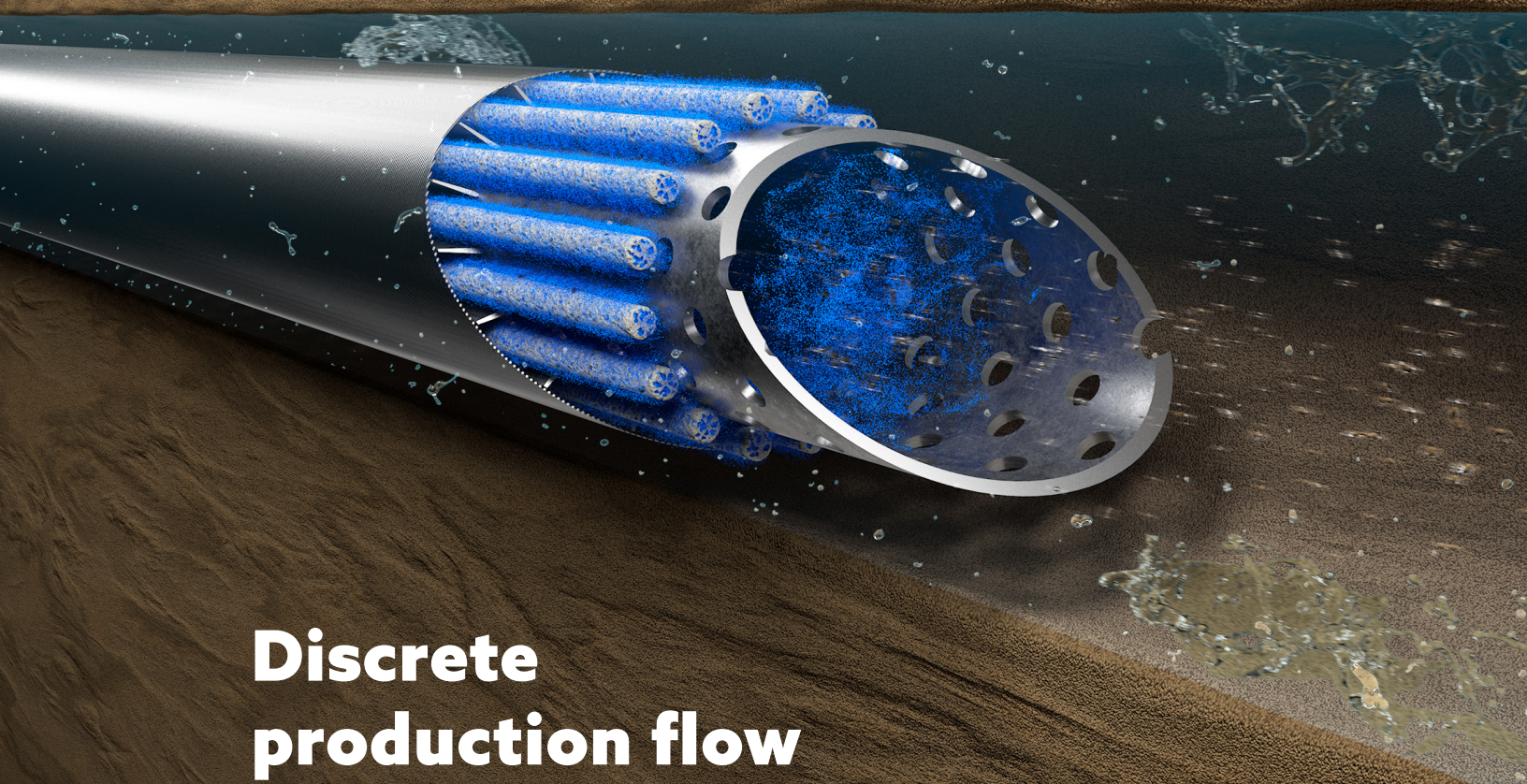
QuantumPro, Inc.

