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SOLUTIONS

# Flocculent Controllers

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Applying the highest standards of Engineering through...  
***EXPERTISE, QUALITY & SERVICE***





# Flocculent Controllers

A Fully Automated, Robust Locally Designed Unit

We engineer and develop equipment and systems for

## **INDUSTRIAL SOLUTIONS**

in the Advanced Water Treatment, Mining Reagent Systems, and Food Processing Industries

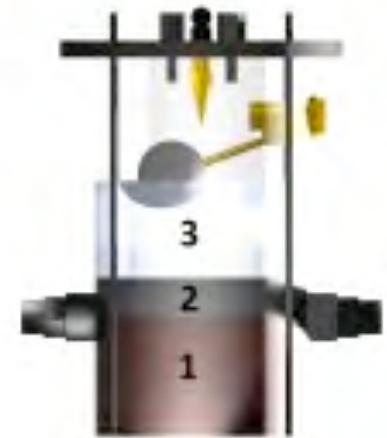
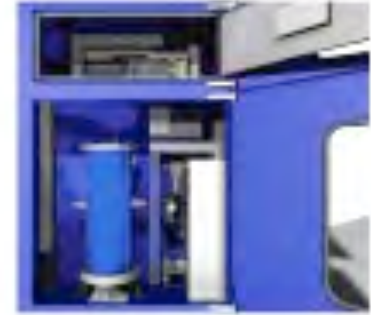


## Flocculent Controller - FC500

Liquid and Sludge Level Interface detection or Monitoring in Flocculent enhanced applications was and is a problem in this modern day and age where almost everything is instantaneously available via one of the recognised information and intelligence platforms like Google and many more. Billions of dollars has gone into R&D projects covering almost every possible scenario on the planet but the reality also shows that there are several gaps in the market still unsolved or unanswered.

# Application

The “Flocculent Controller FC500” and Optimiser is used for the optimised control of flocculent addition to clarifiers, settlers, thickeners, high rate thickeners and DAF systems. A robust design makes it a highly effective and viable in mining, process, pulp and paper, water treatment and underground separation applications.



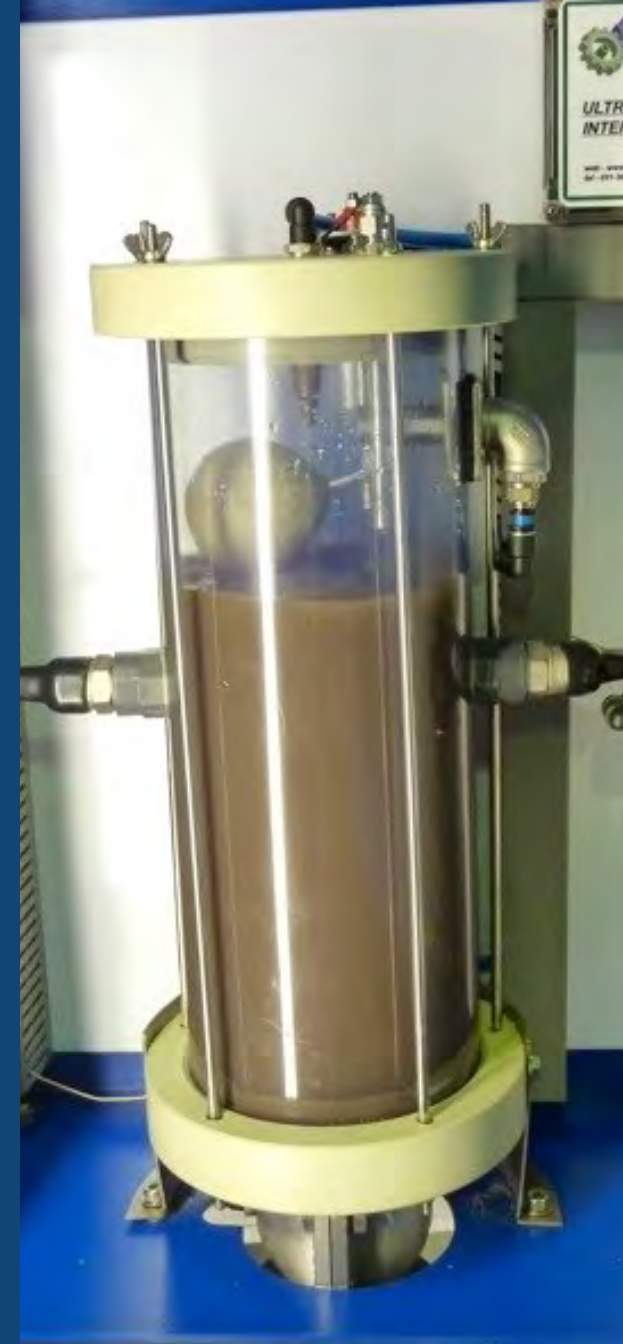
# Background

Flocculent Optimiser's or Controllers are not new to the mining and thickening industries and practically in use for at least the past three decades. These units were known as Flock Savers, Flock Controllers, Settling Pro's, Redtech, Settler Wizards, Settling Wizards, Flock Genius, Flocculators, Thickener Optimisers among others.

