BRASTEN®
commitment to excellence

DC Dredging uses the SDM density meter after a successful trail of two months.

CASE STUDY – DC DREDGING

BRASTEN®
commitment to excellence

Case Study – DC Dredging

INTRODUCTION

DC Dredging, a dredging and transport company, did a two-months trial with the Brasten Slurry Density Meter (SDM) at their dredging ship RIO. The SDM was used during a beach filling project in front of the Belgium coast in early 2017 (see figure 1). Originally the ship RIO was equipped with a nuclear density meter, however, for this specific project in Belgium there was no permission to use a nuclear device. DC Dredging decided to replace the instrument and start the trail period with the non-nuclear SDM density meter. The test at the RIO was positive, thus the company continued using the SDM at their dredging ship RIO during beach nourishment and shore protection projects throughout Europe.

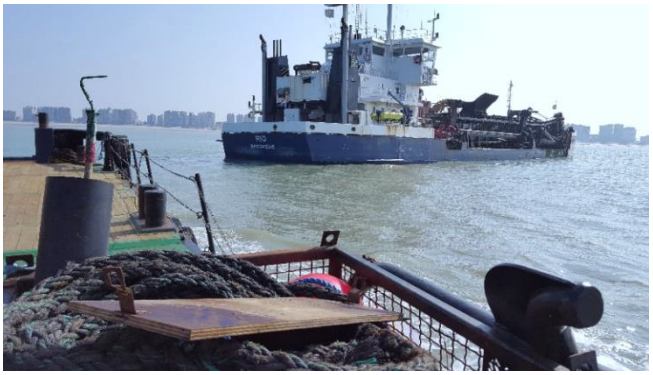

Figure 1: RIO in front of the Belgium coast

APPLICATION

Application:	Behind the discharge pump
Average density:	1450 g/l
Solid content:	45 wt%
Pipe dimension:	558 mm (21 inch)

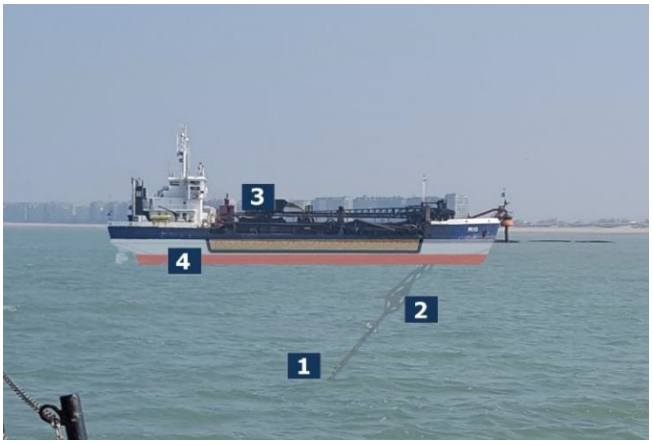

Figure 2: RIO combined with a ship drawing

Figure 2 shows the RIO, the slurry enters the ship through the drag head (1) and suction pipe (2), the sand particles are settled down in the hopper (3) and are discharged for beach nourishment. The SDM was located behind the discharge pump at the back of the ship (4). The exact point of installation was based on the flow rate and the slurry properties. The most homogeneous slurry was found right after the discharge pump. The nuclear density meter used to be located at the same place as the SDM which made it possible to compare the results of both instruments.

INSTALLATION

The SDM was installed using a Weldolet (see figure 3). This custom-made metal piece was welded onto the pipe and was customized to match the specific pipe dimensions at the RIO. During the years, the pipe thickness at the RIO was affected by the abrasive sand slurry.

Figure 3: Example of a Weldolet installation

Case Study – DC Dredging

Brasten took into account the wear profile of the pipe and checked the current pipe thickness to guarantee a flush mounted installation. The SDM was welded onto the pipe in a position between eight and ten o'clock. This position was recommended by Brasten to get the most reliable results.

CALIBRATION

A sample point was made in the pipe close to the SDM sensor which was used for reference purposes. A direct sample was taken from the slurry and a reference value was measured using a density scale. The measured reference value was directly set into the instrument as an adjustment for the shown density value on the screen of the SDM which is based on factory calibrations. The sea water had a density of 1.018 SG, this low density value was set into the SDM and a high density calibration was done using a density value between 1.550 and 1.650 SG. For the high density value, the reference point and the former reference measurement values of the nuclear density meter were used.

OPERATIONS

During validation of the SDM at the RIO, Brasten achieved an accuracy of +/- 5 g/l. The instrument was tested together with a flow meter to calculate the mass flow of the sand slurry. Furthermore, the output of the SDM was connected to a cross meter (see figure 4). This cross meter gives the dredger the possibility to control the efficiency of the dredging process real-time during its operations and could result in saving time and costs during the beach filling project in Belgium.

Example of ROI
As mentioned above, by working more efficiently, the filling process of the hopper will take less time. On the assumption of reaching a ½ to 1 production cycle a day less, the ROI or payback time will be 2 or 3 weeks.

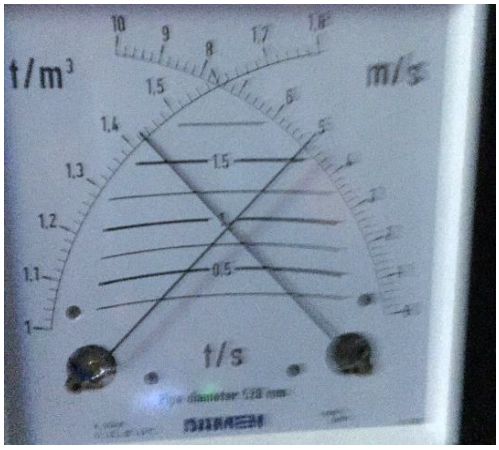

Figure 4: Cross meter at DC RIO

Figure 5: The SDM density meter with a metal weldolet piece

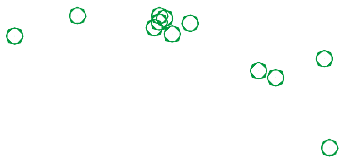

Figure 6: Other locations where Brasten density meters are used for dredging.

BRASTEN®
commitment to excellence

Case Study – DC Dredging

MEASURING BEYOND LIMITS

At Brasten, we continuously work on improving our analysers and sensors. We believe that we can offer solutions for almost any application. We can help you by adapting our solutions to improve your production processes, together with our worldwide network of distributors.

CONTACT US

Brasten Analytical Far East Co. Ltd.,
Thailand
Phone: +66 2 730 6500
Email: info@brasten.com
Website: www.brasten.com

We proudly meet the requirements for the ISO9001 standard since 2010.

BRASTEN GROUP -Global Business Network - at a Glance.