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TECHNICAL DATA SHEET

RAT

Resistance Array Tool

The Resistance Array Tool (RAT) identifies fluid phases in highly deviated and horizontal wells. With an array of 12 micro sensors, it has the ability to provide fluid hold up data to a high degree of accuracy. When combined with other standard and array tools a powerful 3D image of the multiphase flow profile across the wellbore can be generated.

Phase segregation coupled with high well deviation may lead to stratification, slugging or recirculation, which can further complicate data interpretation. The measurements recorded by the RAT address these uncertainties and simplify production logging analysis in horizontal multiphase flow regimes. The accurate determination of individual phase hold up in these challenging environments assists the understanding of these complex flow regimes in the most extreme downhole conditions.

The array of 12 micro sensors determine water hold-up across the wellbore by directly measuring the resistance of the fluid between probes at their tips. Saline water is conductive, whereas oil and gas are nonconductive. The sensors can detect very small and fast moving bubbles and directly transform these measurements into a local hold up which, when combined with fluid velocity, allows determination of individual phase flowrates.

APPLICATIONS:

- Horizontal and high deviation well production logging
- Cross sectional profiling of fluid hold up
- Measurement of mix and segregated flow regimes
- Identification of hydrocarbon production

BENEFITS

- Resolves water and hydrocarbon hold-up in segregated flow conditions
- Identify location of hydrocarbons in high water cut to aid decision making during water shut-off, re-perforation or stimulation operations
- Improve accuracy of production evaluation for highly deviated wells
- Identify and locate sinks and traps to reveal hidden hydrocarbons
- Slim tool body with bowspring deployed sensors for thru-tubing data acquisition
- Deployable on Slickline, Electric line, Coil Tubing or Tractor

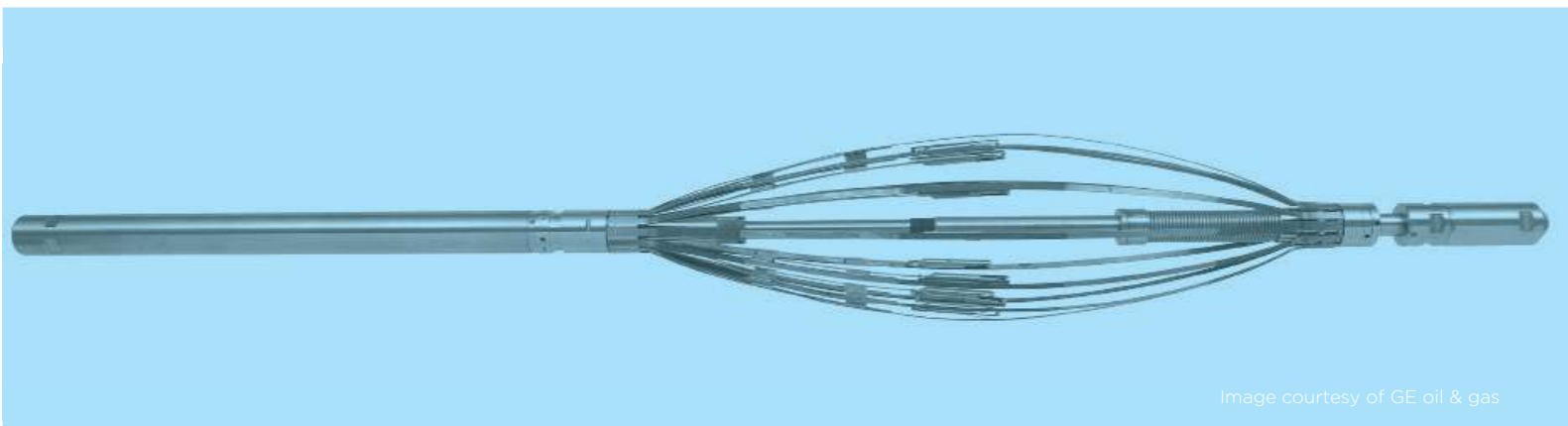


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Specifications

Temperature rating	350°F (177°C)
Pressure rating	15,000 psi (103.4 MPa)
Tool diameter	1 11/16 in (43 mm)
Tool length	55.3 in (1405 mm)
Tool weight	16.2 lb (7.35 kg)
Range of operation	3.5 - 7 in (88.9 - 177.8 mm)
Number of sensors	12
Relative Bearing accuracy	±5°
Relative Bearing deviation range	5° to 175°
Materials	Corrosion resistant throughout