

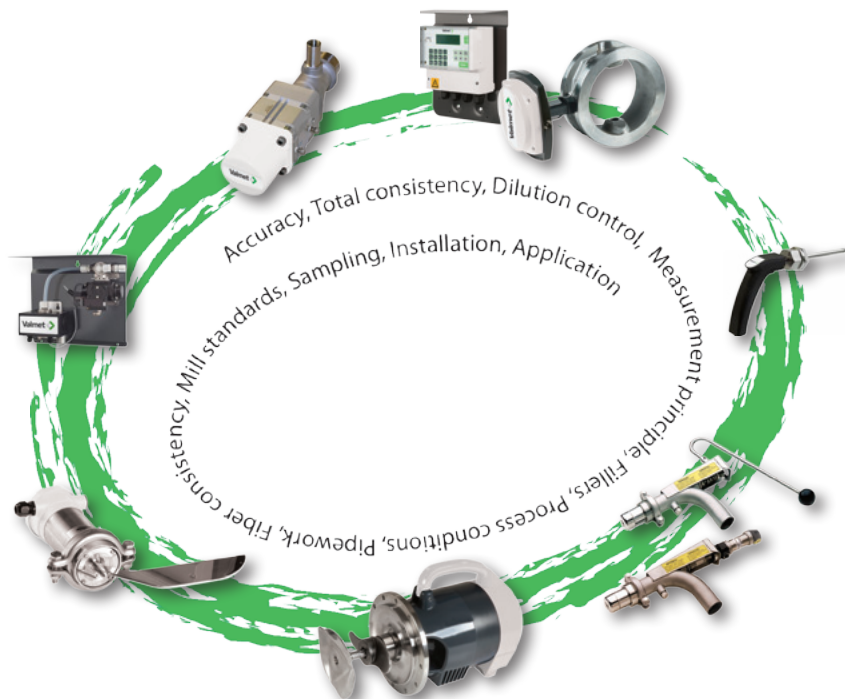
The Art of Consistency





The Art of Consistency – One Color Doesn't Make a Painting

Good art, like good consistency control, means managing many variables in special ways to gain desired results. The various surfaces on which paints can be applied are one factor for artists to consider. The type and amount of oil to mix with the pigments is another. Should the paint be applied with brushes, palette knives, rags, sponges and cotton swabs or even with fingers? For artists, proper management of these variables as well as others is crucial for gaining desired visual effects.





Correct management of a number of variables is central to good consistency control. The pulping process is one consideration. Is it mechanical, chemical or does it involve recovered fiber? The raw material is another. Is it wood fiber? If so, what species? Or if it is recovered fiber, of what quality is it? Various other factors such as fiber dimensions, fillers, colors and chemicals are also part of the equation.

Creating good art and creating good consistency control have one thing in common. There is no single method for achieving either good art or good control. Various styles of art, like various pulping processes, require the know-how it takes to combine variables in the special way needed to gain either a desired artistic effect or a specific pulp quality.

More than 60 years of extensive consistency transmitter R&D and over 70,000 transmitters installed worldwide testify to the knowledge and expertise of consistency control at Valmet. We are also one of the few suppliers of consistency transmitters with our own TAPPI-standardized consistency R&D laboratory.

Know-how is one thing. Instruments are another. Our full range of consistency transmitters includes

Valmet Rotary highlights:

- Shear force measurement
- Versatile consistency transmitter
- Suitable for a number of different applications – from the digester to the machine chest.
- Ideal choice for chemical pulping mills.
- Can be equipped with different components and in different materials to fit most applications.
- Can be used from 1.5 up to 16 % consistency.

microwave, shear force and optical technologies to provide mills with the consistency control that is essential for managing quality variability and process efficiency in any pulp or papermaking process.