SoluTrac™

Dissolvable inserts for downhole tracer deployments

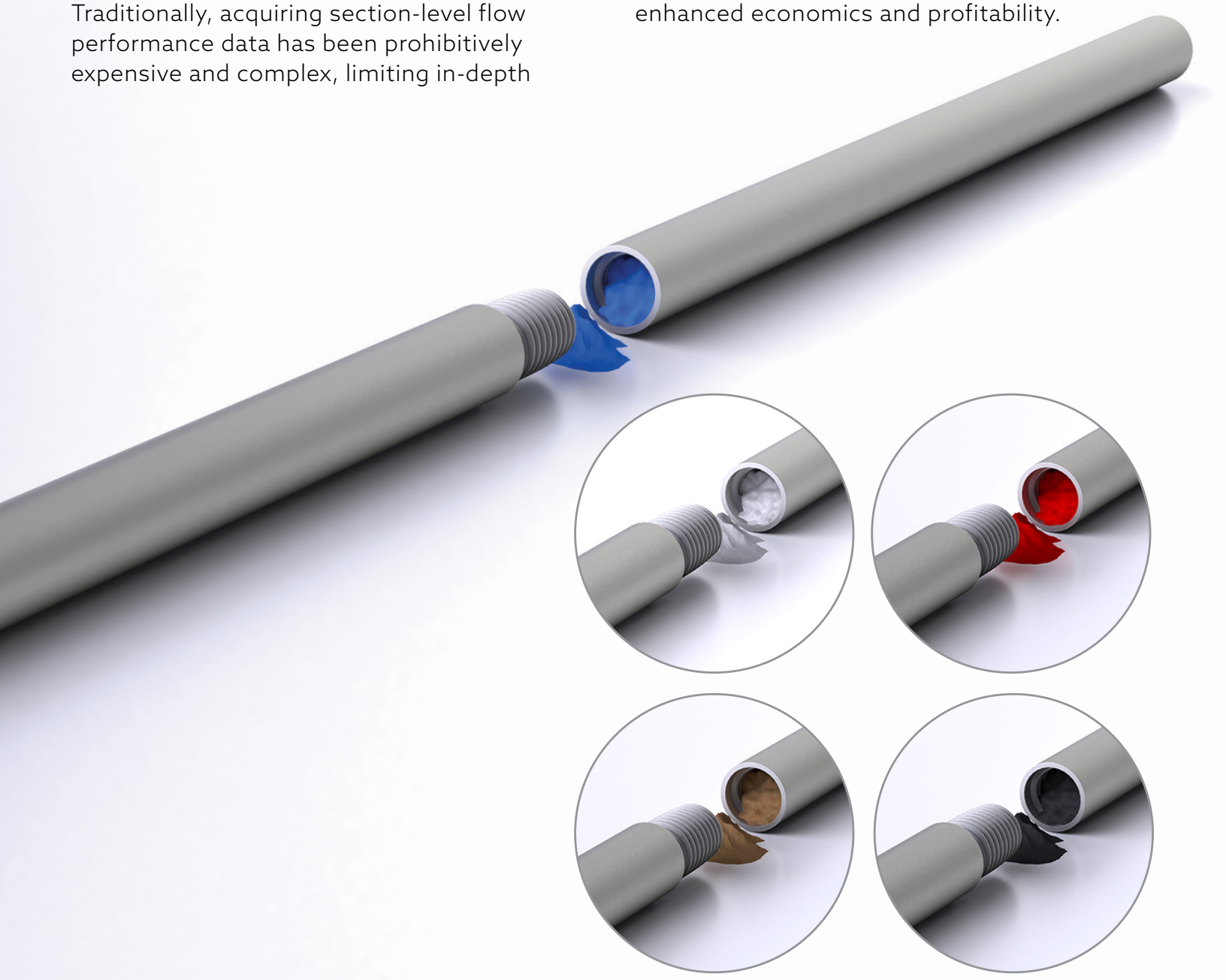


Discrete production flow performance analysis

Overcoming the Barriers to Cost-Effective Production Flow Performance

Savvy upstream operators have long recognized the value of understanding discrete well section production performance. When this data is available, it deepens insights into reservoir performance and complexities, leading to maximized production, enhanced well designs, greater completion efficiency, and improved financial returns.

Traditionally, acquiring section-level flow performance data has been prohibitively expensive and complex, limiting in-depth production mapping studies to a small fraction of wells. Most operators accept a degree of uncertainty regarding the accuracy of their downhole production assumptions, missing critical insights into reservoir performance, flow characteristics, and production performance. This insight is crucial for validating, assessing, and refining well completion or production strategies, which can lead to significantly enhanced economics and profitability.





