Application Report ITM-4 **FOOD**

More efficiency and reliability in crossflow filtration through automatic filter monitoring

To increase the efficiency of crossflow filtration, MAHLE InnoWa GmbH relies on turbidity sensors from Anderson-Negele for automatic filter monitoring.

The Application

MAHLE InnoWa 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 medium delays the formation of a filter cake.

The crossflow filtration system in the microfiltration range is used to remove trub, colloidal solids and yeasts. It can be employed in various stages of wine preparation – for example in the cellar filtration during maturation or in the filtration prior to bottling.

In crossflow filtration with hollow fibers, the suspension being filtered is pumped into the interior of the hollow fibers and a portion of it is drawn off via the sleeve surface of the hollow fiber membrane in a direction perpendicular to the flow. The rest circulates as a concentrate and is returned to the hollow fiber module, until it likewise leaves the system as filtrate. The resulting filtrate is clear and free of solids. Microbiological stability is achieved at this point.

The Requirements

Normally, reliable separation of the filtrate and concentrate is ensured by the design of the crossflow filtration system and hollow fiber membrane. However, membrane damage caused by external influences such as material fatigue can never be ruled out entirely. If yeast from the concentrate recontaminates the filtrate due to a tear in the fibers, for example, fermentation would 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 on location. If a filter breakage was not detected immediately, the complete batch had to be refiltered. This led to additional energy costs and a considerable loss in time depending on the batch size

Customer

MAHLE
Driven by performance

Crossflow filtration with turbidity sensors from Anderson-Negele

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