

Why Clean Differential Pressure Matters When Choosing a Filter

When selecting a filter, many factors must be considered:

- Flow rate
- Pressure
- Temperature
- Viscosity
- Batch or continuous processing

However, one often overlooked yet critical factor is the clean differential pressure (clean DP). Getting this right can be a true game changer, yielding significant long-term operational and cost benefits.

In a recent application, we were asked to filter a pharmaceutical drug substance with a viscosity of 16 centipoise (cP). Several key considerations guided the filter selection:

Chemical Compatibility

Flow Rate

Pressure Management

Stability of Differential Pressure

Viscosity Impact

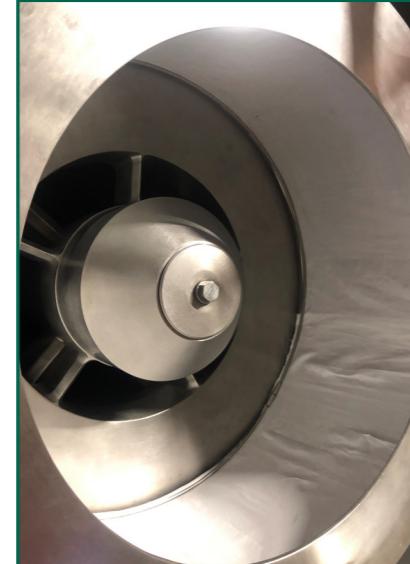
– Due to the solvents involved, material compatibility was essential.
– High viscosity impacts flow; it was vital to ensure the selected filter could maintain the required rate without exceeding process limits.
– Understanding both upstream pressure and downstream pressure expectations was crucial for consistent performance.
– As the liquid was free of suspended solids, the clean DP was expected to remain stable throughout the batch, an important characteristic for maintaining process integrity and throughput.
– At 12–16 cP, the fluid presents resistance to flow, magnifying the importance of selecting a low-resistance filter to maintain efficiency.

At equal flow rates, the all-PFA filter offers a much lower clean differential pressure, making it significantly more efficient, especially when processing viscous fluids. Choosing the right filter is about more than just size and compatibility. Clean differential pressure is a critical performance metric—particularly in high-viscosity or high-value processes. Ignoring it can lead to elevated energy costs, slower processing, or even filter failure. Factoring in DP from the start leads to smarter, more sustainable filtration choices.

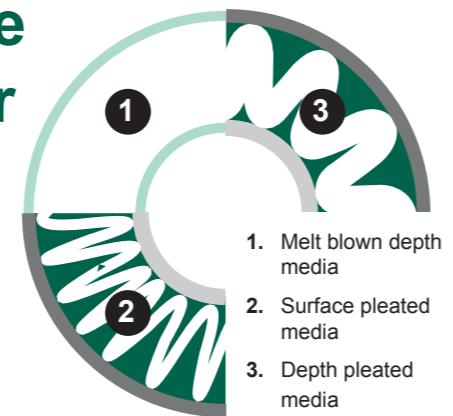
Let us help you select the right filter—based on all the parameters that matter.

Technical Fabrics

Hall Pyke was recently commissioned to produce a custom filter bag for a Buchner Funnel using PEEK (polyetheretherketone), a high-performance engineering thermoplastic.



Renowned for its exceptional chemical resistance, mechanical strength, and thermal stability, PEEK is an ideal choice for demanding filtration environments. While Hall Pyke manufactures a wide range of filter bags—from centrifuges to bag filters to leaf filters—across a variety of materials, this marks the first time the company has produced a solution specifically for use with a Buchner Funnel.



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Hall Pyke NEWS UNFILTERED

July 2025

Dryer Bags - How saving money can cost you

Since 1977, Hall Pyke has been delivering filtration solutions to the manufacturing industry. Over that time, we've built up a deep reservoir of technical and organisational knowledge. It's this experience that enables us to recommend the most effective filtration products for your application, eliminating the costly trial-and-error often associated with filter selection.

The example shown in these images illustrates this well.



