ALIA INSTRUMENTS

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ADM NON-NUCLEAR ABRASIVE SLURRY DENSITY METER

A ROBUST AND ACCURATE INSTRUMENT FOR ALL MINING AND DREDGING SLURRIES

EDITION
FEBRUARY 2023

Alia Instruments ADM non-nuclear abrasive slurry density meter provides an accurate value of the density of the slurry in various mining and dredging applications. These applications are often characterized as challenging processes due to their abrasive or corrosive characteristics. For many years, there was no option available other than using gamma radiation to measure these slurries. However, with the inception of Alia Instruments, customers now have a sustainable alternative to control and optimize their processes.

- Our high-quality density meters are manufactured in The Netherlands
- Alia Instruments is ISO 9001-2015 certified
- We are affiliated to Demcon Group with over 1000 engineers

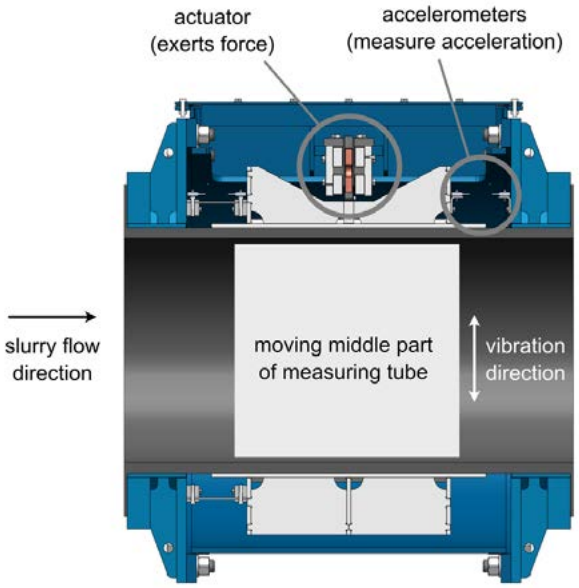
Alia Density Meter

The Alia Density Meter (ADM) provides accurate density measurements of abrasive liquid/solid slurries for dredging and mining applications. The factory-calibrated ADM is positioned in-line in the slurry pipeline. Its primary output is a 4-20 mA electrical current signal, proportional to the slurry density, that can be read by standard control & read-out equipment and processed by existing software applications.

Newton's second law

Newton's second law of motion **F = m x a** relates the mass m of the slurry inside the instrument to the exerted force F and the measured resulting acceleration a. The slurry volume is a known factor inside the measuring tube of the meter. This means that the slurry density, which is the mass per volume unit, is nearly immediate and accurate, regardless of pipe diameter or slurry composition.

The technical working principle is based on basic proven physics: the second law of Newton. Inside the density meter, an actuator exerts a force with a known value and frequency onto the slurry, while a set of accelerometers measures its resulting acceleration.



Advantages Alia Instruments

The Alia Density Meter (ADM) is the ideal choice for any abrasive or corrosive slurry application.

NON-NUCLEAR DEVICE

Significant disadvantages of traditional gamma density gauges for slurry density measurements are overcome by using the Alia Density Meter. No more challenges when transporting nuclear sources with corresponding paperwork, no need for special trainings or specifically trained RSO officers, and no concerns about more stringent regulations in the future. On the contrary: with a non-nuclear Alia Density Meter, you demonstrate social responsibility and respond to society's call to reduce nuclear waste, which enhances your company's sustainable reputation.

SIMPLE AND ROBUST PRODUCT

The simple but fast and accurate measuring principle of Newton's second law has been implemented in a robust and simple design. The ADM housing has a steel measuring tube inside with an exchangeable rubber wear liner through which the slurry flows. With its basic electronic components and highly sophisticated control software, it is an excellent example of high-tech mechatronics.

EASY INSTALLATION AND MAINTENANCE-FREE OPERATION

The Alia Density Meter can be installed in any position. Installation only involves three simple steps: mount the Alia Density Meter into the slurry pipeline, connect the power supply, and connect a 4-20 mA signal cable. There is no need for external commissioning engineers. Due to the robust design and materials, the device is virtually maintenance-free during operation. The rubber wear liner should be exchanged in a regular maintenance program.