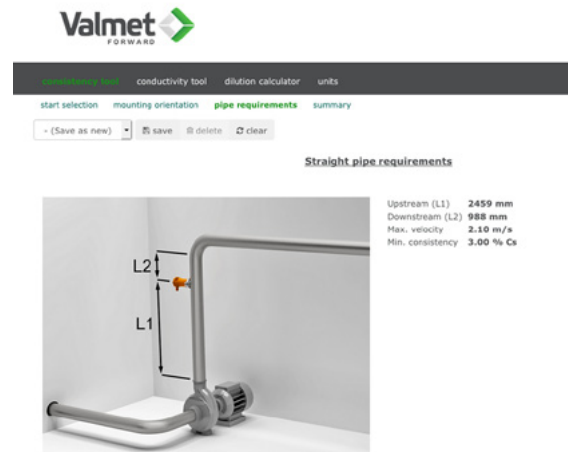
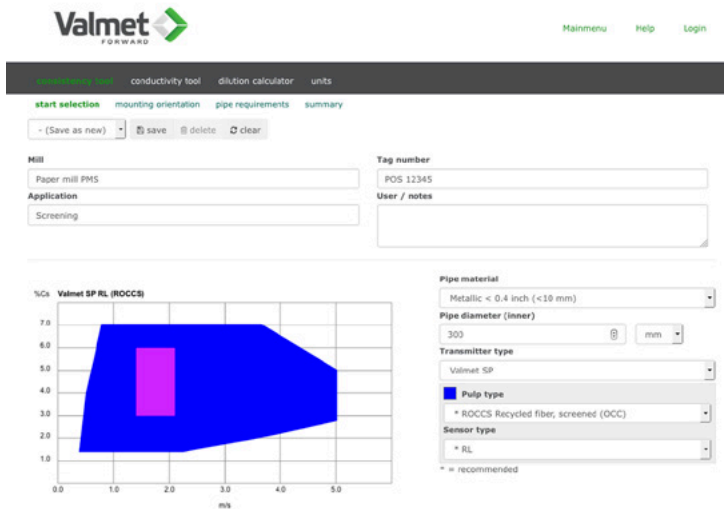
Although our product mix has expanded considerably in half a century, shear force is still a competitive solution for many applications. Today's transmitters certainly contain a lot of software, but the basic principle works and can be developed further.

Even the best measuring instruments require worldwide support to ensure correct equipment selection and comprehensive after-sales services. We are able to rely on Valmet's

broad paper machine and pulping expertise and our modern research laboratories. Long-term customer relationships and constant cooperation with our customers also play an important part in our product development.

Valmet customers are never alone with the equipment we supply. Our worldwide network of branch offices and representatives always makes our entire consistency know-how available to customers wherever they may reside. Getting in touch with our representatives and experts at an early stage ensures that your expectations of successful consistency control will be met.

Consistency Control – the Key to Process Efficiency



Measurement Advisor provides assistance to properly apply equipment for specific parts of the process. Furthermore it provides dimensional data for consistency loop design, conversion tables and other interesting information. Measurement Advisor can be found from Valmet homepage, www.valmet.com

Ultimate connectivity

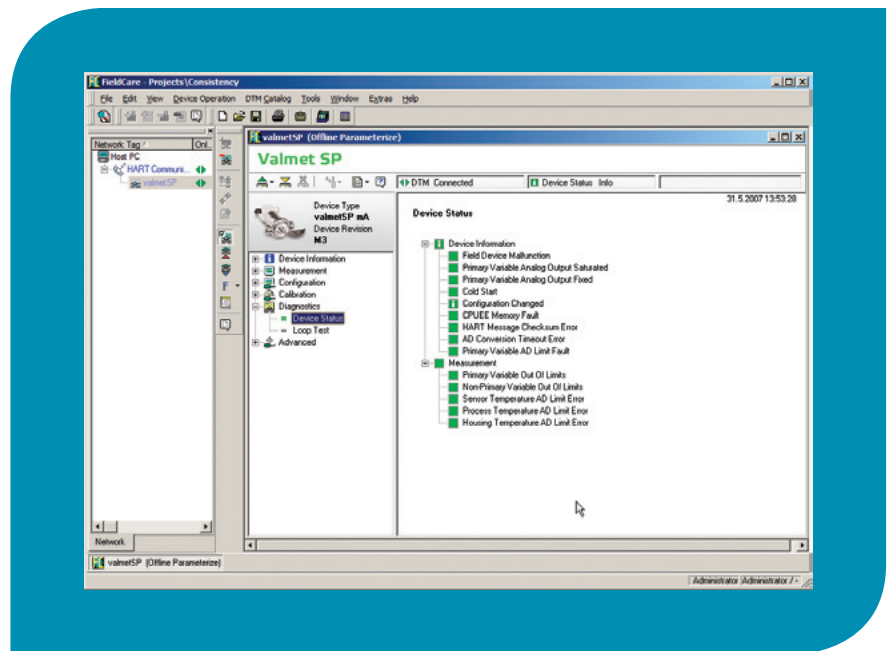
Developing diagnostic features to help our customers in their daily work is a continuous process at Valmet. Preventive maintenance, or identifying small problems before they develop into big ones, is a difficult task. Valmet's current offering of consistency transmitters allows you to browse your DCS on site, or even off site, to find problems the same way as you browse the Internet. The diagnostic software guides and alarms you to prevent unplanned shutdowns as well as giving you the time to plan the corrective measures.

To enable communicating directly with your instruments in both directions we also offer all of the available communication platforms such as Hart, PROFIBUS and Fieldbus foundation.

At Valmet we call this ultimate connectivity.

The future is now

Pitch and other deposits tend to build up on the measurement sensors of blade type and rotating shear force consistency transmitters. This



FieldCare for configuration, documentation and condition monitoring. FieldCare is a FDT, Field Device Tool. FDT is a software specification for field device data management. DTM, Device Type Manager, contains the graphical interface for device operations. DTM:s are available for consistency products from Valmet.

long-standing problem is likely to still increase in the future, as less and less fresh water is being used in the pulping and papermaking processes - unless the sensors of your transmitter have been treated with the special

coating from Valmet that eliminates the problems.

