

# Bowater Gatineau Improves Sludge Treatment Efficiency Using the Newest Technology for Consistency Measurement and Control

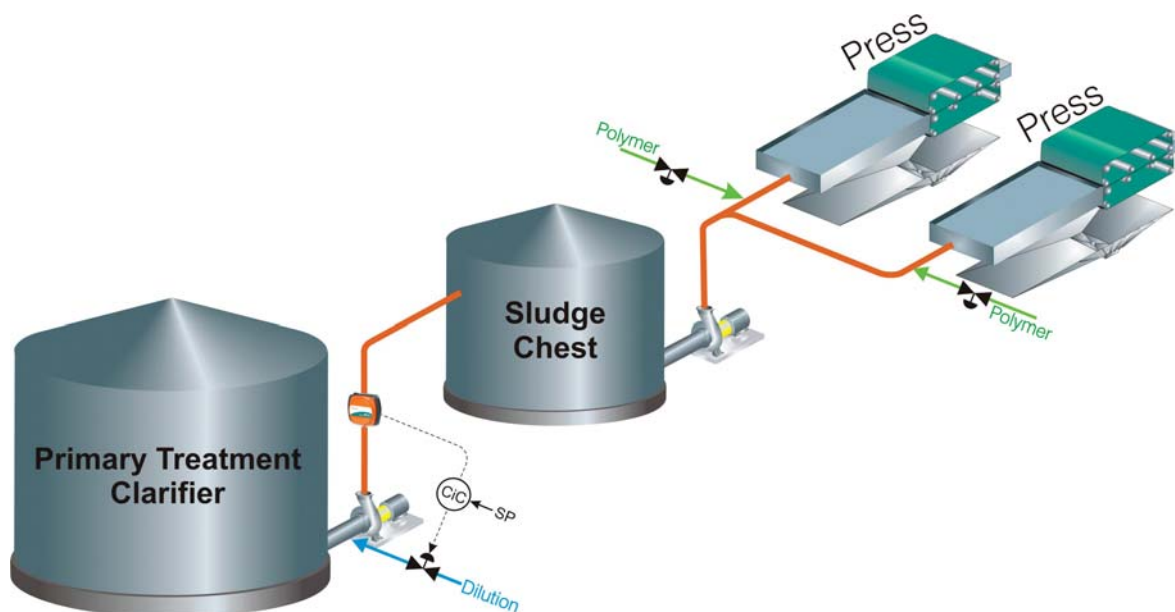
One of the challenges facing the pulp and paper industry is sludge disposal. Most sludges are thin aqueous suspensions of waste material. Their makeup generally depends on the type of mill. Typically, sludges are thickened, dried and burned as fuel or sent to sludge beds. In the latter, they occupy a lot of land and are unpleasant to manage. In order to improve sludge disposal, it is critical for mills to attempt to dewater sludges by mechanical means, like twin wire presses.

## Sludge Treatment Process

All mill effluents are sent to primary treatment systems where the objective is to remove as much solid from the mill effluent and re-circulate the filtrate back into the mill. The remaining "sludge" is moved forward for further treatment.

At Bowater Gatineau, the primary treatment is a primary clarifier; the clear filtrate goes back to the mill. The underflow, the sludge which has settled to the bottom, is pumped forward to dewatering elements, twin wire presses.

The sludge being sent forward has a fairly substantial solids content or consistency, approximately 2%. Therefore, the dewatering process needs to be aided by chemicals and mechanical means. Before entering the twin wire press, the sludge is mixed with a polymer. The polymer is designed to aid the sludge drainage and dewatering on the gravity table, then the twin wire press. The sludge then leaves the press at a solids content of approximately 10% for further dewatering in screw presses.



## Challenges

Sludge consistency from the primary clarifier varies naturally and is a major challenge. This has a direct effect on the dewatering rate and the efficiency of all the mechanical equipment downstream. Consistency surges also have contributed to mechanical damage.

Measuring consistency on primary sludge traditionally has always been a great challenge, since the application requires a very dynamic and non-intrusive technology. The technology must measure true consistency and must not be adversely affected by other process variables such as temperature, pressure, flow rate, viscosity, shear force, particle distribution and composition.



## Solution

Bowater installed a kajaaniMCA flow through consistency transmitter on the sludge discharge of the primary clarifier. The kajaaniMCA is used in a consistency control loop where the consistency going downstream is kept at a constant value using dilution water. Therefore, in subsequent stages of treatment, the polymer dosage is added based on a known consistency value. In turn, dewatering on the gravity tables and the twin wire presses is more stable and the outlet solids can be maximized. This is an excellent approach since it is simple but, more importantly, very effective and right on the money.

## Benefits

- Increased press stability
- Increase in press fabric lifetime
- No more mechanical damage due to inlet consistency being too high
- Significant reduction in polymer usage.

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