

More efficiency and reliability in crossflow filtration through automatic filter monitoring

To increase the efficiency of crossflow filtration, MAHLE Inverflex GmbH uses an automatic system from Anderson Negele for automatic filter monitoring.

The application

MAHLE Inverflex develops and produces wine and fruit juice 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 wine and fruit juice 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 deacidification stage is used to remove solids, colloidal solids and yeasts. It can be employed in various stages of wine preparation – for example in the coffee filtration during maturation 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 line at the hollow fibre membrane in a direction perpendicular to the flow. The remaining part is a concentrate and is returned to the hollow fibre module until a filterable fraction has formed. The resulting filtrate is clear and free of solids. Microbiological stability is achieved at this point.

The requirements

Regular, reliable operation of the filters and concentrate is ensured by the design of the crossflow filtration system and hollow fibre membrane. However, some harm can be caused by external influences such as material fatigue, corrosion or clogging due to fouling. If some of the concentrate concentrates the filter due to a rise in the fibres, for example, fermentation could continue in the final product. Hence, the purity of the filtrate needs to be monitored throughout the filtering process.

Until now, the filtrate 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 filtrate as a source. 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



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Crossflow filtration with automatic filter monitoring from Anderson Negele

