



TurboClean®
Ultrafiltration
Elements
The Highest
Protein Rejection

**MANN +
HUMMEL**



TurboClean® UF Elements

Protein Rejection

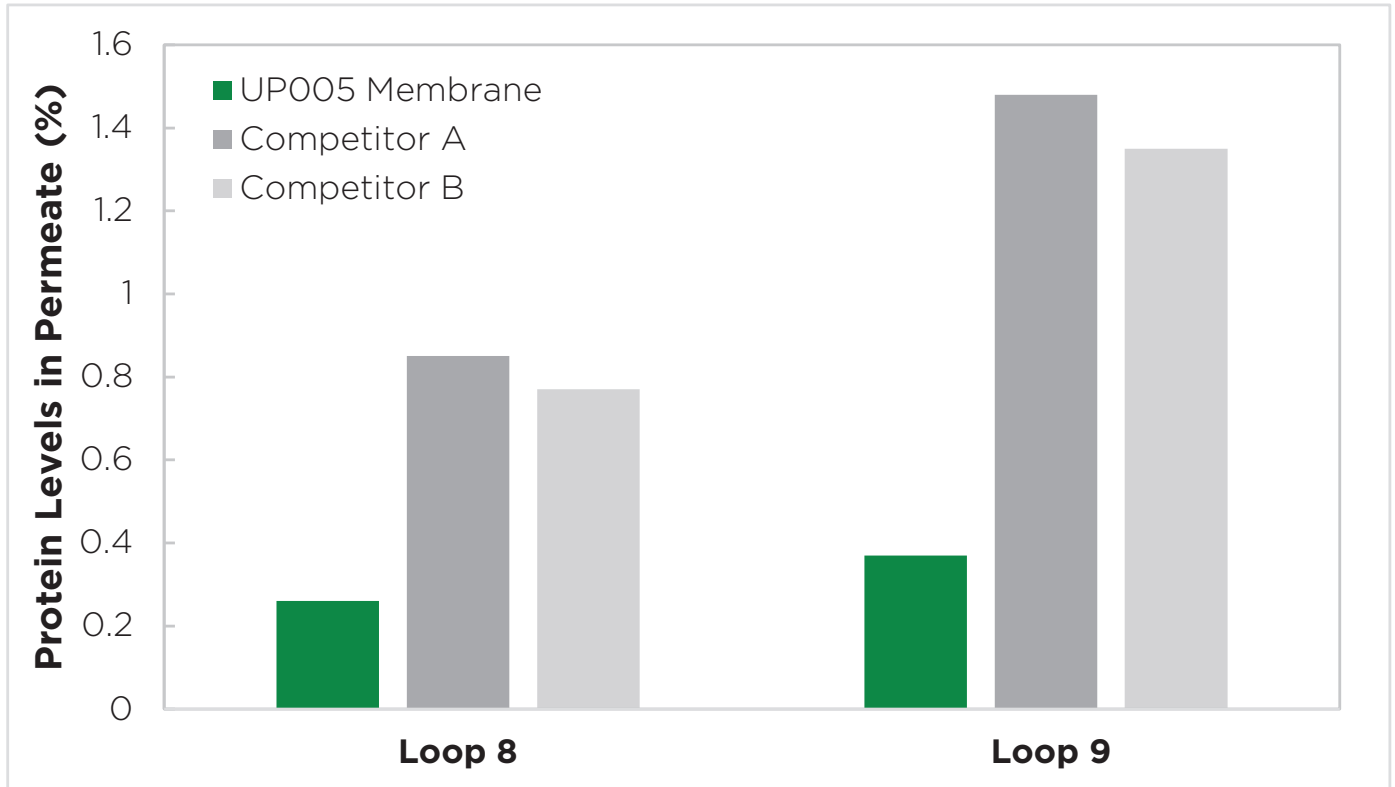
MANN+HUMMEL Water & Fluid Solutions is introducing a new line of TurboClean® ultrafiltration membrane elements for whey and milk processing with the highest protein retention and the highest productivity.

THE HIGHEST PROTEIN REJECTION

MANN+HUMMEL Water & Fluid Solution's (WFS) spiral-wound membranes are known for their high flux, high protein retention, and long lifetimes. TurboClean hard-shell elements are known for being the strongest sanitary elements offering better productivity, longer operating life, the most effective cleaning, and ease of installation. By combining these technologies, MANN+HUMMEL WFS offers the best performing ultrafiltration elements for dairy processors.

TurboClean® elements feature a patented sanitary hard-shell design that delivers better system performance due to about 60% less bypass flow than other sanitary elements. Lower bypass flow results in energy savings and/or higher flux rates as more of the feed flows across the membrane surface instead of around the outside of the element. Higher cross-flow velocity also results in the most effective membrane cleaning. TurboClean elements are stronger than net-wrapped sanitary elements and are able to withstand higher pressure drops.

NADIR® UP005 polyethersulfone (PES) membrane with a nominal 5,000 molecular weight cut-off (or 5 kDa) offers the highest protein rejection in the industry.



PERFORMANCE COMPARISON IN WPI90 SYSTEM

When combined with NADIR® UP005 membrane, TurboClean® UF elements feature the highest protein rejecting membrane with the best sanitary element configuration on the market.

Additional element options are available to meet most every dairy processor's requirements. TurboClean elements featuring UP010 10 kDa membrane and UP020 20kDa membrane are also being offered, as are pHT elements. pHT elements feature construction that may be cleaned at higher temperature and pH than standard UF elements (cleaning at up to pH 13 and temperature 70°C /158°F and sanitization up to temperature 85°C/185°F).

The chart above compares UP005 membrane with 5 kDa membranes from two major dairy membrane manufacturers. UP005 had 72-75% less protein passage than the competitive membranes. These data were sampled from a WPI90 system with a total of nine stages. Samples were taken from the final stages of the system.

MANN+HUMMEL Water & Fluid Solutions offers a full range of membranes and element designs from MF to RO. For more information or to customize a product for your specific requirements, please contact your MANN+HUMMEL WFS representative.



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