



### FINE TUNING OF FILTRATION SIZING DECREASES FILTRATION AND OPERATING COSTS



(1)



(2)



(3)

#### Application:

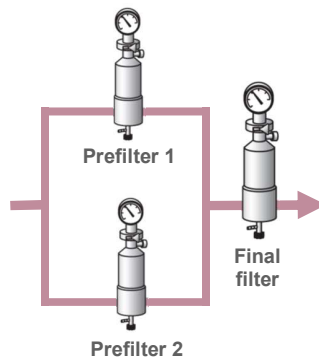
A Romanian pharmaceutical manufacturer (1) is relying 100% on Pall products in sterile and bioburden reduction applications for sterile I.V. solutions, infusion systems and devices, parenteral nutrition, anesthetics and antibiotics.

A Marek veterinary solution (2) is prepared as a culture media, working in campaigns of approx. 2 batches.

Process parameters (3):

- Pressure 2.8 bar (const.);
- Temperature 60°C;
- CIP&SIP of filter cartridges.

The solution, which is close as viscosity to water, was filtered for clarification and bioburden reduction, with one set of 2 prefilters in parallel (1.5 µm) and a final filter (0.45 µm), as shown below:



#### Problem:

The prefilters clog after filtration of one batch, and all the filters, including final filter, had to be replaced, increasing costs/batch. Client's target was to work in campaign with filtration of 3-4 batches before the filters' change.

#### Solution:

Pall **Profile Star** filters are used in many cases as a prefiltration step, due to the pleated polypropylene fibers, arranged in a graded pore structure, which offers extraordinarily high dirt-holding capacity and increases filter life.

The proposed solution was an optimization of the retention rate from 1.5 µm to 5 µm. This increased the filter life of the prefilter, being able to filter 2 batches each, until the end of its service life. The life of the final filter was sufficient for filtration of 4 batches. Even more, the volume of the batches was increased due to the decreased differential pressure drop on the prefilters too.

	BEFORE	AFTER
Filter retention rate	1.5 µm	5 µm
Prefilter use	1 cartridge/ 1 batch	1 cartridge/ 2 batches
Final filter use	1 cartridge/ 2 batches	1 cartridge/ 4 batches
<b>Filtration price/batch</b>	<b>600€</b>	<b>450€</b>
Volume of batch	3000 L	3950 L

Due to variation of contaminants and the range of their dimensions, production times should be monitored. The filtration price/batch could decrease more if the final filter would be used for more than 4 batches.

#### Benefits:

- ✓ Reduced **filtration costs** with 150€/batch, due to less prefilter consumption.
- ✓ Increased filtration volume/batch with 11- 46 %.
- ✓ Decreased filtration time/batch, down to 4-5 hours, shortening the campaign period
- ✓ Lower **operating costs**, considering less CIP & SIP cycles (3 hours)/campaign, shorter time for the filters handling (1 hour/set), less consumption of WFI for the filters' cleaning.