**Product** True Flow

## Fibre Flow

# Locate and quantify flow in the well system with fibre optics

## What it delivers

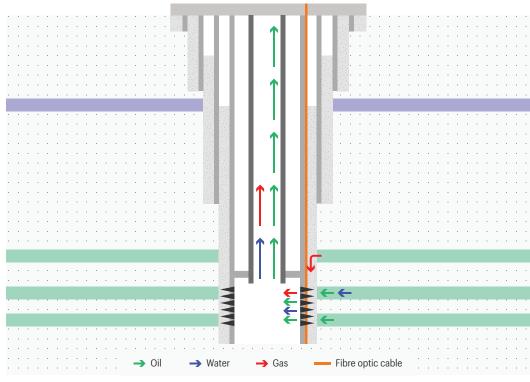
More and more wells are either fitted with distributed temperature (DTS) fibre to monitor performance or are using slickline fibre optic cables for logging wells. But, making sense of the data and activating the well to reveal its actual flow performance isn't easy for traditional systems.

Fibre Flow brings all the benefits of our Total Flow product to wells using fibre optics, to tell the whole flow story from the reservoir to the wellbore. Delivered by our True Flow system using the Cascade (thermal) platform, Fibre Flow provides the clarity and insight needed to manage well system performance more effectively.

Fibre Flow is used to diagnose unexpected or undesirable well system behaviour, but it can also be used proactively to ensure the well system is working optimally.

Well sketch shows a range of flow scenarios that Fibre Flow can locate and quantify.

Fibre Flow provides the clarity and insight needed to manage well system performance more effectively.



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### **Challenges**

Fibre Flow example logplot.

390 m<sup>3</sup>/d.

Log plot shows a fish-hook injector

Smooth-shaped static temperature gradient between Zone 3 and 4 indicates communication between them. Zone 3

well where the objective was to define the formation injection profile in the horizontal section (Zones 4, 5, and 6). QZI indicated modelled static temperature and formation injection profile. QZ shows the total injection rate:

- Quantify flow profiles in well systems with fibre optic DTS sensing
- Poor production or injectivity performance
- Unexpected change in well system performance
- Unexpected water or gas breakthrough
- Suspected cross-flow in wellbore or behind-casing
- Recalibrating reservoir model
- Reservoir flow assessment and characterisation

### **Benefits**

- Understand the true source of production and quantify flow profiles accurately
- Know where injection fluids are going and quantify flow profiles accurately
- Identify cross-flow and thief zones
- Locate source of water or unwanted gas
- Better well and reservoir management decisions, precisely targeted
- Improve well system performance and extend productive life of asset

### absorbs 3% of total injection rate WELL SKETCH LITHOLOGY FORMATION FLOW PROFILE TS\_29/08/2016\_13:19:34 TVDSS GR POF QZI m 1900 O gAPI 150 0.4 frac -0.4 40 °C 80 -400 m³/d m²/d SH TSM -0.4 frac 0.4 40 °C 80 Modelled TEMP 9 5/8 Static TEMP Geothermal TEMP 31/2 6 <sup>5</sup>/<sub>8</sub> 4% 2900 6% Zone 2 3000 3100 3200 Q 36% 3400 9% Ϋ́Ζ 3500 0 SANDSTONE TG

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