Onshore application.



Offshore application.

Nanoparticle Tracers

- Safe, requires no special handling
- Non-radioactive materials
- Withstand temperatures up to 2,000 deg F.
- Ultra-high-resolution detection
- Unintrusive to well design and completion process
- Ultra-light specific gravity of 0.9 – 1.17 g/cm3

Applications

- Unconventional or conventional wells
- Onshore or offshore wells
- Deepwater or subsea wells
- Open-hole wells with sand screen completion
- Multilateral and sidetrack wells
- Enhanced Geothermal System (EGS) wells
- Cuttings re-injection and CO2 injection wells

Features

- FloTrac nanoparticles embedded in rod inserts placed around the sand screen or in another completion element
- Advanced and long-term production flow mapping and diagnostics
- Non-hazardous, non-radioactive, and safe nanoparticle tracer materials
- Near real-time, data-driven diagnostics of flow efficiency
- Physics-based, rigorous sub-atomic detection and high-resolution flow diagnostics
- Nanoparticle tracers are robust, withstanding temperatures up to 2,000 deg F
- 220 unique nanoparticle tracers available for the cluster level flow mapping

Benefits

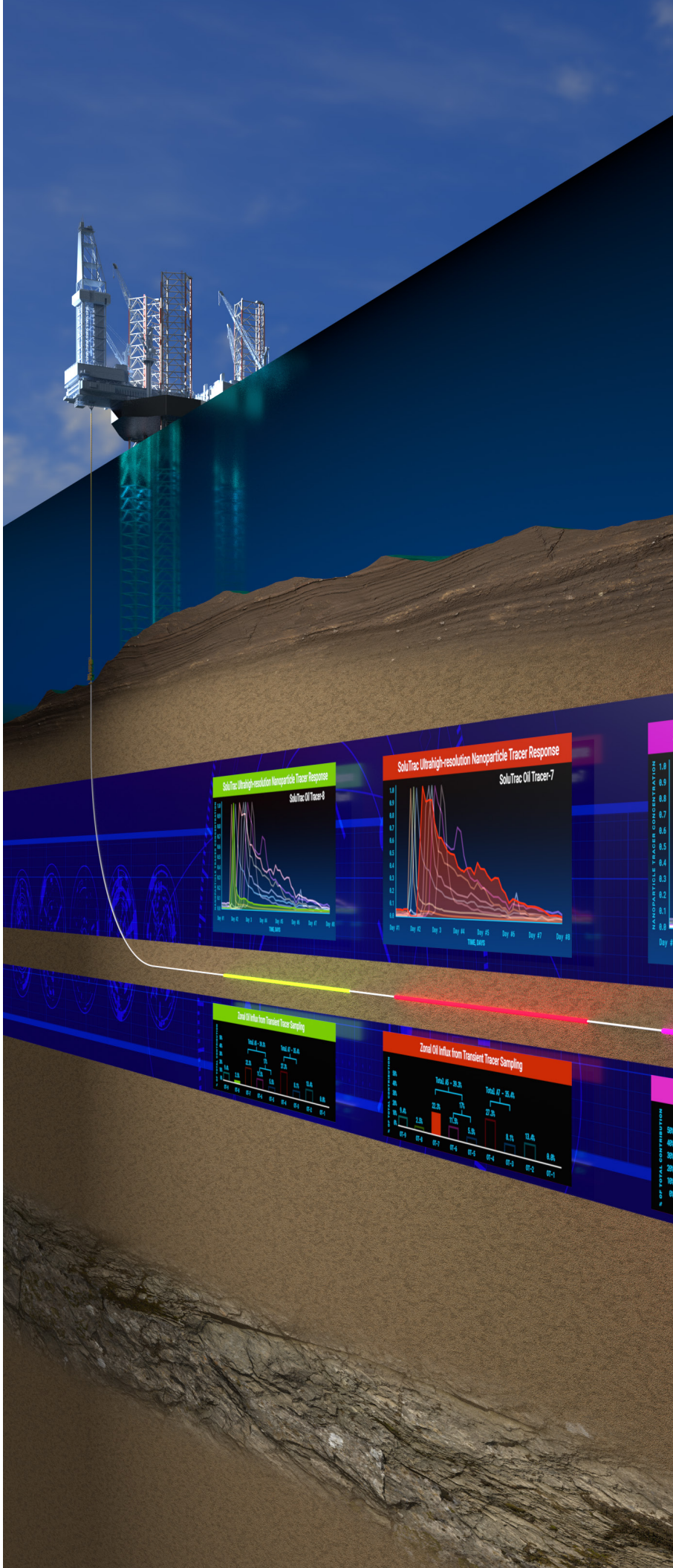
- Helps drive continuous improvement in your well design and production mapping
- Uncovers new insight to enable data-driven decisions to maximize profitability
- Provides clarity to well section-level production flow performance
- Requires no special handling, additional personnel, or wellsite make-up
- Improves completion engineering and enables granular production analysis
- Delivers actionable, reliable, and critical flow performance data
- Access to production performance data at a fraction of the cost of traditional methods