NO DIFFICULT, TIME-CONSUMING CALIBRATION

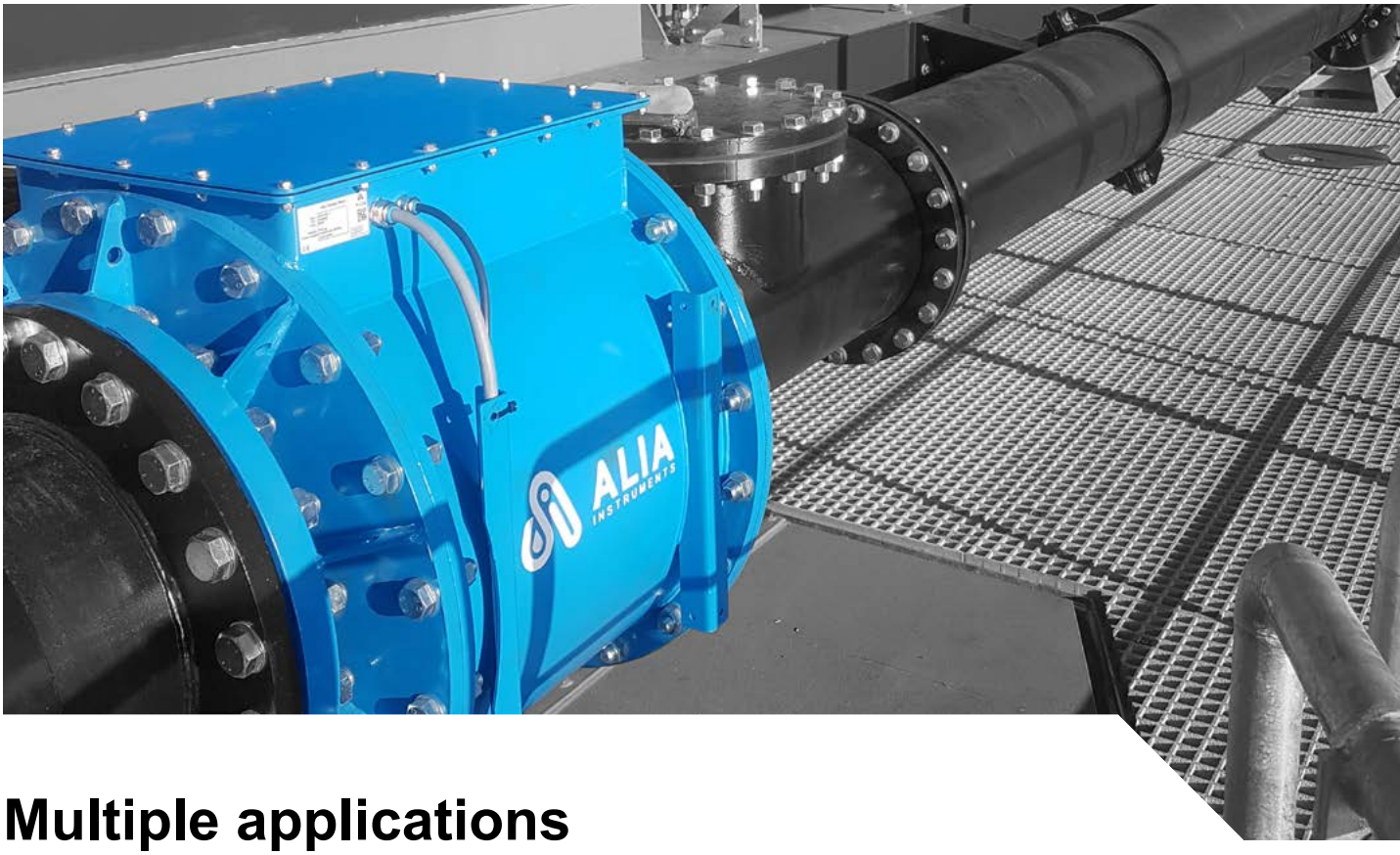
Each Alia Density Meter is delivered fully factory calibrated to you as end user. In most cases, the instrument will function plug-and-play or only needs an offset correction. The latter can be done very easily by running water (or another slurry) with a known density through the ADM and pushing the calibration button on the local display of the ADM. If more sophisticated calibration is needed, this can be performed by Alia Instruments qualified service engineers via a remote connection.

FAST, ACCURATE AND RELIABLE MEASUREMENTS

The Alia Density Meter is only allowed to leave the factory if the accuracy and repeatability are within the required specifications. The 4-20 mA output signal is proportional to the slurry density. This is a virtually immediate signal, showing the [actual, current] values of the slurry density.

DENSITY MEASUREMENT OF ALL MATERIALS

The density measurement is independent of slurry composition, which means that slurries containing sand, rocks, clay etc. can be measured effortlessly. The same holds for fresh or salt water that contains magnetic or corrosive compounds.



Multiple applications

Although originally developed for dredging, the Alia Density Meter is now used in mining and other industries all worldwide. The ADM can be used in various applications in the mining process to monitor the production of dredgers that collect the ore-containing materials. Furthermore, the ADM is suitable for monitoring and process optimization in production plants for separating valuable materials from the ore.

DATASHEET

Medium	Any abrasive or corrosive slurry
Pressure operation	min 1 bar - max. 8 bar (min 15 psi - max. 116 psi)
Measuring range	0 - 4 kg/l
Accuracy	0.5% of the full scale
Calibration	Factory calibrated, local offset correction
Housing	Steel
Lining	Softrubber, easy exchangeable
Signal delay	1 second; Averaging interval is user configurable
Control cabinet protection class	IP 66
Signal cable (option)	10 m (30 ft)
Connecting voltage	100 - 230 Vac
Sizes inner diameter pipeline	80 - 1000 mm (3 - 40 inch)

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