

More efficiency and reliability in crossflow filtration through automatic filter monitoring

To increase the efficiency of crossflow filtration, MAHLE Intelli Control has automatically removed the need for manual filter monitoring.

The Application

MAHLE Intelli Control develops and produces ultra and high purity filtration systems that meet high quality and reliability requirements. The crossflow filtration method, which is also known as tangential flow filtration, is used to filter liquids such as those used in the food industry, for example by ultra and high purity producers. The advantage of this filtration method is that the tangential flow across the filter surface delays the formation of a filter cake.

The crossflow filtration system in the ultrafiltration range is used to remove solids, colloidal solids and proteins. It can be employed in various stages of ultra preparation – for example in the ultra filtration during pasteurisation or in the filtration prior to bottling.

In crossflow filtration with hollow fibres, the suspension being filtered is pumped into the interior of the hollow fibres and a portion of it is drawn off via the draw-off flow at the hollow fibre membrane in a direction perpendicular to the flow. The remaining concentrate and is returned to the hollow fibre module until a filterable fraction has been removed. The resulting filtrate is clear and free of solids. Microbiological stability is achieved at this point.

The Requirements

Normally, reliable operation of the filter and concentrate is ensured by the design of the crossflow filtration system and hollow fibre membrane. However, membrane damage caused by external influences such as material fatigue can occur. In order not to reduce hygiene from the concentrate concentration the filter is due to a rise in the filter, for example, contamination would continue in the final product. Hence, the purity of the filter needs to be monitored throughout the filtering process.

Until now, the filter was monitored through a viewing glass at the filter outlet. However, this method required the system operator to invest considerable time and effort in regularly checking the filter as location. If a filter leakage was not detected immediately, the complete batch had to be discarded. This led to additional energy costs and a considerable loss in time depending on the batch size.

Summary



Driven by performance

Crossflow filtration with automatic filter monitoring from Anderson Negele

