical food contact

Highest flowing sterile gas filter available



Flow comparison for 100 mbar dP across filter

- The unique PTFE impregnated filter media returns optimum flow and gas sterilizing performance.
- High flow performance reduces compressor energy costs or allows smaller filters to be used per application.

- Parker domnick hunter provide expert technical support to ensure sterile gas delivery systems are optimized for your process.
- The HIGH FLOW BIO-X range provides extended lifetimes and have been validated for 150 SIP cycles at 142°C.
- The HIGH FLOW BIO-X range meets the regulations under the scope of EC1935/2004.

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Valairdata 3

Setting the standards

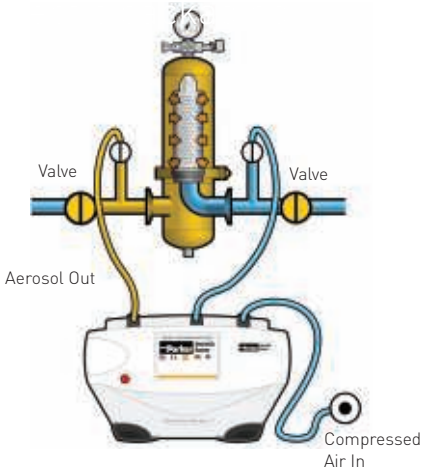
The NEW Valairdata 3 has been designed utilizing state-of-the-art technologies.

The quickest and easiest way to verify the integrity of sterile gas filter systems.

Increasing product quality requirements and processing standards have driven the need for greater control of aseptic process operations. Analyzing the performance of sterile gas filter systems in-situ, quickly and with minimal disruption to the process is a key part of establishing process control.

The Valairdata 3 delivers on these requirements by performing an aerosol challenge of the test filters. Independent validation has correlated this method to aerosol challenges with *B.subtilis, P.aeruginosa* and MS2 coliphage according to ASTM guidelines. Any filter which passes Valairdata 3 testing is therefore capable of providing sterile gas to the process.

Aseptic packaging



The aerosol challenge simulates an actual bacterial / phage challenge. A fine aerosol in the size range 0.1µm – 0.3µm is generated and introduced to the filter under test. Any passage through the filter is detected by a laser particle counter.

The **FAST** Solution

In process environments minimizing downtime and speed of production are key. The Valairdata 3 provides fast and reliable filter integrity testing in-situ, with results obtained in seconds. The test filter can be introduced back into the process immediately after testing with no flushing or drying required.

The **ACCURATE** Solution

Verifying a sterile gas filter's ability to provide sterility is essential to ensure your process remains secure. The Valairdata 3 aerosol challenge is fully correlated to aerosolized bacterial and viral challenges and is an accurate, reliable method for detecting gas filter integrity. Test details are securely stored within the unit in accordance with FDA 21CFR part 11 requirements.

The **PORTABLE** Solution

Designed for use throughout your process, the Valairdata 3 incorporates state-of-the-art technologies to enhance the benefits offered by the aerosol challenge in comparison to other sterile gas filter test methods. The lightweight, portable design and long-life battery allow operators to test filters in-situ, to safeguard your process from potential contamination. Once testing is complete the results are easily transferred from the unit via a USB data stick for easy tracking, storage and transfer of test data.

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The complete solution

Parker domnick hunter is the world leader in filtration and separation techologies for dairy processing operations. Below is a selection of products designed to support production of high quality safe dairy products.

Gas Sterilization Filters

HIGH FLOW BIO-X

The optimum gas sterilizing filter, providing full retention to bacteria and phage at unrivalled flow rates.

PTFE impregnated media	Gas sterilizing grade

- 94% voids volume PTFE impregnated glass fibre
- Exceptional flow rates with low pressure drops

Gas Sterilization Filters

HIGH FLOW TETPOR II

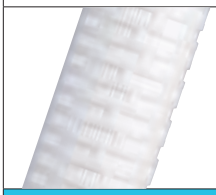
Offering sterile gas filtration validated in liquid conditions.

PTFE membrane	Gas and liquid sterilizing grade

- High voids volume PTFE membrane
- Validated to 225 SIP at 142°C

Gas Prefiltration

HIGH FLOW PREPOR GFA



Bulk removal of particulate from compressed air and gases.

Borosilicate media	1 micron in gas

- High flow rates and low pressure differential
- Reliable, efficient protection to sterilizing grade filters

Gas Prefiltration

PEPLYN AIR

Bulk removal of particulate from compressed air and gases.

Polypropylene media	1 - 25 micron in gas

- Steam sterilizable capability
- High flow rates and low pressure differential

Water Treatment - Clarification

PROPLEAT

Economical solution to particle removal.

Polypropylene media	0.8 - 40 micron in liquid (nominal)

- Flexibility to excel in a wide range of clarification / particle removal applications
- Ability to be cleaned / sanitized in-situ

Water Treatment - Clarification

PARMAX

Large diamater filtration for high rates and high capacity.

Polypropylene media	1.0 - 20 micron in liquid (absolute)

- Reduced running costs for large capacity applications
- Consistent quality filtrate delivered to facility at point of entry

Water Treatment - Sterilization

BEVPOR MS

Validated removal of waterbourne bacteria.

Polyethersulphone	0.2 micron in liquid

- Ensures safety of water for process operations
- Fully integrity testable for HACCP compliance

Steam Filters

PLEATED and SINTERED Filters

Steam filtration to culinary grade (3A Standard 609-03).

316L stainless steel	1, 5 and 25 micron

- JUMBO version for increased capacity
- Execptionally high flow rates

Technical Support

email: tsg@parker.com
tel: +44 (0) 191 4105121

Parker domnick hunter provide technical support around system design and operation. With a strong pharmaceutical heritage, products exceed food safety standards for aseptic filling / packaging, tank ventilation and sterile air / gas applications.

Gas & Liquid Housings

HBA, HPG, VSH

Full range of scalable, sanitary filter housings and accessories available.

316L Stainless Steel

- Full range of sanitary mechanical or electro polished finishes available
- Standard design or customized manufacturing (specials) available

Integrity Test Instrument

Valairdata 3

Fully automated filter integrity testing device to test filters quickly and easily.

Aerosol challenge test device

- Fully correlated to bacteria and phage challenge testing
- 30 seconds to test a single 254mm filter

Compresed Air & Gas Treatment (CAGT)

WS Water Separators

Providing efficient bulk liquid removal from gas at all flow conditions.

Bulk Liquid Removal

- Performance independently verified to ISO8573 standards
- Low pressure loss / low operational cost

Gas Generation

Nitrosource

Advanced technology nitrogen gas generator.

Nitrogen generation from compressed air

- Low life-cycle cost of ownership
- Elimination of costs associated with cylinder supply

Compresed Air & Gas Treatment (CAGT)

OIL-X Evolution

Providing air quality that meets or exceeds the requirements of ISO8573-1, the international standard for compressed air quality.

Compressed Air Filters

- High quality ISO8573.1:2001 compressed air
- Running costs that start low and stay low

Whey Separations

Sanitary spiral elements

High performance sanitary membranes for whey speparation and concentration applications.

Sanitary membranes	MF / UF / NF / RO

- Enhanced construction developed for durability and extended life
- Available in standard diameter or customer configurations for maximum performance

Carbon Dioxide Polishing

PC02

Providing quality incident protection for beverage grade carbon dioxide.

Carbon Dioxide Polishing Systems

- Ensures compliance with quality guidelines published by the ISBT
- Protects sensitive food and beverage manufacturing processes from vapour impurities