Pitch and deposit buildup on sensors cause hard-to-detect drifting in the measurement signal. Also chemical trials may show a similar phenom-

Valmet MCA highlights:

- A total consistency transmitter
- Measures both cellulose fibers and filler particles.
- Unaffected by pulping processes or wood species. This gives it major advantages compared to other measuring principles.
- Suitable in processes with high requirements for measurement accuracy and frequent grade changes.
- Ensures better basis weight control.
- Suitable for many applications from 0 up to 16% consistency.



enon. When the measurement drifts, it becomes impossible to maintain the target setpoint, and the controlled consistency will be lower than desired. This problem causes others, and the result is a drop in productivity as the consumption of water, energy and chemicals increases.

Shear force consistency transmitters using sensors treated with our special coating (utility model pending) have been designed with your productivity and future in mind. The coating also withstands abrasive fillers and thus increases the lifetime of rotating sensing elements. At Valmet the future is now.

Every fiber counts

Both production and profitability improve when you can be certain that the mass balance is correct. Often this value is presumed to be 100% correct and therefore it is overlooked. Since the accuracy of this value many times correlates with laboratory samples, there is room for error.

Many of the advanced process controls rely on a correct production signal based on flow and consistency. Inaccurate consistency measurement can be costly. For instance, increases

in production can take place without paying attention to important matters concerning consistency measurement such as pipe diameter and length as well as instrument positioning.

Correct mass balance minimizes loss of fiber. At Valmet, we know that every fiber counts. The payback from

taking good care of consistency loops is one of the most cost-efficient investments that can be made in a mill today. Many times it is not new hardware but knowledge that is needed to gain both increased production and cost-efficiency. We have the know-how to help you.



TCU (Transmitter Central Unit) is common for Valmet products. The local display is very convenient and easy to use. TCU provides ultimate connectivity and is capable for full operations of calibration, configuration and diagnostics. There is no need for conventional communicator.



Ideal Choice for All Applications

Pulping

There are many processes between the blow line and final production calculation where different consistency transmitters and samplers are used. Although the full range of consistency control equipment is available from Valmet, the most common technology used in this area employs shear force.

Correct consistency control has an impact on production, yield, brightness and chemical consumption. Improving consistency control accuracy by as little as 0.1% consistency can improve a pulp mill's bottom line. We would be happy to offer our expertise to help you gain this kind of growth.

Stock preparation

The goal of stock preparation is to mix many components perfectly and consistently, according to the specifications of the papermaker. Different consistency transmitters, each one the right one to carry out the task it is to perform, help to achieve the perfect mixture of long and short fibers, fill-

ers, chemicals and broke. Accurate consistency control is always evident in the final product. On the other hand, poor consistency control is too.

Efficient operation of the mixing and machine chests is crucial. Today, yielding the task of consistency control in stock preparation to microwave technology from Valmet is still a superior choice. Doing so minimizes the variation in basis weight resulting from fluctuating rates of stock flow to the PM approach system.

Samplers

Perhaps it could be said that sampling errors are the root of all evil, at least as they regard consistency control. No transmitter can be better than the laboratory sample it is calibrated against. Valmet has specially made samplers to ensure that the best possible samples are collected for analysis.

Shear force measurement

Valmet SP



Valmet Rotary



Microwave measurement

Valmet MCA



Valmet SP highlights:

- The most common transmitter type in the pulp and paper industry.
- The wide variation of blade types and material options makes it suitable for many different applications and consistency ranges.
- Can be installed from 1.5 up to 16% consistency.



Optical measurement

Valmet OC



An optical in-line consistency transmitter. Suitable for many different application, in clean pulp as well as in pulp suspensions with filler particles. Measures the reflected/back-scattered light. Easy installation with ball valve mounting ensures quick and safe access without stopping the process. Operates within the range 0.5 to 7% consistency.

Valmet LC



An optical low consistency transmitter that uses de-polarization and attenuation of light as a base of measurement. Accurate low consistency measurement independent of pulp

color and brightness. Suitable in the range 0 to 2% consistency.

Pulp samplers

Valmet Nove



Nove is the most used pulp sampler type on the market. Available in manual and pneumatic versions. With different process couplings and in different materials. Easily adjustable pulp flow. Can be used in screened pulp from 0 to 8% consistency.

Valmet Nove H



A safe and non-clogging sampler for high demand applications. Suitable for high consistency in screened as well as unscreened pulp. The sampling piston also acts as a cutting knife, taking care of shives and knots. Suitable up to 18% consistency.

For more information, contact your local Valmet office. www.valmet.com
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