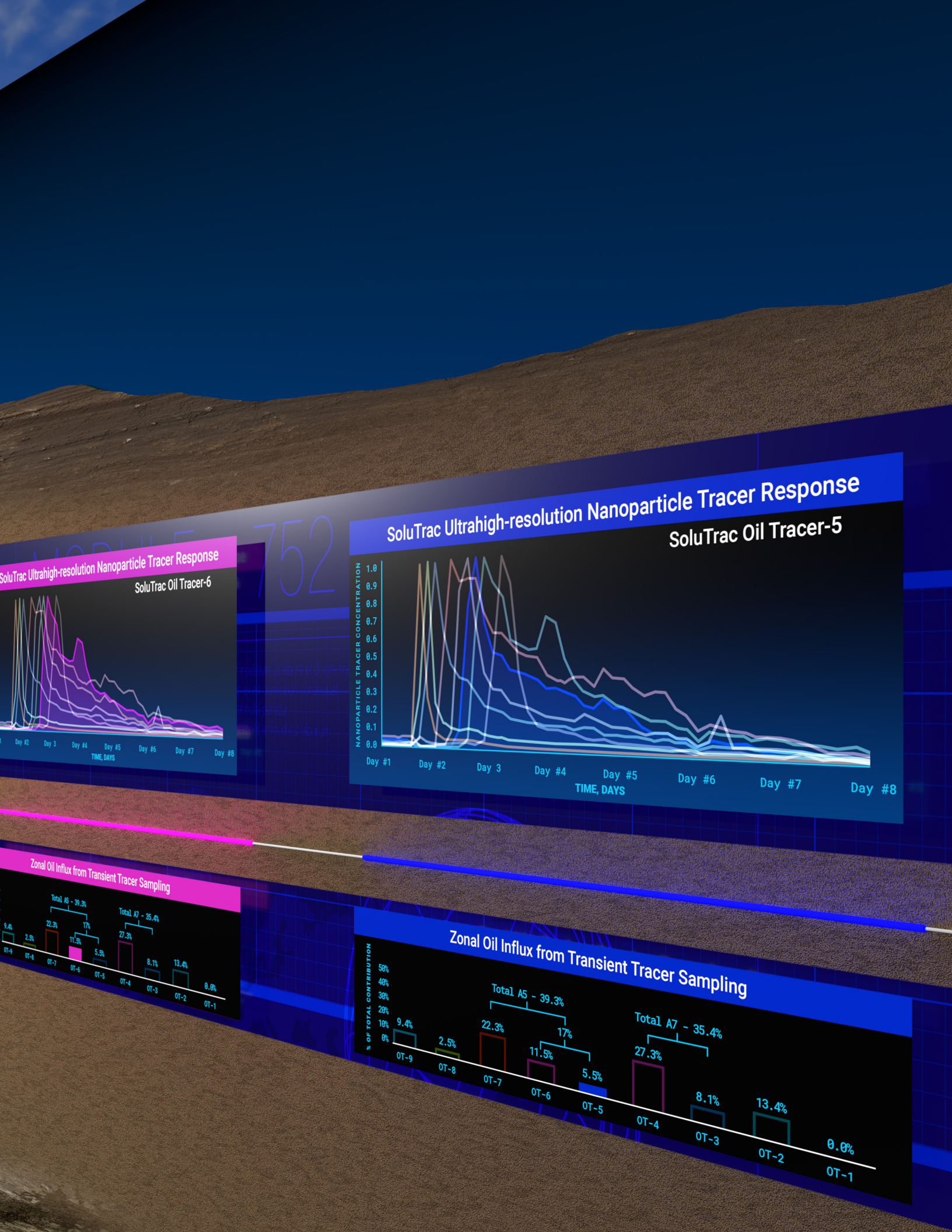
SoluTrac Technology Makes Discrete Flow Performance Data Routine

