

Industry: Dredging

- Cutter Vessels

SONARtrac[®] SOLUTIONS

Cutter operators maintain depositional velocity, prevent sandouts, and reduce pump wear with the SONARtrac flow monitoring system.

Benefits

- No wear
- No wetted parts
- No leaks
- No pressure limits
- True average flow velocity
- Entrained gas measurement
- Installs without process downtime

Process

A cutter dredger always pumps the removed mudline material through a partly floating pipeline. This pipeline is typically very long and has several pumping substations to maintain a positive flow of material. In order to prevent sand from building up and blocking the flow in the pipeline, the operators must keep the flow velocity above the depositional velocity of the slurry. Operators use the feedback from flowmeters to adjust the cutter head height and speed to maintain the necessary velocity.

Challenge

Cutting efficiency is greatly affected by variability in soil density, hardness, lithology, and sediment particle size distribution. All of these factors create slurry of variable makeup and density. If the dredge pump works at a constant speed, the slurry will have a variable flow velocity, which is undesirable and potentially dangerous. If the velocity is too low, there is a risk of sandouts in the pipeline. If the velocity is too high, the pump will wear and be inefficient. Traditional velocity flowmeters with wetted parts are prone to wear, causing measurement inaccuracies, and require frequent, costly replacements.



In addition, some soils contain large amounts of gas produced by biologically degradable materials. These entrained gases may disturb the readings of traditional flowmeters and cause slurry density measurements to be inaccurate.

SONARtrac Solution

The SONARtrac system provides dredging operators with accurate, reliable velocity measurements. Operators can use those measurements to regulate cutter head height and speed to ensure proper velocity and prevent sandouts and unnecessary wear. Unlike other flow meters, the SONARtrac system does not have any wetted parts prone to wear and does not come in contact with the dredged material. Instead, it uses patented sonar-based technology to calculate velocity from the outside of the pipe, thereby reducing costs associated with replacement parts.

The SONARtrac system can also provide a true measurement of the amount of entrained gas in the dredged material which can be used to correct density measurement.