Flocculants are used in the treatment of municipal sewage, industrial wastewater or mining processing plants throughout the world. There are many different types of flocculent chemicals and wastewater treatment systems. Flocculants cause the suspended solids in wastewater to float to the top or sink to the bottom where they can be removed. Flocculent by itself however is a costly component not adding any benefit to the application and is regarded as a direct cost. By optimally controlling the amount of flocculent added, brings a immediate improvement to the profitability of any business.

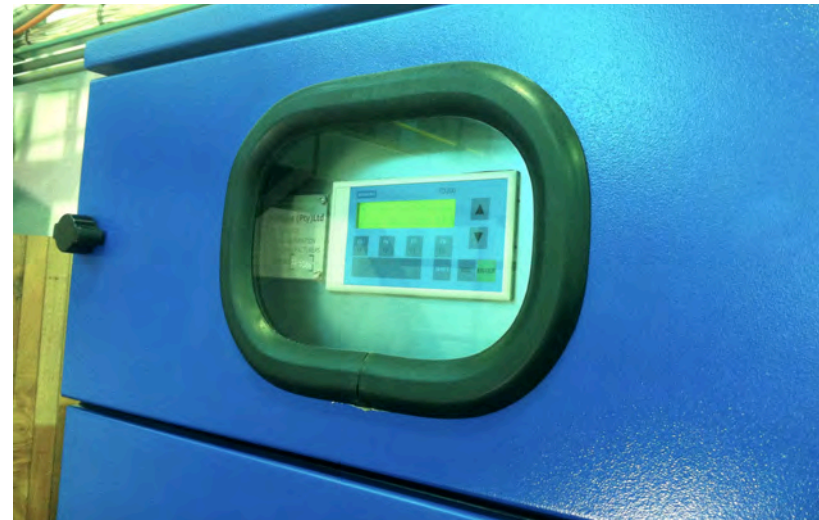
# Features

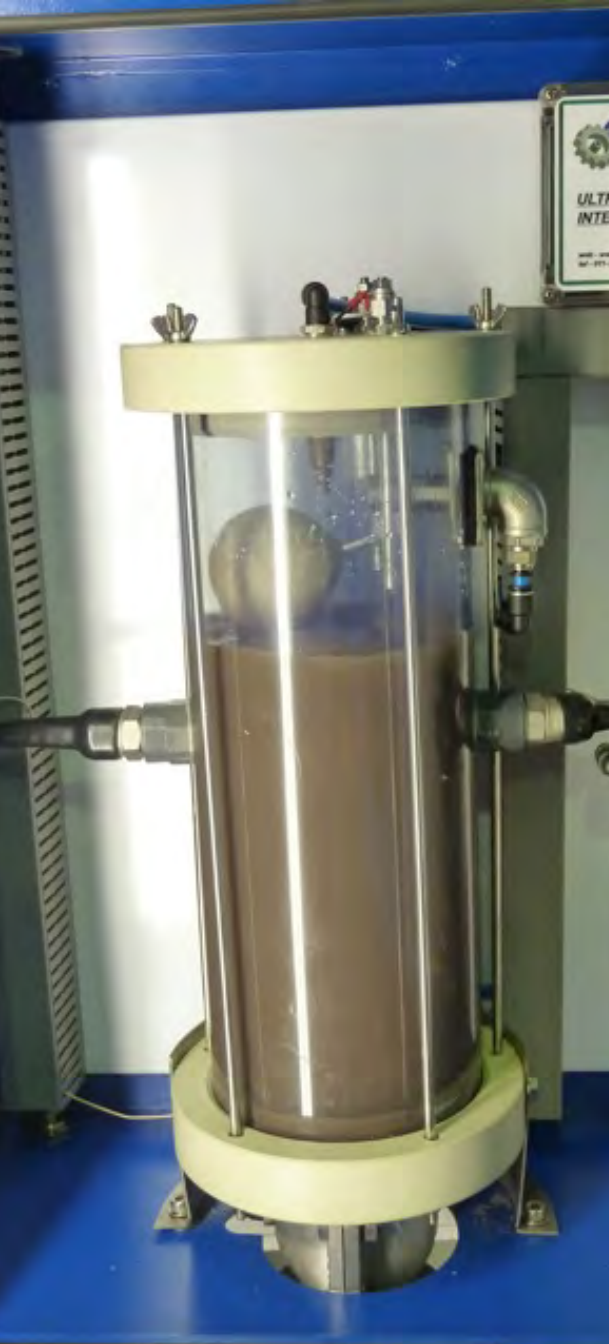
- Low maintenance
- Password protected
- 3CR12 Anti Corrosion Enclosure
- Local manufactured components
- Rugged and Robust Design
- Ultra Sound or Thermal Liquid Solid Separation Detection
- Quick tube removal system for easy maintenance
- Allan Bradley / Siemens PLC and Display options