With SoluTrac dissolvable inserts for downhole tracer deployments from QuantumPro, Inc., you can now acquire discrete production performance data at a fraction of the cost of traditional methods and without the special handling or complicated deployment issues. Additionally, SoluTrac provides data that is more precise and useful than traditional techniques.

By integrating SoluTrac into your well construction process, you can make discrete and high-resolution flow performance analysis a routine evaluation rather than a rare occurrence—optimizing your completion design, reaching your production targets, and improving profitability.

SoluTrac removes the barriers to widespread discrete production flow performance analysis.



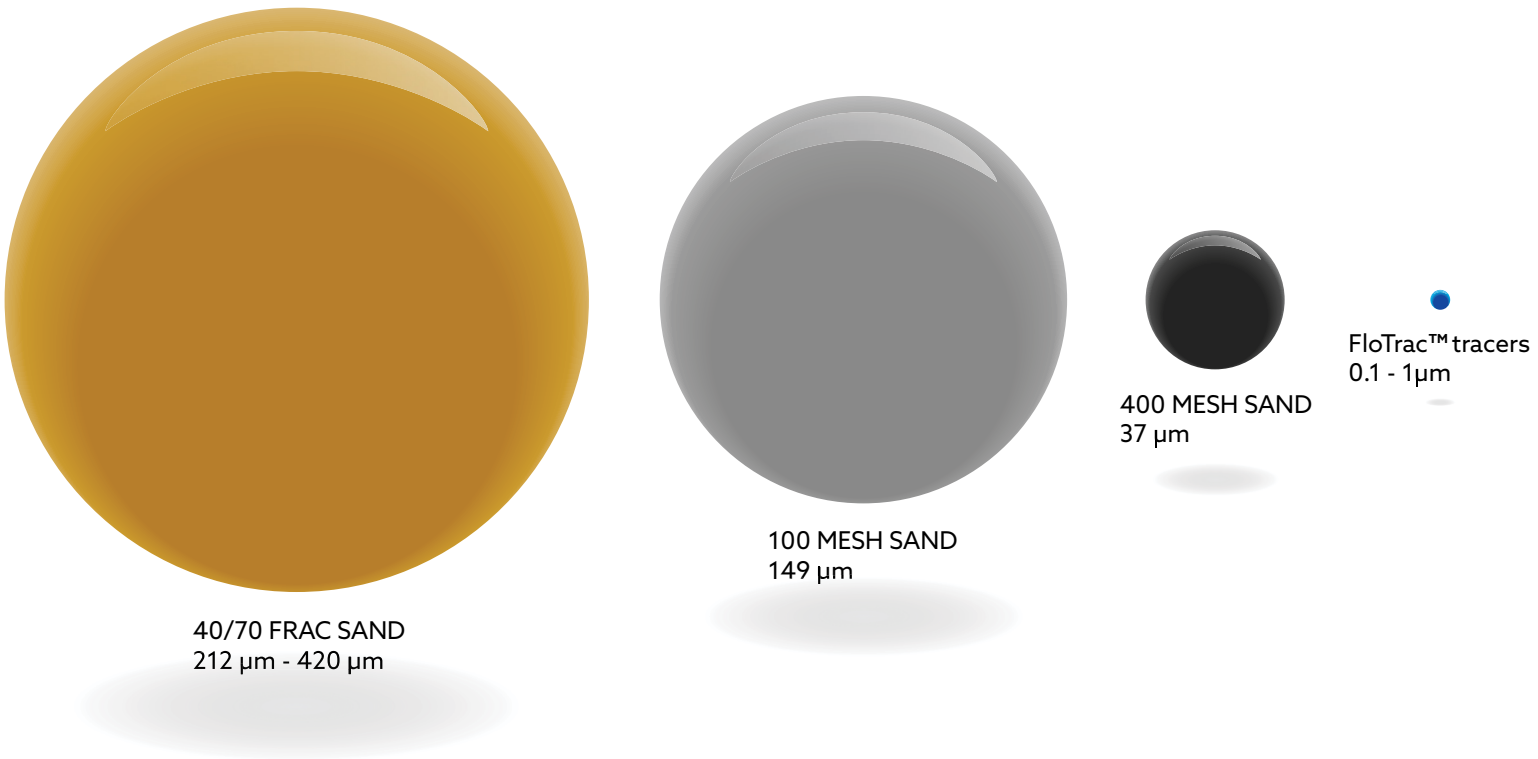

SoluTrac Ultrahigh-resolution Nanoparticle Tracer Response
SoluTrac Oil Tracer-6
