



Level



Pressure



Flow



Temperature



Liquid Analysis



Registration



Systems Components



Services



Solutions

AF 12 with Model 910 Centrifuge Solids Discharge Control- Pharma.

Online monitoring of centrifugation, removing solids from liquid and fluids



Typical centrifuge



AF12 inline sensor with Model 910 analyzer



Finished product

To optimize the control of a centrifuge for the removal of solids, a solids monitor is needed to measure both the inlet load and outlet clarity.

Customer profile

Major pharmaceutical required control of centrifuge to ensure clarity of product after solids removal.

Application description

Many pharmaceutical processes start with fermentation of solids organisms like yeast or bacteria.

After fermentation, the product is extracted from the organisms and during that process, the liquids and solids are separated using a centrifuge.

During centrifugation of the mixture for solids removal, the solids from the influent liquid build up in the centrifuge bowl. The build up continues until the bowl is full. At this point, further separation is impossible with the removal of the solids from the centrifuge.

Application challenges

Two methods are used to control clarity of the centrifuge discharge.

Manual: periodically, or when the centrifuge is full of solids, a discharge is initiated to clear the bowl of solids. This method does not provide a good quality clarified stream and can put an undue load on further clarification and filtration equipment downstream.

Timed:

While the centrifuge is in operation, the bowl is regularly discharged on a timed basis. This is the most widely used method of keeping the centrifuge clear but does lead to loss of liquid and/or product in the solids stream. To minimize the loss of liquid, a short, rather than a full, discharge cycle is employed. In many cases, however, a short cycle does not completely clear the bowl. Solids steadily build up and efficiency of the centrifuge is affected.

Solution

By using online measurement both on the in- and outlet of the centrifuge an automated discharge operation can be obtained for higher product yield and minimized product loss.

Typical the solids level will be high in the beginning of the solids removal and then fading out during the end of the batch.

Using a Wedgewood Analytical solids monitor measuring and controlling the inlet solids/liquid mixture to the centrifuge a constant feed can be obtained and overloading of the bowl can be prevented.

Measuring the clarity of the Centrate with a Wedgewood Analytical solids monitor with extended range® will not only provide the plant with continuous data for controlling the discharge of the centrifuge but also with continuous quality monitoring of the process liquid.

On the outlet of the centrifuge small air bubbles will be formed in the process liquid. To prevent these bubbles from interfering with measurement a constant pressure valve is recommended.

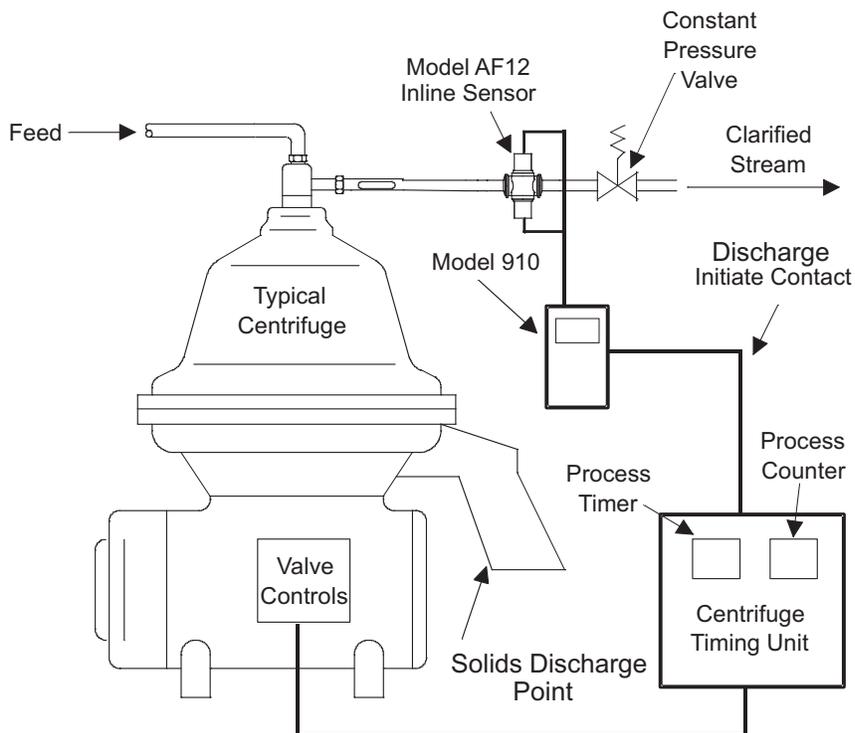
Instrument description

All Wedgewood Analytical in-line monitors can be SIP/CIP in-line. The sensors are all made in a Ultra-hygienic resilient stainless steel flow cell design available with material finish of 16µinch (0.4µm) Ra, in sizes from ¼” up to 4” tri-clamp and withstand up to 2900 psi (200 bar) depending upon process connection.

Available with explosion proof design for both FM and ATEX classification.

Measurement range for the standard solids monitor is typical from 0.5% up to a couple of percent solids depending upon the color of the solids. For the outlet the extended range version will cover as low as 20 ppm.

For more information, contact
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Centrifuge discharge schematic

ISO 9001:2000 Certified

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