

Valmet Low Solids Measurement

Low solids measurement system for waste water plants

Designed for municipal and industrial waste water treatment plants, Valmet LS continuously, reliably and accurately measures solids in very small concentrations. The system is primarily designed to measure the amount of suspended solids in reject water (filtered water) coming from the dewatering unit (centrifuge or belt filter press). The measurement is used to monitor and optimize drainage (devices and polymer). Valmet LS also monitors air amount in the samples, which effectively prevents polymer overdosing. Valmet LS measurement is based on Valmet's 20 years of experience in developing advanced optical measurements.

Valmet LS continuously measures:

- Total Suspended Solids (TSS) 0...5000 mg/l, for higher concentrations, please contact Valmet
- Entrained air index – Indicates polymer overdosing

Key features

- The sampling pump that provides stable, continuous and representative sampling in all production situations.
- An automatic cleaning feature that cleans the measurement cell and sample line automatically with water at configurable intervals.
- Advanced self-diagnostics that use clean flush water to calibrate the light sources of the measurement cell, which prevents measurement drift.
- An automatic screening system that screens the sample from the debris (plastics, strings, etc.) and automatically cleans the screens when device is flushed.
- A deaeration module that stabilizes and deaerates sample before it go through the measurement cell.
- An automatic chemical cleaning feature that doses diluted cleaning chemical at configurable intervals independent of normal cleaning/flushing. This minimizes the use of the cleaning chemical.
- The system utilizes two light sources. When sample passes through the measurement cell, the absorption, scattering and depolarization signals from



both of the light sources are measured. (This is critical for accurate TSS)

- The self-diagnostics automatically monitor the optics and alert operators if the measurement cell becomes too dirty for accurate measurement.
- The sapphire lenses used in the measurement cell provide accurate measurements in dirty and high-wear conditions and have optimum optical properties.
- Easy calibration and low maintenance.
- Accuracy
 - extremely high measurement accuracy
 - excellent usability.

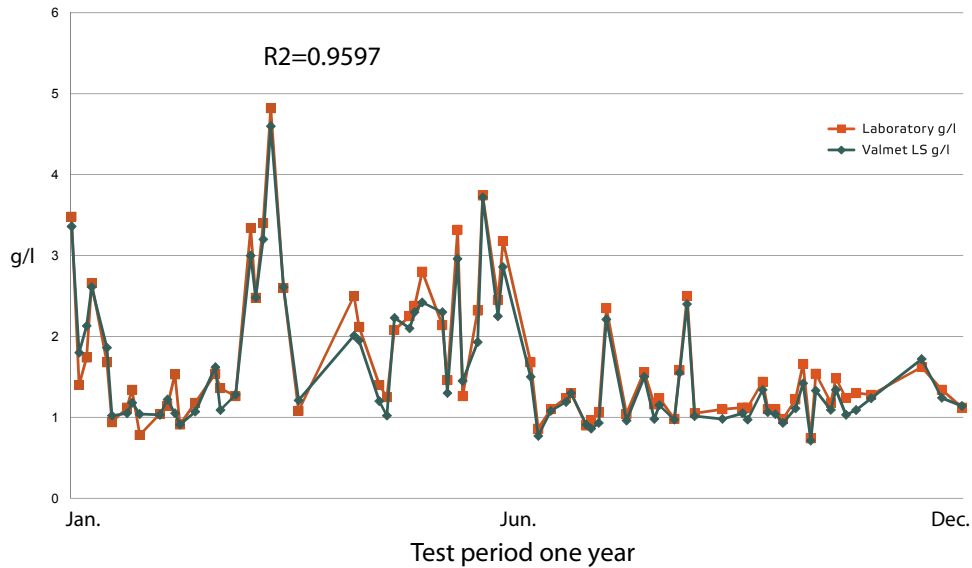
Versatile user interface:

- Local operation unit TCU (Transmitter Central Unit)
- Valmet FieldCare PC connection for configuration and calibration
- Analog outputs to DCS (2 pcs.)
- Binary inputs from DCS (2 pcs.)