Day #1
Day #2
Day 3
Day #4
Day #5
Day #6
Day #7
Day #8
TIME, DAYS
SoluTrac Ultrahigh-resolution Nanoparticle Tracer Response
SoluTrac Oil Tracer-5
NANOPARTICLE TRACER CONCENTRATION
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Day #1
Day #2
Day 3
Day #4
Day #5
Day #6
Day #7
Day #8
TIME, DAYS
Zonal Oil Influx from Transient Tracer Sampling
Total A5 - 39.3%
Total A7 - 35.4%
9.4%
2.5%
22.3%
17%
11.5%
5.5%
27.3%
8.1%
13.4%
0.0%
OT-9
OT-8
OT-7
OT-6
OT-5
OT-4
OT-3
OT-2
OT-1
Zonal Oil Influx from Transient Tracer Sampling
% OF TOTAL CONTRIBUTION
50%
40%
30%
20%
10%
0%
Total A5 - 39.3%
Total A7 - 35.4%
9.4%
2.5%
22.3%
17%
11.5%
5.5%
27.3%
8.1%
13.4%
0.0%
OT-9
OT-8
OT-7
OT-6
OT-5
OT-4
OT-3
OT-2
OT-1

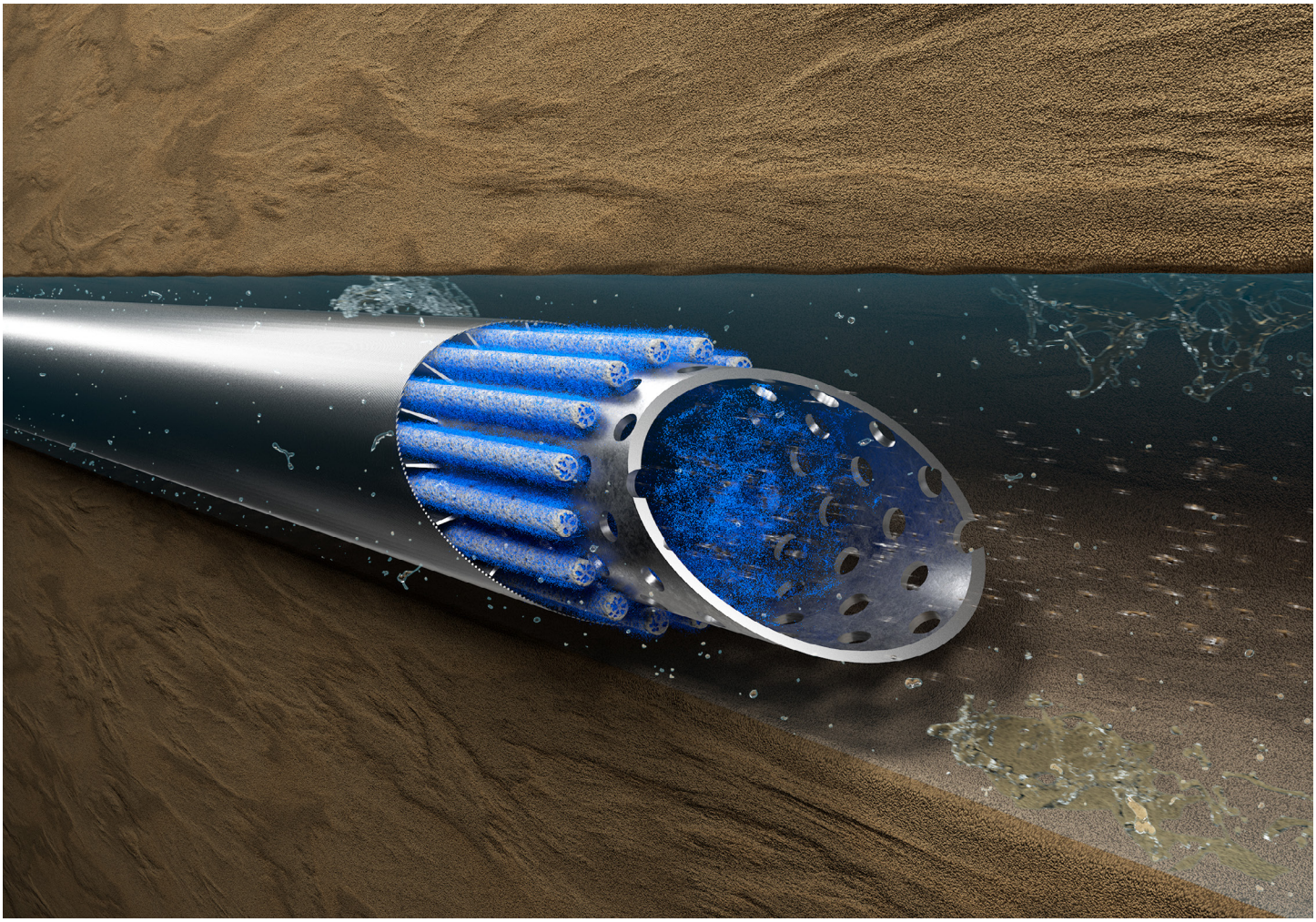
FloTrac: Precision Nanoparticle Tracers for Unmatched Production Flow Performance Insight

