

Roxar Multiphase Salinity System (RMSS)



Real-time measurement of produced water conductivity and salinity in multiphase flows

Measuring conductivity and salinity of the produced water from a well is often an important operational parameter for many oil and gas operators. Emerson offers a dedicated salinity sensor suitable for operating in three-phase gas-liquid flows. The sensor measures the effect of the flow on the propagation of the microwave signal in the volume between three probes. The conductivity of the water phase and the local water-liquid ratio can be determined based on this data.

Key features:

- Compact design consists of a pipe spool and an Ex d flow computer typically mounted upstream of the multiphase meter
- Stand-alone product based on modularity, allowing integration with both new and existing multiphase meters
- Real-time continuous outputs of both water conductivity and salinity

RMSS added customer value

In addition to making the Roxar MPFM 2600 less dependent on changes in water conductivity and salinity, other benefits include:

- Direct formation water detection and break-through monitoring
- Utilization for flow assurance purposes, for example, optimize corrosion, erosion and scale inhibitors
- Utilization for reservoir management purposes, for example, maximize oil production and minimize water coning
- Monitoring injected water breakthrough

The Roxar Multiphase Salinity System provides sensitive and real-time measurements of the conductivity and salinity of produced water in multiphase production wells. Together with the Roxar Multiphase Meter, this enables operators to obtain saline independent multiphase measurements, take immediate remedial action to improve flow assurance (optimizing corrosion, erosion and scale inhibitors), minimize water coning, and maximize oil and gas production.

Specifications – RMSS

Table 1: System performance and characteristics

Specifications	Characteristics
Operating range	<ul style="list-style-type: none"> ■ Wtr⁽¹⁾ - 100% Water in Liquid Ratio (WLR) ■ 0-80% Gas Volume Fraction (GVF)⁽²⁾⁽³⁾
Meter sizes	2 in to 6 in, with other sizes available on request.
Installation	Vertical upwards flow, preferably downstream of a blind-T (Typically upstream of the Roxar Multiphase meter)
Typical uncertainty (90% confidence interval)	<ul style="list-style-type: none"> ■ +/-0.5 abs Siemens/meter conductivity ■ +/-0.5 abs % Salinity (NaCl)
Design pressure	5,000 psi (345 bar)
Design temperature	-4 °F (-20 °C) to 266 °F (130 °C)

(1) Water transition point.

(2) Operating range can be extended towards 90% GVF dependent on operating pressure and flow profile.

(3) 90 - 100% covered by the Roxar Wetgas Salinity System.

Table 2: Mechanical and electrical components

Specifications	Characteristics
Wetted parts materials	<ul style="list-style-type: none"> ■ Duplex UNS 31803 ■ Inconel N06625 Other materials are available upon request.
Ex d electronic canister material	Stainless steel
Flange connection	Grayloc® / Techlok® hub, ANSI or weldneck
Length	750 mm (30 in) (This length applies to all meter sizes.)
Sensor technology	<ul style="list-style-type: none"> ■ Microwave transmission sensor ■ 3-pin probe configuration

Table 2: Mechanical and electrical components (continued)

Specifications	Characteristics
Power Supply	<ul style="list-style-type: none">▪ Voltage: 24 VDC▪ Power consumption: 24W
Communication interface	<ul style="list-style-type: none">▪ Ports: RS-485 x 2▪ Communication protocol: Modbus
Electrical certification	<ul style="list-style-type: none">▪ ATEX and IECEx (Ex d e [ib] IIB T5 Gb)▪ EMC (Nemko E14033.02)
Ex d Ingress protection	IP 66

Roxar

Head Office Roxar products:

☎ +47 51 81 8800

✉ info.roxar@emerson.com

☎ CIS: +7 495 504 3405

☎ Europe: +47 51 81 8800

☎ North America: +1 281 879 2300

☎ Middle East: +971 4811 8100

☎ Asia Pacific: +60 3 5624 2888

☎ Australia: 1 300 55 3051

☎ Latin America:

Portuguese: +55 15 3413 8888

Spanish: + 52 55 5809 5000

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