

SEPARATOR PROFILING

- ✓ Identify Interfaces
- ✓ Characterize emulsions
- ✓ Detect Sand & Solids
- ✓ Full Separator Profiling



Are you struggling to maintain export oil specifications or oil-in-water quality?

Is your chemical expenditure continuing to rise?

Do you have shut-in production that you cannot handle?

The separation system is designed to remove the unwanted water and solids (waste streams) from the oil and gas revenue streams. Typically, the incoming fluids and solids are produced from either several wells or fields and the processing equipment is designed to achieve the required specifications.

As the production matures, in order to handle the changes whilst maintaining required performance, additional chemical treatment and process modifications may be required.

For an efficient process, it is essential that we can clearly control and manage level within the vessels. The utilization of our technology provides detailed analysis of various layers within the vessels. The information can be used to assess the impact of process conditions and chemical treatment on separation. Through understanding and control of the separation process we can improve efficiency, increase throughput and reduce downtime.

ROCsole
SEE BEYOND.

SEPARATOR PROFILER

PERFORMANCE

Technology	Electrical Tomography	Resolution	11- 22mm (0.43- 0.87")
Level Accuracy	± 1% (application specific)		
Typical Measurement Range	180-2880 mm (7-113")		
Typical Total Length	200-5000 mm (8-200")		
Minimum Nozzle Size ID	40mm (2")	Customizable probes are available, please contact Rocsole.	
Pressure Range	Up to 207 bar (3000 PSI)		
Probe Temperature Range	Up to 175 °C (350 °F)		

ELECTRICAL CHARACTERISTICS

Supply Voltage	24Vdc	Output	- Modbus/TCP
Electronics	24Vdc @ 3A		- Modbus/RTU (RS485 & RS232)
Computer	24Vdc @ 3A		- Analog 4-20mA

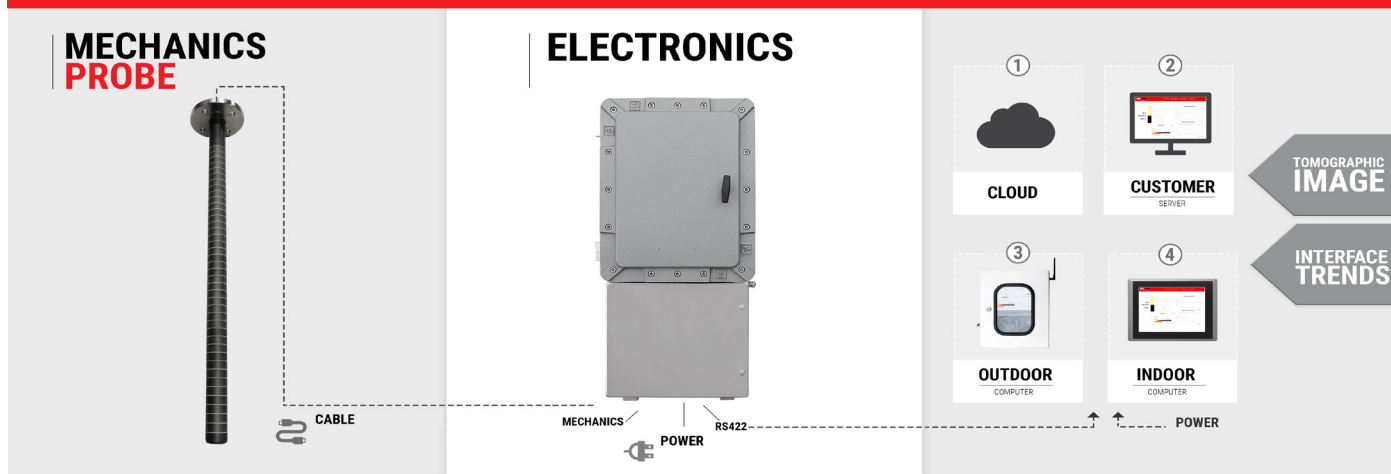
MECHANICAL CHARACTERISTICS

	Weight	Material	Zone
Probe	Varies	Varies	Zone 0
Electronics Cabinet	44.9 - 76.8 Kg	Varies	Zone 1
Computing Unit	30 Kg	Varies	Safe Zone

ZONE 0

ZONE 1

SAFE ZONE



ENVIRONMENTAL

Approvals	ATEX, IECEx, CSA (optional)	Operating Temperature Sensor	-40 .. +175 °C
Method of Protection	No special needs	Operating Temperature Electronics	-40 .. +50 °C
Installation	With online factory support	Operating Temperature Computing Unit	-40 .. +50 °C
Compliance	EN	System Storage Temperature	-40 .. +65 °C