At the core of the SoluTrac tracer solution is a portfolio of over 220 FloTrac ultra-high-resolution and ultra-high-temperature nanoparticle tracers. Each tracer is distinctively tagged, non-radioactive and non-hazardous, and formulated with the highest degree of sub-atomic detection accuracy and resolution, enabling exceptional recovery rates and flow mapping capabilities. The nanoparticle tracers are distinguished by small changes to their compositions, which enable precise sub-atomic detection and identification.

And unlike conventional chemical tracers, every FloTrac nanoparticle tracer is compatible with both water and oil, meaning you need only a single tracer composition for both water and oil flow mapping, regardless of the fluid stream, reducing costs considerably.

The FloTrac nanoparticle tracers are released slowly after deployment, then recovered by sampling and analysis, delivering high-resolution flow and production performance data, well beyond the capability of inconclusive liquid tracers. Along with delivering superior flow performance information, the uniquely formulated FloTrac tracers maintain stability in temperatures up to 2,000 deg. F and downhole pressure up to 10,000 psi.





SoluTrac for Section Level Production Flow Profiling at a Fraction of the Cost

The QuantumPro SoluTrac solution features dissolvable rod inserts containing traceable nanoparticles. These inserts are sized and shipped to the well sand screen manufacturer where the rods are arranged in a circular pattern around the inside of the screen. Once deployed, each sand screen is identified by the specific nanoparticle tracer rods it contains and is placed in a designated part of the well section where production flow data is desired.

As production flow passes over the rod inserts, the nanoparticle tracers, coded to match each assigned well section, are slowly released. The rod dissolution time and associated tracer release into production flow is configured by using an appropriate alloy for the rod inserts. Depending on the needs, dissolution times can be configured to last for up to ten months. After release, the tracers are carried to the surface with production for periodic sampling and analysis by QuantumPro experts who pin-point the sources and relative volumes of production flow to total production to deliver a production profile of the well.

With an extensive portfolio of over 220 uniquely coded nanoparticles, the SoluTrac solution supports a wide range of analytical objectives.

SoluTrac™

Dissolvable Inserts for Downhole Tracer Deployments

To learn more about how **SoluTrac™** can remove barriers to discrete production flow performance analysis contact **QuantumPro, Inc.**

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QuantumPro, Inc.