

3M Separation and Purification Sciences Division

3M™ Betafine™ XL Series Prefilters double service life of final membrane filter in bottled water plant.

The problem

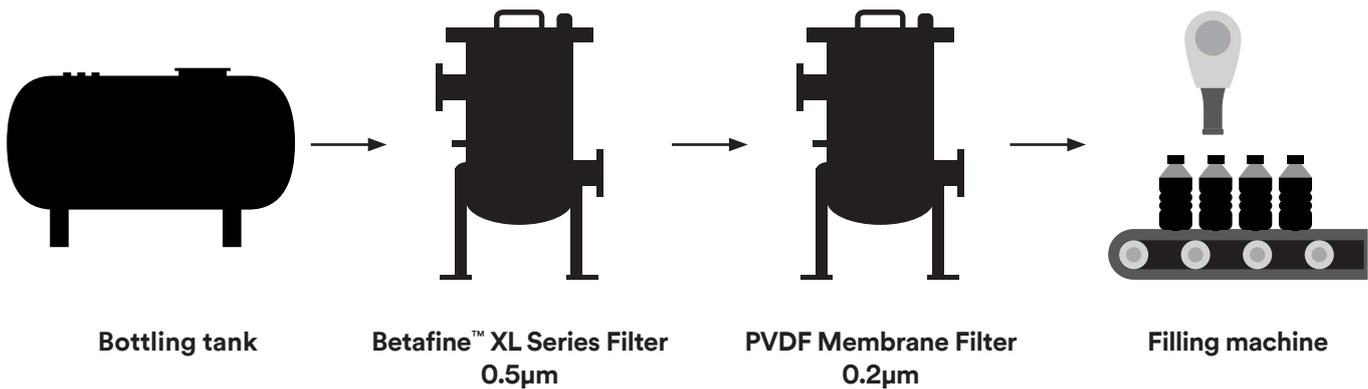
Over the last decade, the popularity of bottled water has rapidly increased in many countries. Consumers are drawn to the convenience, taste, and health attributes that bottled water can provide. Contrary to bottled water's image of purity, however, many brands contain modest levels of bacteria. These organisms are benign, cause no known adverse health affects, and are within most local standards for potable water – in fact, they are just as commonly found in tap water. However, some bottled water companies have concluded that the presence of any bacteria in their final product is not compatible with the brand image they wish to portray. Additionally, it is believed that the presence of bacteria in the water can be attributed to biofilm growth on surfaces in the processing plant. Greatly reducing these bacteria, through rigorous cleaning and sanitation, coupled with 0.2 micron absolute rated final filtration, is considered good practice for robust plant hygiene. While not all bottled water companies employ 0.2 micron rated final membrane filters, their popularity is increasing.

One such plant experienced shorter-than-desired service life of their 0.2 micron rated final filters. The plant, on average, was plugging their final filters every three weeks, while the prefilters, polypropylene depth style filters nominally rated at 1 micron, would often exhibit low differential pressure drop until they were replaced on a preventative maintenance cycle every 12 weeks.

3M had previously solved filtration problems for this company in various bottle washing and equipment rinsing applications which depended upon their municipal water supply.



The process



The solution

The 3M Application Engineering team collected and analysed water samples from the company to determine which 3M filter would offer the best combination of long service life, while still providing the fine particle control needed to help protect the final membrane filter.

After reviewing the particle size and distribution of the water samples, their conclusion was that the 3M™ Betafine™ XL series, 0.5 micron rated filter would offer the best blend of service life and protection. The 99.9% efficient Betafine XL series filter incorporates 3M's innovative Advanced Pleat Technology which maximises usable surface area in the filter design, resulting in improved flow rates and greater throughput.

Application engineering

The cornerstone of 3M's philosophy is service to customers, not only in product quality and prompt delivery, but also in validation, application support and in the sharing of scientific information.

Our Application Engineering (AE) group is a market-orientated group of scientists and engineers who work closely with customers to solve difficult separation problems and aid in the selection of the most effective and economical filtrations systems. 3M Application Engineers routinely provide end users with:

- ▶ Validation and regulatory support
- ▶ Extractable and compatibility analysis
- ▶ Filter systems optimisation studies
- ▶ 3M™ 101 Series Integrity Testing Device

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