

## Case study – Density Meter comparison test in France



### MEASURING TASK

Density determination of a water/solids slurry.

Pipe diameter: 300 mm (12 inch)  
 Pipe material: Carbon steel alloy (ASTM A53)  
 Solids: 0 - 10 wt%  
 Density: 1.015 – 1.060 g/l  
 Temperature: 4°C – 8°C (39°F – 46°F)

### INSTRUMENT USED

SDM – Slurry Density Meter installed in a metal pipe piece designed for this application.



Figure 1: SDM Slurry Density Meter

### CHALLENGE

A French electricity company is using water from an uphill reservoir for power generation at one of their hydroelectric power plants in France. For maintenance, sediments are dredged from the uphill basin and transported to the river downhill. A certain water/solids balance is needed to prevent accumulation of sediment in the flow from the power plant to the river. Also, wear caused by solids on the turbine of the hydro plant has to be prevented.

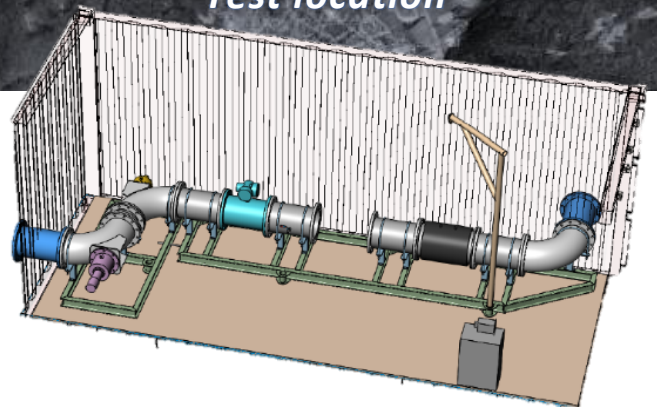


Figure 2: Density meter test laboratory near basin A

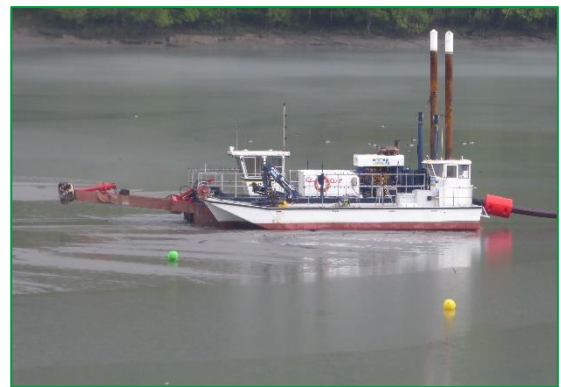
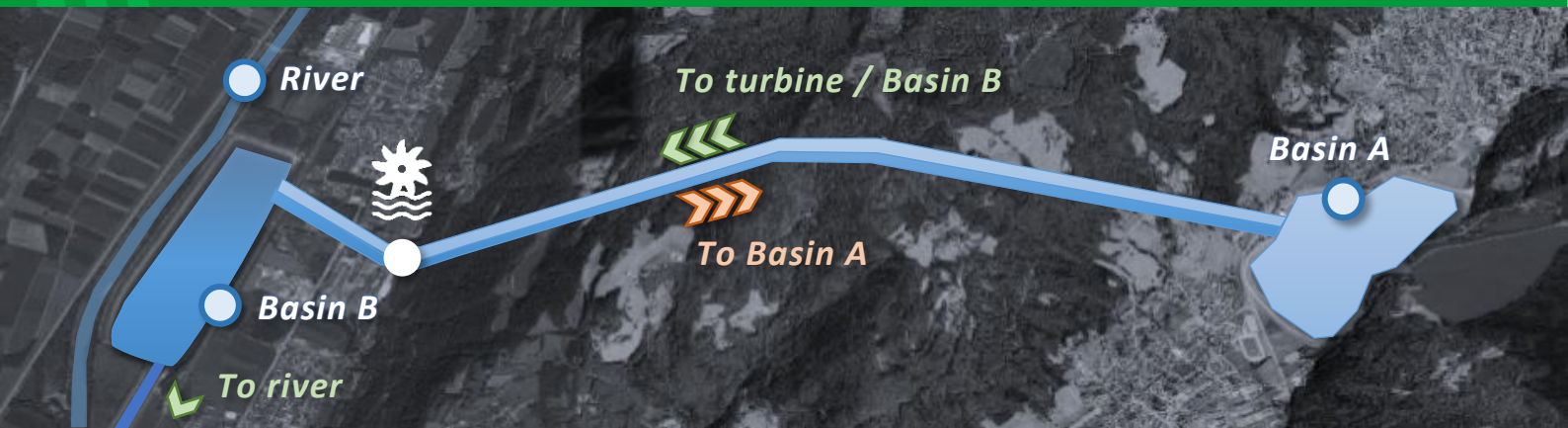


