

Sediment concentration measurement – Density profiler (S Scan)

Sediment generation and ultimate deposition creates different problems that may cause various issues shifting water depths in harbours, reservoirs, dams, lakes and rivers. During its transportation in water, sediments might also affect equipment that comes in direct contact with water such as pumps used for cooling or ballasting and drinking water production among others

This makes sediment measurement data is very important. The S-SCAN Model 03 system is specifically constructed for this purpose.



Applications

- Density based nautical depth criteria
- Optimization and quality control of dredging works
- Evaluation of sedimentation and consolidation of sediment layers
- Follow-up and quality control of dam flushes
- Precise determination of ton dry weight of dredging material
- Measurement of suspended sediment concentration in water

Benefits

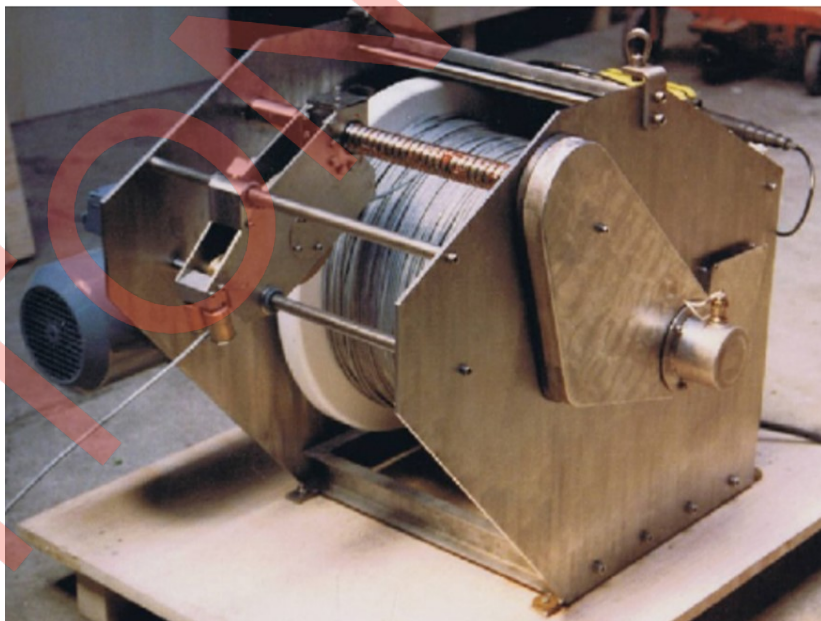
- User's friendly software
- Live visualization of density profile, depth, winch status
- Fully integrated and automated fast profiling
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Features

- Low energy X-ray based, direct measurement system
- High accuracy ($> 0.3\%$)
- Fast sampling time (10 Hz)
- Software controlled winch with adjustable speed

Winch

- Motor 220VAC, 50Hz. Engine 0.75 kW,
- Electrotowing cable 50m, 1300 daN,
- Operated from Control Unit and/or pendant
- 1 speed (may be adjusted to requirements)
- Emergency stop



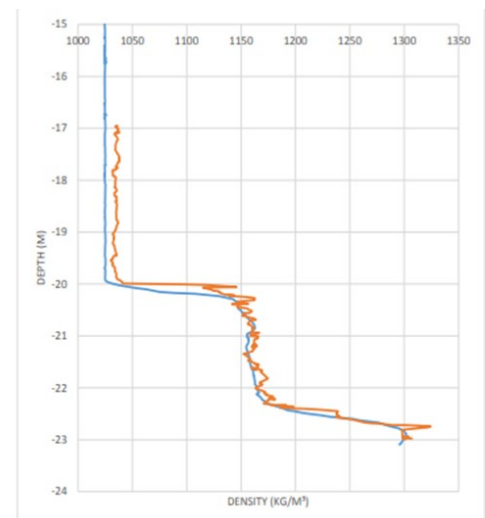
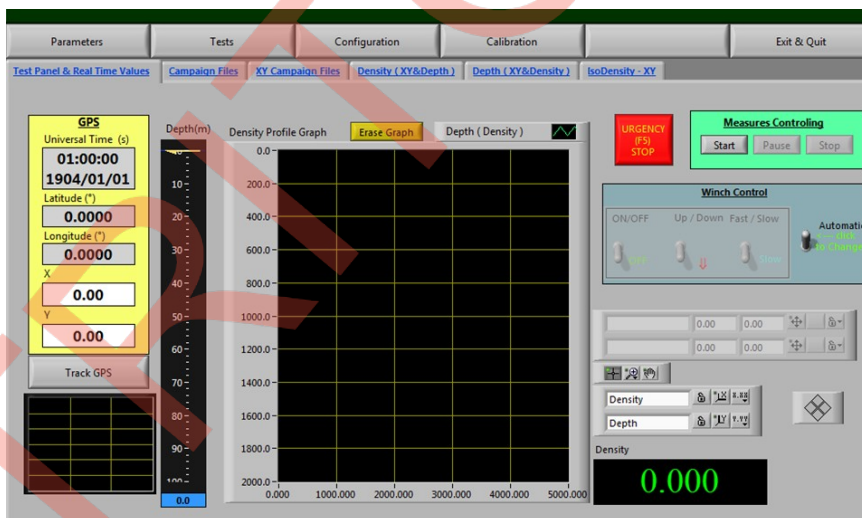
Note: Winch construction may vary from model shown.

Specifications

Measurement head	
Material	Stainless Steel for marine applications 316L
Weight	Approx. 50 kg
Dimensions	360 x 430 x 110 mm
Max. depth	50 m
X. Ray generation	< 30 kV
Detector NaI(Tl)	Φ 38 x 25 mm
Measurement range	Density: 1 to 1.5 Concentration: 1 a 600 g/l
Accuracy of the concentration measurement	± 0.3 % in 1 sec
Measurement time	0.1 sec for vertical profiling 1 sec to 1 hour in fixed point
Stability	< 0.3 % from 5 to 40 °C
Pressure sensor	Range 0 – 50 m (may be modified on request) Accuracy ± 10 cm
Operating mode	
Fixed point	concentration measurement in one point versus time
Vertical profiling	Density or concentration measurement on vertical
Control Unit	
Functions	Data acquisition, visualization and storage Winch control
Base	PC Compatible
Temperature Operation / storage	5°C to 40 °C / -10°C to 60 °C
Moisture Operation / storage	85 %
Power supply	110/220 VAC 50/60 Hz ~ 100W
Security	X. Ray emission authorized by physical key and only under water by security switches
Calibration	Calibration unit based on specific secured system with stable standards

Specifications Cont

Winch	
Electrical 220 VAC 50Hz powered manually controlled through pendant control box or computer controlled	
Options: manually operated or 24 VDC powered with pendant control box	To be used mostly in fixed point
Cable	Electrotowing, steel, dia 5.5 mm, 4 wires, Max load 1300 daN
Radiation safety	
X Rays	< 30 kV
Doses rate at 10 cm of any accessible surface	< 1 μ Sv/h
National regulations requirements	Outside of Regulatory scope in most countries. Users need to clarify national needs.
Software	
Integrated software with:	
GPS positionning (WGS84 coordinate system)	
Grid definition	
Visualisation of vessel position	
Real-time acquisition and visualisation of the density profile (density versus Depth) or concentration versus time	



Example of density profile