Pall Corporation

Case Study

Ultipleat® Polymer Candles Used in Manufacturing PET Bottle Grade Resin

Background:

A major PET resin manufacturer in Eastern Europe produces resin in excess of 70,000 tons per year. The manufacturer's primary product is high viscosity PET resin used in containers for soft drinks, mineral and drinking water, beer, vegetable oils, and other food products. They also provide raw materials for packaging tapes, films and other household items.

Through the use of modern, automated technology imported from a premier European engineering company, the PET manufacturer produces high quality PET resin that is well accepted by most major soft drink companies throughout the world. The manufacturer uses a dual-stage depth filtration system to produce its resin. The filtration system plays a major role in yielding consistent, high quality products by eliminating impurities and contamination that is otherwise harmful or unacceptable to the bottling industry.

Challenge:

The PET manufacturer operates an inline filter system with nineteen (19) fan-pleat style elements per housing. Each filter element has a 6.20 cm (2.44 in) OD and is 78.28 cm (30.82 in) in length, with a pressure rating of 103.4 bard (1500 psid). At a flow rate of 4400 kg/hr (9700 lb/hr) and using a 40 µm rated depth filter, the customer experienced an on-stream life of about 60 days.

Other significant data includes:

- Downtime/scrap production/labor per changeover: significant (estimated to be in the thousands)
- Number of changeovers based on 60 days of on-stream life: 6 per year
- Changeovers per year: 6

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The goal was to reduce the down time and annual operating costs, without changing capital equipment or sacrificing on quality. Increasing the filter area is a key factor for prolonging the on-stream life of the filter. However, increasing the area by simply adding more pleats to the element's design can have a net adverse effect. The tighter spacing of the pleats (which would be required to accommodate additional pleats) likely would prevent the flow from reaching all of the filter's media.

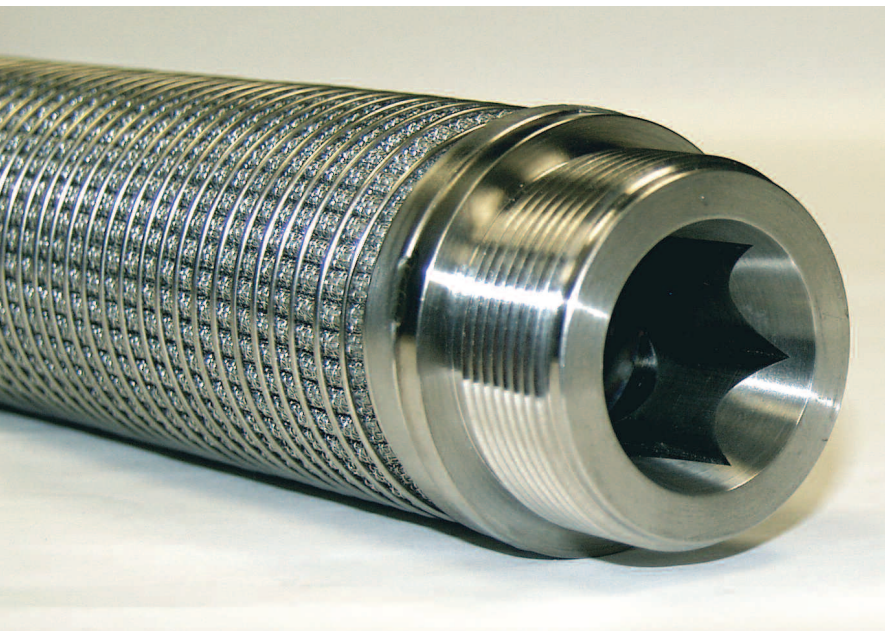
Solution:

After careful study, Pall recommended its Ultipleat Polymer candles for use in this application. One bundle of nineteen (19) elements size 5.89 cm (2.32 in) OD x 78.28 cm (30.82 in) length were designed to retrofit into the customer's existing housing. Pall's Ultipleat Polymer elements provided an increase in area of approximately 1.29 times over the existing fan pleat design. Additionally, Pall's Ultipleat Polymer elements provided a pressure rating of 128 bard (1850 psid), allowing the elements to resist high dp. The elements were put online in May of 2010.

Customer Benefits:

- The customer reported trouble-free 'fit and seal' into the existing housing
- The on-stream filter life with the Ultipleat Polymer candles reached 90 days, an increase of 1.5 times over the fan pleat design
- The customer reported no reduction in quality
- The annual cost savings based on the Ultipleat Polymer candle per line is estimated to be greater than US $10,000.

Satisfied with the success of Pall's Ultipleat Polymer candles, the PET manufacturer purchased another set of Ultipleat Polymer candles. The manufacturer plans to phase out all existing fan pleat elements and replace them with Ultipleat Polymer candles.



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EP 0 667 800; EP 0 982 061; EP 1 380 331; US 5,543,047; US 5,690,765; US 5,725,784; US 6,113,784; US 7,083,564; US 7,318,800; EP 1 656 193; US 7,871,515.

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