pulsar MEASUREMENT

Dredging equipment manufacturers choose non-contacting Greyline flow meters.

The Challenge

Thousands of dredges are operated to maintain navigation channels in our rivers, lakes, and harbors and to mine sand and gravel for the construction industry. Managing and optimizing production from a dredge requires continuous monitoring of pipeline pressure, vacuum, and slurry velocity. The operating conditions are extremely harsh and any sensing components in contact with the abrasive slurry can be damaged. But dredge operators need accurate real-time flow information to properly manage production so equipment manufacturers have been seeking innovative monitoring solutions.

Cornerstone Industries of Otley, Iowa provides automation controls for the dredging industry. To improve dredge operation efficiency they searched for suitable flow measurement technologies and identified the Greyline DFM 5.1 Doppler Flow Meter as an ideal instrument to monitor slurry velocity. The Greyline flow meters work with non-contacting, clamp-on ultrasonic sensors that do not require cutting the pipe and are not affected by the abrasive slurry.

The Solution

In 2009 Cornerstone began supplying Greyline Doppler flow meters to dredging equipment OEM's and evaluated their performance and reliability. Working with the manufacturer CDW Custom Dredge Works of Topeka, Kansas, Greyline Doppler Flow Meters were installed on CDW's line of popular Cutterhead dredges and sold throughout the United States and worldwide. Before Greyline Doppler flow meters were deployed, CDW used pressure gauges in the discharge line and vacuum gauges on the suction side of the pump. By comparing pressure and vacuum readings they were able to get a crude indication of flow rate and slurry density but were never satisfied with the accuracy and overall efficiency of the dredge production.

"The Greyline flow meter is a great piece of equipment!"

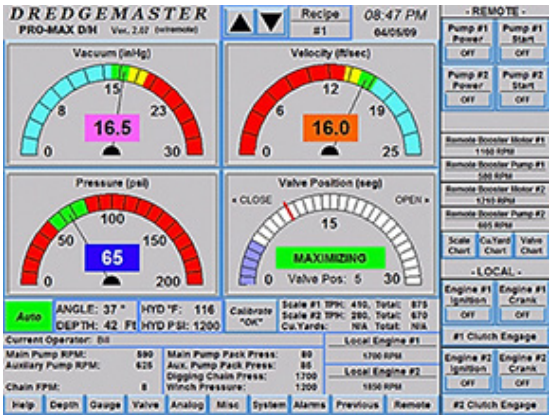
John Jones, CDW Custom Dredge Works

With a Greyline DFM 5.1 Doppler Flow Meter installed the dredge operator can monitor the actual flow rate in the discharge pipe. If flow velocity slows down the operator allows more water into the suction side to decrease the slurry density and increase the flow rate. If the flow velocity is too fast the operator increases the slurry density by reducing water intake.

Production conditions vary from site to site but the dredge operator will typically maintain flow velocity between 3.35 m/s and 5.18 m/s (11 ft/s and 17 ft/s) in steel pipes 203.2 mm to 609.6 mm (8 in to 24 in) diameter. Costs are directly related to the time the dredge is in operation, so obtaining the highest density slurry at the highest possible velocity dramatically improves efficiency and profitability.

CDW Custom Dredge Works mount a Greyline clamp-on Doppler sensor on the dredge discharge pipe at least 6 to 8 feet from the pump or elbows.

The ultrasonic sensor is connected to an electronics display enclosure that is mounted inside the dredge operator's cab. With the flow rate continuously visible the operator can troubleshoot pipe plugging and adjust the intake pipe valves so that the optimum water/sand mixture is maintained for best production.



More Information

Cornerstone Industries: www.cornerstoneindustries.net

Custom Dredge Works: www.customdredgeworks.com

Featured Products

Greyline DFM 6.1 Doppler Flow Meter

Greyline PDFM 5.1 Portable Doppler Flow Meter

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