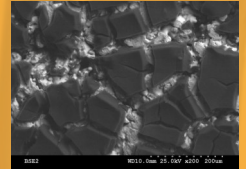
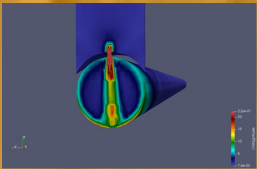


# Research & Development

At Scaled Solutions we run our own R&D programme with support from Scottish Enterprise

## How our services can help you



### Internal R&D Initiatives

Scaled Solutions are currently engaged in a number of exciting activities as part of a large self-funded R&D project supported by Scottish Enterprise award. We are proud to be viewed as one of Scotland's most innovative companies, and have invested in cutting edge equipment and high calibre personnel to help us to reach our R&D goals.

As part of our Research and Development programme we are continually looking at new innovations and capabilities including:

- Pilot rig
- HPHT mineral solubility
- Corrosion under high shear
- CFD modelling of laboratory and field equipment
- Hydrogen sulphide scavenger efficiency
- Asphaltene stability and crude analysis
- Wax precipitation and inhibition
- HPHT Core Flood with live fluids, fine migration
- HPHT Core Flood drilling fluid evaluation
- EOR with dead and live fluids
- Novel analytical techniques
- Fluid placement and scale prediction modelling software

### Bespoke Projects

Scaled Solutions are always engaging with our clients to develop new equipment, test methods and techniques.

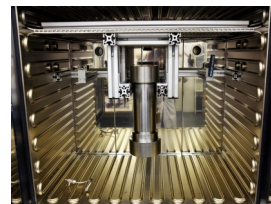


### Chemical Delivery

At Scaled Solutions we have developed a number of ways of understanding and examining the effects of chemical placement and direct injection topsides or down hole.

### HPHT

By designing tests and manufacturing test equipment in-house, that can replicate the extremes of pressure and temperature downhole, chemical testing can be performed under more realistic conditions.



## Key Papers

- Andrew Farrell, Benjamin Martin, Dario Frigo and Gordon Graham, (Scaled Solutions Ltd.); ‘Asphaltenes Risk Assessment and Mitigation– Designing Appropriate Laboratory Tests Protocols’; SPE– 193560
- Neil Goodwin, Paul Hammonds, Gordon Graham (Scaled Solutions Ltd.); ‘Ultra HPHT Mineral Solubility: Reaching True Equilibrium, the Effect of Additional Divalent Cations, and Comparison with Scale prediction Models’; SPE– 193564
- Adam Lever, Amarpreet Kaur, Dario Frigo, Gordon Graham (Scaled Solutions Ltd.); ‘The use of Computational Fluid Dynamics (CFD) to analyse the Applicability of Laboratory Tests to Replicate High-Shear Flow Regimes Under Field-Realistic Conditions’; 30<sup>th</sup> Tekna Oilfield Chemistry Symposium
- Andrew Rafferty, Christine Stewart-Liddon, Caroline Simpson, Paul Hammonds, Phillip Maskell, Gordon Graham (Scaled Solutions Ltd.); ‘Methodology to Evaluate the Performance and Stability of Hydrogen Sulphide Scavengers’; SPE– 193571
- Dario Frigo, Gordon Graham (Scaled Solutions Ltd.); Production Chemistry Issues and Solutions Associated with Chemical EOR’; SPE– 193568

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## Truly Independent Laboratory

At Scaled Solutions, our mission is to be recognised worldwide through our independent specialised laboratories as the leading supplier of bespoke equipment, training, consultancy and provider of solutions to challenges in Production Chemistry, Corrosion and Formation Damage.

We aim to exceed our customers’ expectations and improve our service to our customers on a continual basis through our key values: team work & communication, openness & transparency, continual improvement and trust.

Quality, Integrity, Safety and Excellence

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