



Krohne Electromagnetic Flowmeter Brings Stability to Potentially Rocky Sand Pumping Application

Most flowmeters are delivering perfectly accurate results when pumping water. But when you add rocks or sand to the mix, this can figuratively muddy the waters and create noise that leads to instability and false readings.

This is certainly not news to Hagler Systems of North Augusta, SC, a leader in providing innovative solutions and designs for pumping applications to the dredging and slurry industries. Since opening shop in 1997, Hagler Systems has earned a solid reputation for their booster designs, cleanouts, automated control systems and other custom dredge and slurry solutions.

When Hagler Systems was hired to improve sand dredging productivity for their client, Carolina Sand, they knew that two primary changes had to take place. First, they could greatly reduce the unwanted materials in their ore body by switching to dry mining. And second, they could make the entire dredging process more efficient, even self-sufficient, by monitoring the process with an accurate, stable flowmeter.

According to Hagler Systems president, Bob Hagler, "Because of the trash in their ore body, material they could not see with the naked eye, Carolina Sand was only moving about 150 tons of sand an hour. With our new system, they've not only doubled their production to an average of over 300 tons an hour, they also no longer need an entire crew of 2 to 3 people to operate the dredge. Now their personnel simply operate the tank loaders and the transport system automatically pumps the material to the plant. The flowmeter is the key to achieving this dramatic improvement in efficiency."

When Hagler and his team initially got the call from Carolina Sand, they knew that they would need to use DC electromagnetic flowmeters, as AC magmeters would be adversely affected by the "noise" from the rocks and suffer from drift issues. They also needed custom solutions that could be delivered when promised and within a reasonable timeframe. They quickly determined that a Krohne's OPTIFLUX 4300 would satisfy all their needs.

Krohne is a worldwide technological leader in the development, manufacture and distribution of accurate, reliable and cost-effective

measurement instruments for process instruments. The company offers a wide range of flowmeters for different applications; their OPTIFLUX 4300 is particularly well-suited for harsh slurries and difficult environments, as it is abrasion, chemical and vacuum resistant.

Hagler, a process engineer by trade who has been in the slurry mining and process control industry his entire career, was very familiar with Krohne and that company's strong slurry metering capabilities.

"We're very particular about the equipment we use in slurry applications," Hagler said. "Everybody says they have one that works, and then when you put them in, they may not."

He continued, "First off, I had worked with Krohne and knew that they would deliver the goods on time, as promised. Krohne delivered meters in twelve weeks, which is excellent for custom meters. Other companies we'd work with would promise fourteen weeks and then deliver even later than that. Krohne is dependable."

The other essential attribute that Krohne offered was the stability of their products – stability to within a tenth of a gallon a minute even when pumping rock-filled slurry.

"I've seen flowmeters jump up as much as 200 gallons a minute," Hagler explained. "That's not an actual increase in the flow – that's a reaction to the noise of the slurry contents. A pipeline is just like a long freight train of water, and it's impossible to accelerate that train that quickly. The flowmeter actually controls the velocity of this train – it sends a signal to the controller and the controller speeds up or slows down the pump to maintain efficient set points. If the flow meters are lying, your entire system responds to the lie and you end up with a mess. The Krohne meter is extremely stable; it's like a truthful speedometer that ensures you never go too slow or too fast. It delivers results you can work with and trust."

Hagler Systems started with one 12 inch Krohne OPTIFLUX 4300 flowmeter. The company actually had 10 meters on order from a different company, and after getting successful results from the Krohne solution, they switched the entire order over to OPTIFLUX 4300's in different sizes.

Hagler ordered custom meters to exactly match the interior dimensions of the pipeline, because, as he pointed out, "you don't want the sand to experience any change in the flow because of the

meter. It has to be smooth all the way through, or else you can wear out the meter and reduce the accuracy.”

Hagler worked with Krohne tech support to help set the flow meter parameters.

“Krohne was a shining star in terms of their customer support,” he said. “Their invaluable programming assistance ensured that our installation went smoothly and we understood every meter set point.”

Overall, Hagler and their customer, Carolina Sand, are extremely pleased with the tangible results they are seeing with the new system. Hagler actually refers to the Krohne OPTIFLUX 4300 as “the best I’ve ever used.”

“The payoff,” Hagler said, “is in the increased efficiency of the system. In fact, the reduction in fuel cost, manpower costs and electrical costs pretty much pays for the meter. Perhaps more important than that is what Carolina Sand is not seeing. They are not seeing downtime – an unstable meter can slow a pipeline to a crawl, or even choke a pipeline, which is no joke. Stoppage in a pipeline can lead to having to shut down for three days or more. When you choke 3000 feet of pipeline with sand, it takes a long time to clean it out.”

Fortunately Carolina Sand doesn’t have to worry about this problem. Thanks to Hagler and the Krohne flow meter, their sand dredging application is moving along swimmingly, every single day.