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Why Clean Differential Pressure Matters When Choosing a Filter

A customer approached us with an ongoing issue: dryer bags were falling from the cell plate during operation. When Hall Pyke was invited to investigate the root cause, it didn't take long to identify the problem.

As seen in the photos, the incumbent supplier had used a felt insert instead of a solid PTFE cord in the snap-ring. This seemingly minor difference had a significant impact: as the bags became heavy with powder, the weight exerted downward force on the neck of the bag. The felt cord compressed too easily, allowing the bags to slip free from the cell plate. In contrast, a solid PTFE cord provides the rigidity and grip needed to keep the bag securely in place.

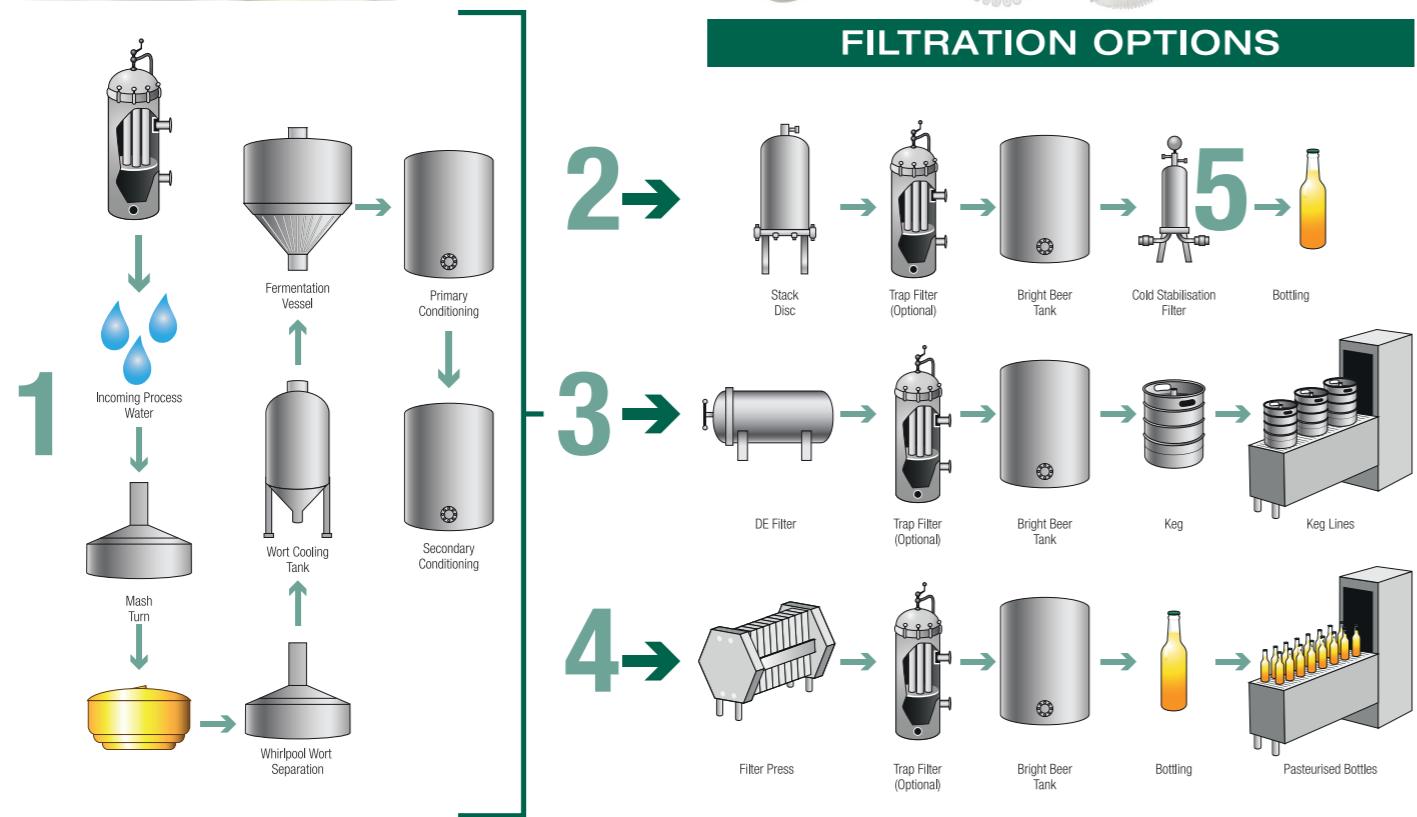
We can only assume that the substitution of felt for cord was made on the basis of cost. However, as this case demonstrates, such decisions can lead to operational inefficiencies and failures.