Typical installations:

- Reject water suspended solids measurement of the sludge dewatering unit.

Measurement accuracy and correlation with laboratory definition

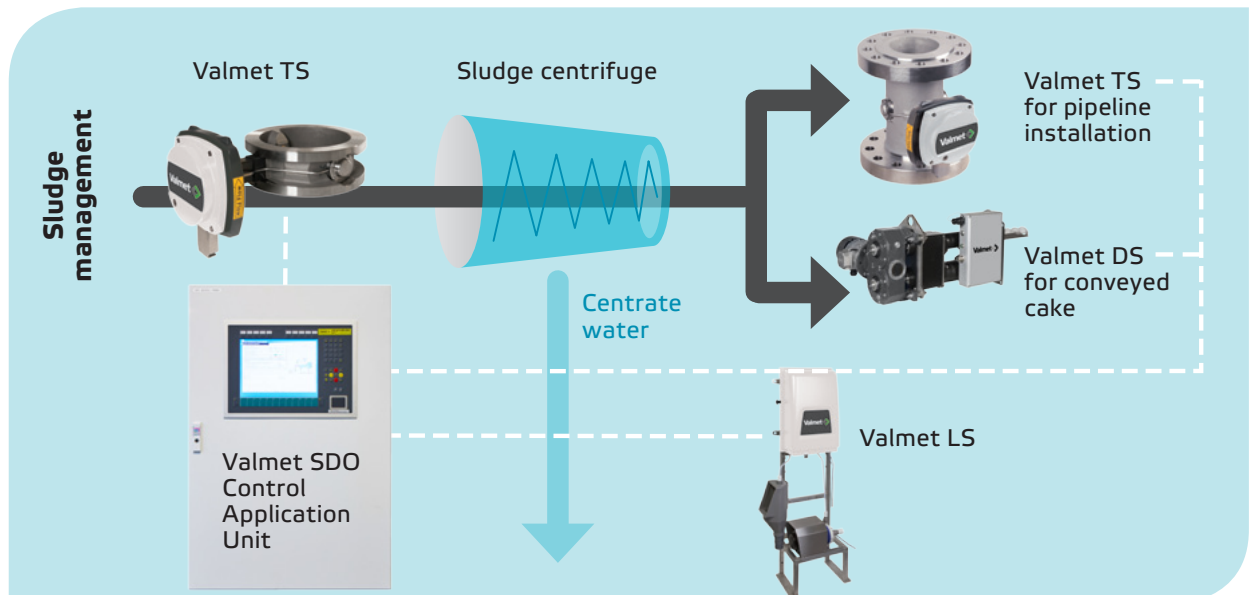


Applications

With online monitoring:

- Process changes and errors are noticed quickly.
- The cause of and the solution to the error is found quickly.
- The system provides immediate online responses to all chemical and equipment test runs.
- The system provides more and continuous process information with less laboratory work.

