

# Factory reduces polymer usage in waste mud stream with Micro Motion meters

## RESULTS

- Reduced polymer usage by 56% amounting to \$200,000 per year
- Reduced maintenance costs by \$10,000 per year
- Reduced regulatory exposure with record keeping and control using DeltaV



## APPLICATION

At the beginning of the sugar making process, American Crystal Sugar washes sugar beets before slicing and pumps the resultant mud and organic material to their landfill where it dries for a few years. Since the dried mud still has a significant amount of nutrients, it is spread out onto the fields. Most of the water is removed from the mud before landfilling to reduce odor from the rotting organic material. Water removal is achieved primarily in mud presses where aged polymer is used to aid in the flocculation process and to prevent buildup in the screw conveyers. Recently, excessively wet harvests have put pressure on this part of the operation; therefore, options to improve efficiency and increase capacity were explored through automation.

## CHALLENGE

American Crystal Sugar's goal was to meet odor restriction requirements to maintain permitting, reduce overall costs of polymer usage and disposal, and increase overall capacity. The existing process relied on manually sampling the incoming mud stream to determine how much polymer to use, however, mud consistency changes frequently. Insufficient polymer usage leads to plugging and poor mud press operation which reduces availability and throughput. To avoid these problems, polymer is over supplied leading to excessive raw material costs.

## SOLUTION

To overcome these challenges, American Crystal Sugar automated their process leveraging the multivariable capabilities of Micro Motion Coriolis meters. Two ELITE® CMF300 meters were used to measure flow, density and temperature to calculate a net



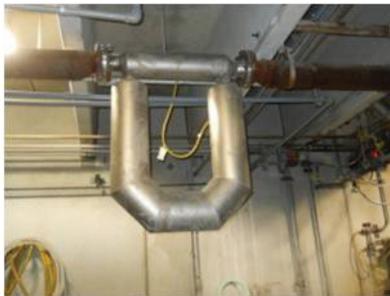
For more information:  
[www.EmersonProcess.com/solutions/water](http://www.EmersonProcess.com/solutions/water)  
[www.MicroMotion.com](http://www.MicroMotion.com)



## WATER & WASTEWATER

solids mud flow on a mass basis coming into the system. The net solids flow measurement was used to determine how much aged polymer to add. Micro Motion Coriolis meters were also used to charge polymer to aging tanks as well as dose the aged polymer into the mud stream. DeltaV with AMS was used to commission the new system, control the entire process, and provided easy record keeping for regulatory purposes.

American Crystal Sugar achieved a 56% reduction in polymer usage resulting in approximately \$200,000 savings in raw material costs per year. They doubled their mud press capacity eliminating an operational bottleneck and reduced the risk of diverting mud to their ponds requiring mud dredging at \$118,000 per occurrence. Fewer presses were needed reducing maintenance costs and gaining flexibility.



ELITE CMF300 used to measure incoming mud stream. Flow, density and temperature measurements are used to calculate net solids.



ELITE CMFS015 meters for charging polymer to aging tanks. These fractional sized meters provided best performance balancing accuracy and pressure drop.