Figure 3: The dredging unit in basin A (uphill)



Figure 4: Rhosonics' density meter at test location

## Case study – Density Meter comparison test in France



### SOLUTION

The contractor invited four suppliers of density meters to prove and validate their density measuring methods. These suppliers are using different technologies to determine the slurry density, done by the measurement of:

1. Radiation (Nuclear)
2. Acoustic impedance (Ultrasonic)
3. Electrical conductivity (Tomography)
4. Force and acceleration (Mass/volume)

One of the invited suppliers cancelled their participation for the test in advance, so three technologies were compared. This was done during a period of four weeks in which the data of each measuring instrument were collected.

### RESULTS

After four weeks of evaluation, the Rhosonics SDM Slurry Density Meter was chosen as the winning technology. This choice was based on the accuracy and stability of the measurements, but also on the easy installation and short calibration compared to the nuclear and tomography devices.

The Rhosonics density meter contributes to:

- Prevention of plant shutdowns caused by sand accumulation in the flow to the river
- Prevention of wear on the power turbine caused by the water/solids slurry
- Improvement of dredging efficiency
- No nuclear source, so no costs for licences, permits or specialized personnel

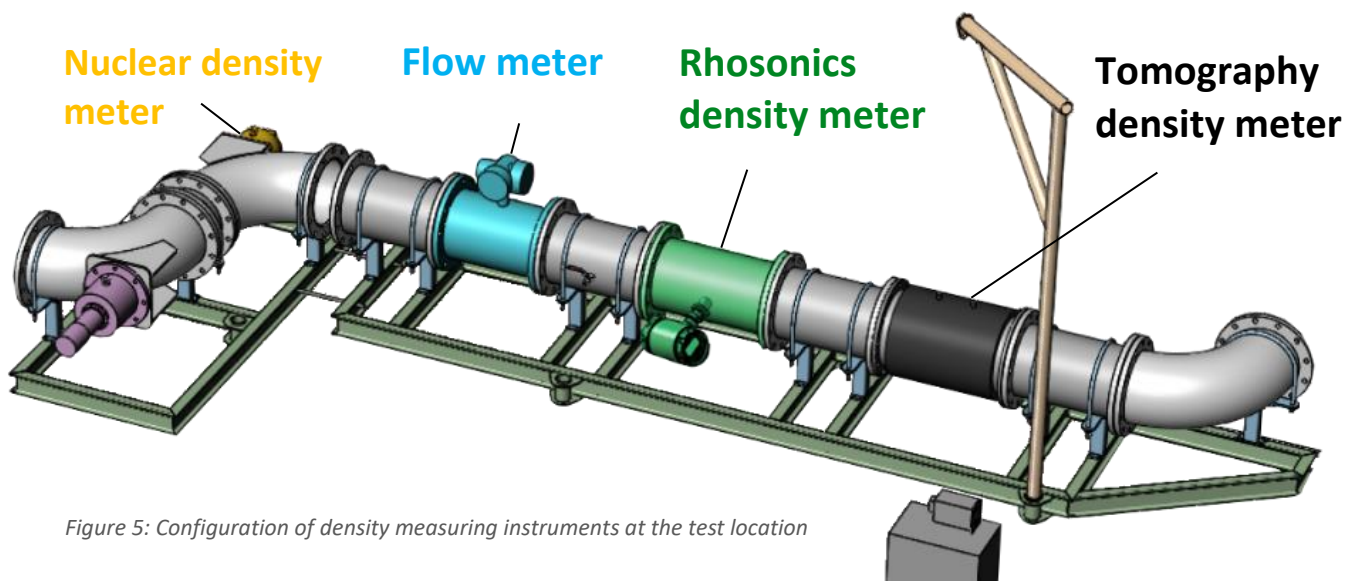


Figure 5: Configuration of density measuring instruments at the test location