

# Non-Radioactive Production Measurement



## ▶ PICTURE OF SIMILAR VESSEL

### GENERAL

A production measurement system gives visual insight in the dredging operation. The mixture density and flow velocity is measured and gives feedback to the operator, who can actively adjust the operation of the dredger to achieve a higher production. A production measurement system, increases the average production of a dredging operation and increases the operational efficiency.

### SYSTEM DESCRIPTION

The production measurement system consist of a heavy duty flow sensor and ERT density sensor. The flow sensor measures flow velocity and is flanged in between the dredge pipe. The density sensor measures the concentration and is also flanged in between the pipe. A separate conductivity sensor measures conductivity of the water. A measurement unit handles the data acquisition and processes the signals. An anti-glare screen displays the results in a clear presentation to the operator.

### WORKING PRINCIPLE

The flow velocity is measured by an electromagnetic field. The electrodes incorporated in the sensor pick up the induced voltage signal. The voltage signal is converted into an analogue output signal. The flow measurement is fully independent of pressure, density or temperature of the mixture.

The density measuring principle used is electrical resistance tomography (ERT). The pipe sensor is equipped with multiple electrodes arranged around the circumference of the sensor. The electrodes measure a conductivity field in the cross section of the pipe that is translated to a density tomogram. The average density in the pipe section can be calculated from the tomograms.

### TECHNICAL DETAILS

Density measuring method	Electrical resistance tomography
Flow measuring method	Electromagnetic
Input voltage	24V DC or 110-230 V AC
Output signal	4-20 mA
Mixture velocity	0-10 m/s
Mixture temperature	0-40° C
Mixture pressure	Max. 10 bar
Size-range	DN250 – DN1100
Flange range	PN10
Wear material	Rubber Liner
IP Class	IP67

### NON RADIOACTIVE ADVANTAGE

The production measurement system is free from the burdens that are accompanied with radioactive systems. The non-radioactive system doesn't require several permits and licenses that must be arranged for radioactive systems. Moreover all crew members can work with the system without specific certificates and training that is needed for radioactive systems.

### VISUALISATION

The output signals of the flow velocity and mixture concentration are combined to create the real time production. The visualisation is done by a screen that shows the yield indicator with a flow velocity, a density and a real time production. The counters show the day and total volume that is dredged.

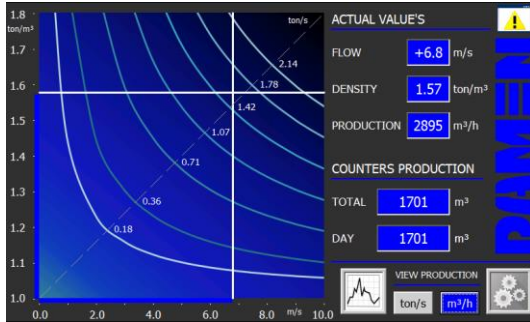
### REMARKABLE FEATURES

- Wear resistant rubber liner
- Can be mounted in horizontal or vertical orientation
- Safe system, non-radioactive
- Free of legislation and permits

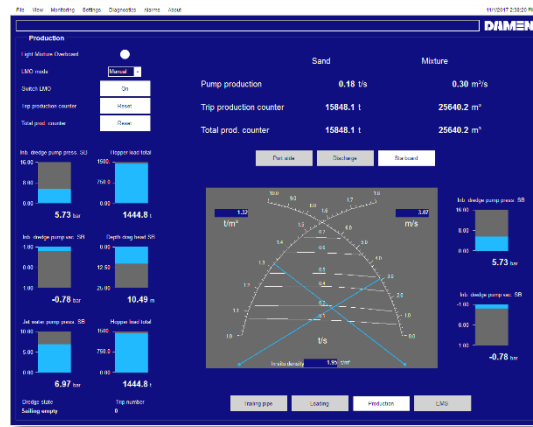
### NOTE

Soils containing clay or other conducting material needs to be reviewed to ensure proper operation due to the measuring principle of the instrument.

# Non-Radioactive Production Measurement



DIGITAL PRODUCTION VISUALISATION



PRODUCTION VISUALISATION DDM5.0



ANALOGUE PRODUCTION VISUALISATION



PRODUCTION MEASUREMENT CABIN