

ImproChem

Technobrief

Thickener Management



The Settling Wizard is part of ImproChem's value adding offering and can be used very successfully to optimise your Thickener Operation.

The Settling Wizard is used to adjust the amount of polymer added into a solids-liquid separation process. This is achieved by continuously sampling and measuring the settling rate. The measured settling rate is compared to the desired settling rate, referred to as the Set Point.

In a situation where the measured settling rate is too low, a signal is sent to the dosing pump, to increase the dose rate of Flocculants. In a situation where the measured settling rate is too fast, a signal is sent to the dosing pump to reduce the Flocculants dosing rate. By controlling the dosing pump accurately, better performance and dry tons output can be achieved.

A built-in communicator converts the settling rate input to a 4-20mA signal. This signal is sent to either a cell phone or our im-PROSERV web based system, to ensure that the ImproChem sales technologist and plant operators receive instant updates on the thickener performance.



Figure 2: P&ID of typical Settling Wizard installation

Features

The Settling Wizard is linked to the im-PROSERV TrueView website. The im-PROSERV TrueView Website allows our customers and sales technologist to see trend graphs, SPC calculations and it allows us to set e-mail notifications and sms alarm conditions for critical parameters. Set point, chemical dose rate and settling rate are graphically displayed on the im-PROSERV website. Other parameters such as bed level, flow rates, densities and turbidity can be monitored and displayed as part of the ImproChem Ultimate Settling Wizard Offering.

The Settling Wizard is

- Self-cleaning
- Robust construction
- Easy to maintain
- Interfaces with SCADA systems

The Settling Wizard offers further benefits to the customer: Mine Managers have enjoyed increased dry tons throughput, reduced risk of sliming, and optimum utilization of operator's time. Management of the thickener becomes predictive, rather than reactive, and operators are freed from time consuming manual adjustment of pumps and valves.

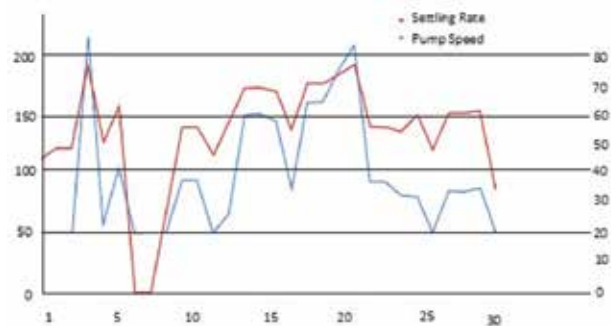


Figure 3: Settling rate and pump speed being displayed on im-PROSERV TrueView.

Benefits

- Continuous on-line settling rate monitoring
- Continuous flocculant dosing rate control
- Reduced flocculant consumption
- Improved productivity-increased tons per hour underflow
- Improved water quality of supernatant in terms of turbidity
- Reduction in cost of operations
- Reduction in risk of failure of thickener
- Safe way of sampling

Feed to thickeners varies continuously in mineralogy, suspended solids, density and pH. Settling Wizards are productively utilized in coal, gold, chrome, nickel and platinum mines. Substantial value is added in processes where dry ton throughput is critical, and where fines contain precious minerals that must be extracted. Increased solids throughput creates substantial, leveraged increase in profitability. Sliming of a thickener can cost millions, and predictive control by the Settling Wizard creates substantial savings.

Settling Wizard monitoring and control also leads to improved turbidity-a clear indication that more solids are being transported through the thickener than without control of the settling rate. In one mine, the Settling Wizard led to a reduction in operation costs of R 4 million, and an increase of solids recovery of 7%.

In a gold mine, judicious use of the Settling Wizards led to an increase in solids throughput of 150%, without sliming. The increase in cost of flocculant was insignificant in comparison to the increase in profitability of R10 million for the mine.

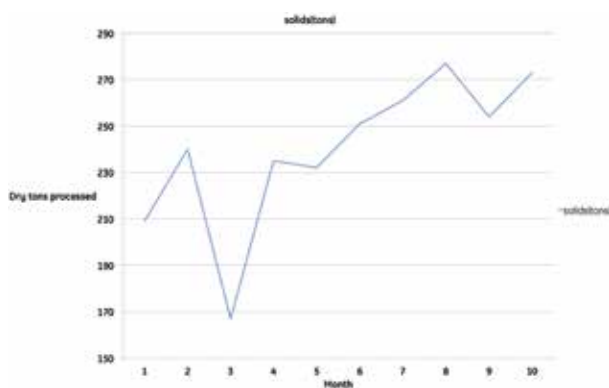


Figure 4: ImproChem Settling Wizard contribute to Increase in dry Tons processed

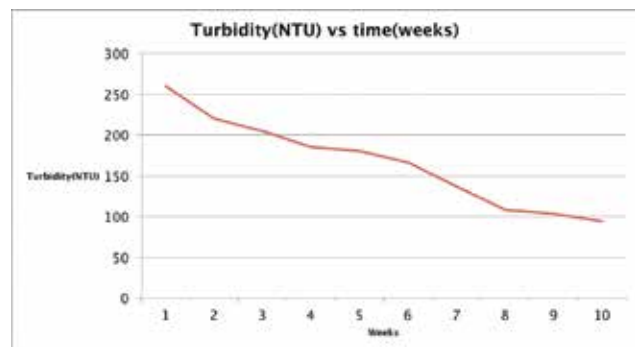


Figure 5: Decrease in turbidity caused by monitoring and control using the Settling Wizard.

Value Generation

- Optimum dry solids throughput.
- No carryover of solids
- Optimum thickener efficiency
- Consistent bed level
- Optimum rake torque
- Maximum underflow density

Conclusion

Monitoring and control of settling rate is the key to optimal Thickener Management. If the settling rate is not monitored and controlled, sliming of the thickeners can occur. The ImproChem Settling Wizard will help to optimise cost of flocculants and operators.

Optimisation of solids removal in the underflow is worth millions in any mining operation. Continuous improvement can lead to significant savings in cost of operations, and improved profitability.

When asked whether they would use the Settling Wizard in future, customers responded:

YES, because:

- Settling Wizard optimises the profitability of the thickener process
- Reduces the possibility of a slimed thickener and resultant reduction in profitability
- Allows operators to be more productively employed
- Settling Wizard offers monitoring and control that allows any upset to be properly managed, and prevents fines sliming the thickener
- In general, it optimises the performance of the thickener. Any increase in cost is outweighed by an exponential increase in profit.

Contact your ImproChem sales technologist to find out how the ImproChem Settling Wizard can help you optimise your Thickener Operation.



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