

Spinner Array Tool

SAT

The Spinner Array Tool features 6 miniature turbines deployed on bowspring arms, enabling discreet local fluid velocities to be measured at 60 degree intervals around the wellbore.

Description

Phase segregation occurs in many wells, including even 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 individual phases flow at different velocities and possibly in different directions. Historically correlations have been used to estimate these from the total fluid velocity log. The Spinner Array Tool provides direct measurement of individual phase velocities. This makes it possible to provide quantitative estimates of the volumetric flow rate of each phase with a much higher degree of certainty and thus provide vital information for reservoir management.

The six miniature turbines are mounted on bowspring arms and use low friction jewelled bearings to reduce the mechanical threshold of the spinner and improve sensitivity to fluid flow. The tool outputs the direction and speed of spinner rotation and speed. A relative bearing measurement is incorporated to indicate the high side of the hole.

Features

- Cross-sectional velocity profiling.
- 3D imaging of velocity profile with MAPview software.
- Phase velocities in segregated fluid streams in deviated and horizontal wells.
- Option of larger, 0.6in diameter spinner.
- Memory and surface read out operations.
- Combinable with other Ultrawire™ tools.
- Optional Rotational Alignment Sub (RAS).

Specification

Temperature rating	350°F (177°C)
Pressure rating	15000psi (103.4MPa)
Tool diameter	1.9in (48.3mm)
Tool length	45.5in (1.156m)
Tool weight	~ 17.2lb (7.8kg)
Toolbus	Ultrawire™
Current consumption	25mA
Pipe range	Up to 7in casing
Number of sensors	6
Spinner diameter	0.4in (10.16mm)
Spinner pitch	2in
Sensor measure point	16.5in (419mm)
Relative Bearing accuracy	5°
Relative Bearing dev range	5° to 175°
Materials	Corrosion resistant throughout