ADDITIONAL INFORMATION

Spares	Please contact Rocsole
Product Code	PROB-8 .. 64
Software	Rocsole Webroc

SEPARATOR APPLICATION

KEY FEATURES:

- Full vessel profiling (gas, liquids, solids)
- Works contaminated
- Detailed analysis of emulsions
- Rapid analysis (10 cycles per second)
- No re-calibration required
- Signals are always backed up with 3D imaging

BENEFITS:

- Reliable level control- prevents unplanned shutdowns
- SEE BEYOND allows operations when contaminated
- No re-calibrations required
- No radioactive sources involved and is completely safe
- Easy user-interface, integrates into existing control systems
- Detailed data analytics available
- Customized reporting available

CASE STUDY: INTERFACE LEVEL MONITORING IN TEST SEPARATOR WITH ROCSOLE PROFILER

© Copyright of Shell Global Solutions International B.V.

PROBLEM/CHALLENGE

- Impact of back-produced EOR chemicals on oil-water separation could not be quantified in 2016.
- Understanding on separation impact is required for upscaling to commercial scale and to identify any bottle-necks in existing crude dehydration equipment

APPROACH / PROCESS / TECHNOLOGY SUMMARY

A Rocsole profiler was installed in the Test Separator to monitor the fluid phases inside the vessel. The instrument measures the conductivity of the different production fluids (for details refer to SR.19.01345, Technology Definition Sheet and Global Technology Catalogue).

Data from this instrument was analyzed together with other surveillance monitoring and lab analysis, e.g.:

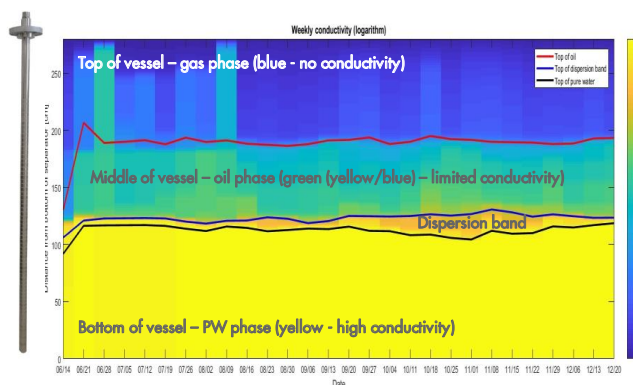
- Oil quality: BS&W, viscosity and density;
- Water quality: Oil in water, surfactant, alkaline and polymer concentration;

This provided detailed insights of the oil-water separation and dispersion band height inside the Test Separator.

The only technical alternative for the Rocsole profiler would be a nucleonic profiler. A nucleonic profiler is more costly and comes with operational hassle due to its usage of radioactive elements.

BUSINESS IMPACT / RESULTS

- CAPEX reduction: direct benefit of using a Rocsole profiler instead of a nucleonic profiler is XXX USD;
- Indirect benefit of no HSE exposure to a nucleonic source;
- Heavy oil/see beyond fouling: no observable performance impact due to fouling in the presence of heavy oil at an operating temperature of 40°C. Degree of fouling to be confirmed after probe retrieval from the vessel.
- This was a first deployment in PDO (and Shell) for a Rocsole interface level profiler and showed its value for process monitoring. Rocsole is working on a plug & play sensor for future deployments and improving on



ROCSOLE is the world's leading provider of tomographic equipment for the process industries. We have invented and innovated the area of robust and reliable in-situ sensors paired with our software using electrical tomography through our own design, development and testing. We have carried out a vast number of trials and pilot project with customers. Our solutions are industrial scale with fast-acting and high-resolution technology capable of determining and monitoring deposits and emulsified liquids in real-time for critical processes.

Our solutions are used in multi-industry. Oil & Gas has challenges with emulsion layers and quick deposit build-ups. The similar challenges are found not only in Pulp & Paper, Food Processing, Detergent production (FMCG), Chemical Industry but also in the Semiconductor Production Process. ROCSOLE™ is commercially active in these sectors, with the focus area being Oil & Gas.

ROCSOLE™ has a broad IP portfolio with worldwide granted patents. We are backed by Shell Ventures, Repsol Energy Ventures, Equinor Energy Ventures as well as the Finnish TESI investment company.

For more information, visit
www.rocsole.com

FANEL Solutions (Agent in France)

3 Impasse des Cerisiers
67150 NORDHOUSE, France

E-mail: c.wurtz@fanelsolutions.fr
Mob: +33 6 15 93 75 28

Rocsole Inc

4201 Main St.
Houston, TX 77002, USA

E-mail us: sales@rocsole.com

Rocsole Ltd

Kauppakatu 20
FI-70100 Kuopio, FINLAND

Call us: +358 40 775 6993
E-mail us: sales@rocsole.com

More info: www.rocsole.com

ROCsole
SEE BEYOND.