

Industry: Dredging

- Hopper Vessels

SONARtrac® SOLUTIONS

Hopper operators maintain depositional velocity, prevent sandouts, and improve efficiency with the SONARtrac flow monitoring system.

Benefits

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

Process

Depending on how the hopper dredger operates, it may have different flow measurement needs. If a vessel is trailing where the drag head is removing soil from the mudline, a flowmeter in combination with a density meter can be used to monitor efficiency. If the vessel is pumping the contents to shore through a pipeline, flow velocity measurement is important in order to maintain a flow rate above the depositional velocity.

Challenge

Soil density, hardness, lithology, and sediment particle size distribution can create slurry of variable makeup and density. At a constant pump 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 sand outs in the pipeline. If the velocity is too high, the pump will wear and be inefficient. Traditional velocity flow meters with wetted parts are prone to wear, causing measurement inaccuracies, and require frequent, costly replacements. In addition, the presence of entrained gases may disturb the readings of traditional flowmeters and cause slurry density measurements to be inaccurate.

On hopper dredgers there is very minimal space in the pump room to install or operate a velocity flow meter. As a result, the installation location of the flowmeter will be close to the discharge of the main dredge pump. This presents a challenge for any flowmeter since the velocity profile of the slurry may be highly variable at the meter location.



SONARtrac Solution

The SONARtrac system provides dredging operators with accurate, reliable velocity measurements. Operators can use those measurements to regulate surface velocity, and adjust the height and angle of the drag head to maximize efficiency. The velocity feedback can also be used to prevent sandouts and unnecessary wear. Unlike other flowmeters, the SONARtrac system does not have any wetted parts prone to wear, thereby reducing costs associated with replacement parts. Instead, it uses patented sonar-based technology to calculate velocity from the outside of the pipe.

The SONARtrac system can be installed in two hours by a crew of two and does not require any heavy lifting equipment. Therefore, the meter may be installed farther away from obstacles in locations not possible for other flow velocity meters.