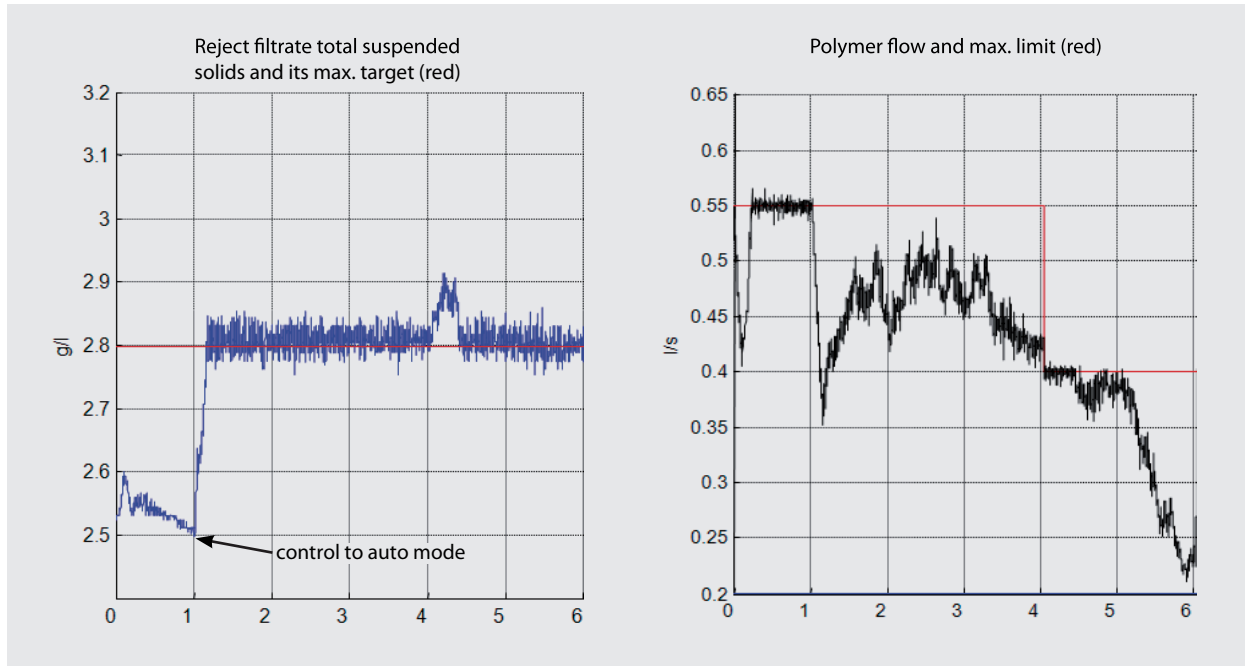
Process



Results

In this example, automatic control has been implemented in the mill's automation system. In the figure below, the control was set to auto mode at one hour. The control system aims to continuously decrease polymer dosage (black graph) but in a way that keeps the suspended solids (blue graph) at the set level. This

results in optimal/minimal polymer dosage. As can be seen from the graph, the control system decreases polymer dosage from the normal manual dosage level to an optimized and automatically controlled amount/minimum amount. At the 4 hour point, the maximum polymer dosage was lowered. This example and the graphs below show that Valmet LS measurements allow for automatic and accurate polymer control.



Benefits

Suspended solids measurement and control of polymer

- Facilitates centrifuge optimization and provides improved performance.
- Better control over recycling materials:
 - a high solids rate in the reject water causes the excess concentrate solids to be needlessly and potentially harmfully treated and centrifuged several times.
- Facilitates polymer dosage.
- Decreases costs resulting from polymer dosage and centrifuge usage.

ROI example

Depending on process capacity, the return of investment can be as short as one year. The resulting savings are based on avoiding polymer overdosing and reducing the solids recycling back into the process. Based on our experience, the savings resulting from decreased polymer costs can be as high as 30 %.

Please contact Valmet to discuss savings possibilities in your process.

Customer ROI

- Polymer savings
- Process optimization
- Improved throughput
- Improved centrifuge functionality
- Dryer output solids from the centrifuge:
 - lower transit costs when shipping to landfill
 - facilitates material burning
- Reduced laboratory/sampling work
- Faster polymer test runs
- Polymer type optimization

Valmet LS modules



TCU



Fixed sampling valve



Deaeration module



Chemical cleaning module



Water air regulator



Valmet LS and assembly stand with accessories



Measurement cell

Customer statements

- “we have tested several measuring devices and this is the first one that really works in this point of the process”
- “reliable measurements”
- “provides valuable information for the operation of the centrifuge”
- “Laboratory samples only reveal centrate quality at the moment of sampling:
 - alf an hour after sampling, the situation can be completely different
 - the only way to accurately follow and control the process is with continuous measurements”

Dimensions and other technical data: see Valmet LS Technical Specifications.