# Requirements

1. Domestic Water Supply ( 200 L/hr @ 5 Bar )
2. Clean Power Supply ( 110 / 220 VAC @ 5 Amp. )
3. Clean Dry Instrument Air ( 7 – 10 CFM @ 6 Bar )

# Benefits

- Online monitoring
- Direct settling rate output
- Predictable feed forward action
- Optimal Flocculent Usage and Savings
- More constant underflow density
- Simple set-up and commissioning
- 20 Real-time settling rate adjustments per hour
- Immediate compensation for feed flow, solid size and spreading variances

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# The Problem

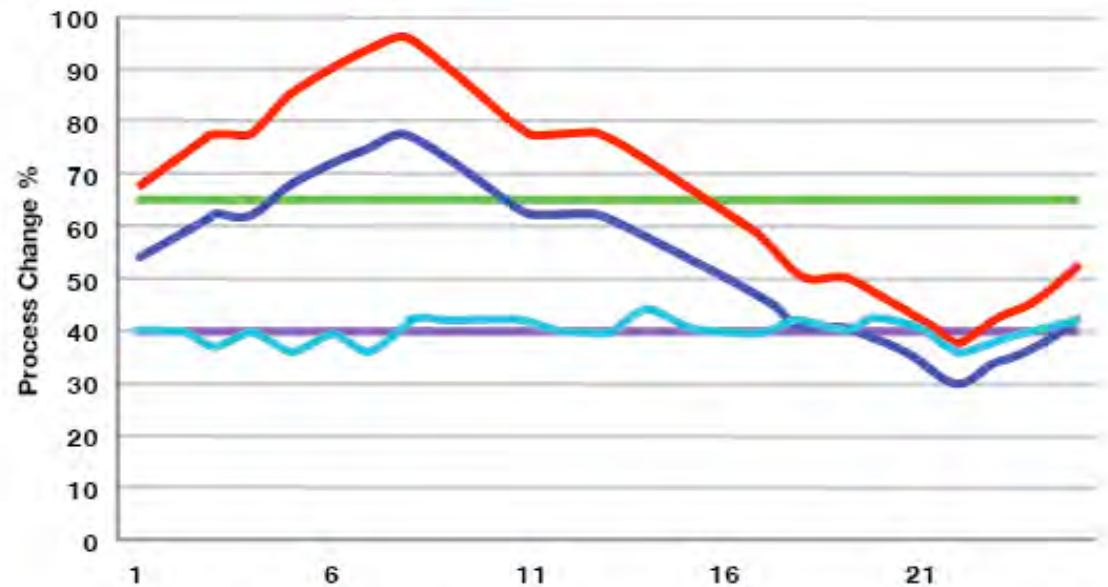
Precisely measuring and controlling the mixture of untreated material, flocculents and sludge is essential to ensure a even constant separation process. The level/interface instruments that support the process liquid measurements must be capable of distinguishing between liquids with varying properties in order to detect the levels where the different liquids interface in the pond or tank. With this knowledge, effluent and flocculents is controlled to provide the optimum mix for treatment and settling.

Such wastewater treatment systems operate under variable conditions that change with system and plant demand. The instruments in the process loop also must have a rugged design in order to survive in dirty harsh operation conditions.

A number of different liquid sensing technologies have been tried as level/interface sensors in wastewater treatment applications. Optical detectors, for example, have not been particularly successful because the sensors fail due to fouling in this dirty operating environment. When selecting a sensing a technology for liquid level/interface it is important to not only consider the process media and desired performance criteria, but the plant environment is important too. The above also highlights the downfall of all the controllers and optimisers to date because one can only control as accurately as you can measure.

# The Solution

There are multiple technologies that can detect level/interface in liquids and slurries. AS AutoMech Solutions has now effectively partnered with selected leaders in Density and Thermal Technologies offering the most accurate and effective Flocculent Optimiser and Controller available.



Process Change	Pump Speed	Fixed Addition	Setpoint	Settling Rate
The Process is continually changing due to variances in Flow, Solid Spreading and Solids Distribution on a ongoing basis.	The Flocculent Addition Pump is constantly following the changes in the Process.	If there is no Flock Pump Adjustment the constant flocculent addition will vary between over and under dosing.	The initial dynamics of a thickener will always remain reasonably constant requiring a fixed Settling Rate.	The ongoing adjustment of the flocculent pump will result in a even Settling Rate close to the dynamics of the thickener.

# Optional

- Turbidity and Coagulant Control
- Feed Density Measurement and Trending Output
- Bed Level Interface and Trending Output
- Advanced Control Algorithms including Bed Level and Feed Density
- Online acid self-cleaning system
- DeviceNet, DH+, and Profibus compatible.



# Simplified Operation

- A post flocculent sample is drawn into the settling tube
- Online sensor detects level of flocculation and settling
- The actual settling rate is compared against the required
- Logarithmic calculation brings correction
- Exponential error including non linear behaviour is compensated for
- Pump speed is adjusted to compensate for the detected error





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