At Hall Pyke, we believe in engineering integrity over shortcuts—and we're here to ensure your filtration systems perform reliably, right from the start.



Hall Pyke Brewery Filtration Solutions

At Hall Pyke we strive to provide our customers innovative, advanced filtration technologies to manage process contaminants. We offer a wide range of filter products for brewery applications for incoming process water, tank vent gas, and beer refining streams. At Hall Pyke we can handle all your brewery process filtration from barley to bottle!



Why Hall Pyke Brewery Filter Solutions

1. Process Water Filters. Efficiently handle high volumes (up to 40,000+ hl/day) using high-capacity cartridges with w-pleat layered materials—maximising surface area and contaminant loading.

2. Carbon Filters for Process Water. Remove chlorine and off-flavour compounds with carbon block technology designed for full contact and high adsorption—without carbon fines.

3. Depth Media Sheets & Lenticulars. Cellulosic filters effectively retain yeast, DE, and spoilage organisms through physical and electro-kinetic capture—ensuring bright, clear beer.

4. Beer Trap Filters. High-throughput, low-pressure filters using multi-directional flow paths and engineered media to trap gels, Kieselguhr, and particles—maintaining beer clarity.

5. Cold Stabilisation Filters. Final-stage PES membrane filters (0.45–0.65 µm), steam sterilizable and integrity tested—ideal for cold sterilisation of beverages.

6. Sterile Air Filters. PTFE membrane cartridges for sterile air applications (e.g. tank vents, wort air, line purging), offering high flow, low pressure drop, and repeat steam sterilisation.



The Ranelagh Rockets celebrated their end of season football training with a well deserved Teddy's ice cream treat sponsored by Hall Pyke.

Ranelagh Rockets are a GAA team for children with additional needs.

Children can develop their sporting skills and form friendships in an understanding and non-judgmental environment. This community experience is all about being involved in clubs and meeting others. In the Ranelagh Rockets the parents connect as much as the children.

Clarifying the 0.2 vs. 0.22 Micron Debate in Filtration



The 0.2 v 0.22 rating is an administrative indicator for filter manufacturers but not a retention performance criteria.

Pore size ratings are so unrelated to actual dimensions and so subject to anomalous interpretations as to make substantial dependency upon their values an unwise choice.

The pore size rating system at best provides a qualitative differentiation.

Tests such as bubble point measurements and bacteria challenges are used to assign pore-size ratings. The assigned numbers are meant to imply particles size retentions, not dimensional mensurations from which flow properties might also be derived.

The organisms used in the microbial challenges differ in accordance with the filters presumed pore size.

The log reduction values necessitated by FDA's definition of a sterilizing filter is retention of $1 \times 10^7/\text{cm}^2$ colony forming units (cfu) per square centimetre of effective filter area (efa). Such a retention produced against a *Brevundimonas diminuta* ATCC-19146 confrontation characterizes the 0.2/0.22 µm rated membranes.

Pore size ratings are administrative devices. They serve only as part numbers or catalogue listings for filter manufacturers.

The selection of filters for sterilizing applications is made primarily on the bases of LRV's that the various filter types impose upon *Brevundimonas diminuta* challenges in accordance with the FDA's definition of a sterilizing filter.

The membranes that meet the FDA's stipulation of retaining $1 \times 10^7/\text{cm}^2$ challenge are listed as being rated 0.2/0.22µm.