

Resistance Array Tool (RAT)

The Resistance Array Tool has 12 micro resistance sensors deployed on bowsprings to determine the water hold-up profile across the whole wellbore. Water (brine) is conductive, while oil and gas are non-conductive.

Description

Phase segregation occurs in many wells, including those with little deviation from vertical; the lighter phases migrate to the high side of the well, the heavier phases to the low side.

The Resistance Array Tool differentiates between conductive water and hydrocarbons which are non-conductive, and will detect very small, fast moving bubbles. This allows determination of the water hold-up cross-sectional profile in wellbores of any deviation from vertical to horizontal and in any flow regime.

Combined with data from the Spinner Array Tool (SAT) and Capacitance Array Tool (CAT), the tool allows quantitative estimations of volumetric flow rate for each phase with a much higher degree of certainty and thus provides vital and more precise information for reservoir management.

Features

- Cross-sectional water hold-up profiling.
- 3D imaging of water hold-up profile with MAPview software.
- Water hold-up in any fluid regime in vertical to horizontal wells.
- Memory and surface read out operations.
- Simultaneous operation with other Sondex Ultrawire™ tools.
- Combinable with other tools of the Multiple Array Product Suite via Rotational Alignment Subs (RAS).

Specification

Temperature rating	350°F (177°C)
Pressure rating	15000psi (103.4MPa)
Tool diameter	1 ¹¹ / ₁₆ in (43mm)
Tool length	51.4in (1.306m)
Tool weight	18.0lb (8.2kg)
Toolbus	Ultrawire™
Current consumption	70mA
Maximum opening	7in casing
Number of sensors	12
Sensor measure point	15.7in (398.8mm)
Relative Bearing accuracy	5°
Relative Bearing dev range	5° to 175°
Materials	Corrosion resistant throughout

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