

Production Chemistry

Xodus Group's integrated approach to enhancing hydrocarbon production and optimising fluid flow in the well and production system.

Today's oil and gas industry frequently involves exploiting fluids that exist in challenging areas of the reservoir – in high pressure, high temperature conditions for example, or as heavy, viscous oil or from unconventional deposits. Producing these fields requires huge investment which has to be balanced by understanding and managing risk. From field concept through to export and refining, production chemistry plays a part: the more extensive the knowledge of the fluids, the more value can be released from the asset.

This vital understanding of the impact of fluid properties in all stages of process design is key to production chemistry at Xodus.

At Xodus, the focus is on helping clients use chemicals in a cost-effective way to enhance hydrocarbon production and optimise fluid flow in the well and production

system. We work with the client's production operations team to maximise the benefit of process chemicals and to design and monitor chemical interventions such as scale squeezes. It is our view that integrating production chemistry expertise into the client's operations at the earliest opportunity leads to fit-for-purpose, efficient solutions at each stage of the production process.

The broad range of disciplines at Xodus means that production chemistry interacts closely and seamlessly with production assurance, process and subsurface engineers, as well as integrity, safety and environmental disciplines, making sense of the fluids' entire journey from reservoir to customer.

Our experience

Our experience covers subsea, subsurface, topsides and pipelines, the conventional and

the unconventional, from the North Sea and around the world, in both project design and production operations. This broad capability is evident in some of the recent projects delivered by Xodus production chemists:

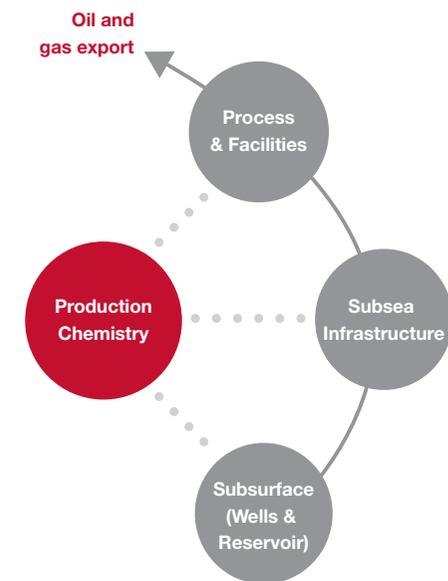
Scale control

- › Modelling scale deposition risks and history matching laboratory core flood analysis to design and optimise scale squeeze applications
- › Effective scale treatment methods including using produced gas as a carrier fluid for the inhibitor; applying scale-squeezes to reservoirs with asphaltene issues.

Wax and asphaltene

- › Modelling the risk of solids deposition and designing inhibitor treatments
- › Pipeline pigging programmes, with fit-for-purpose sampling and solvent washes.

From reservoir to customer, production chemistry plays a major part in process design and production operations.





Sour gas control

- › Treating the cause, not the symptom, with effective and workable biocide programmes
- › Remediation of scale problems associated with chemical scavenger injection
- › Control of hydrogen sulfide (H₂S) in cargo storage tanks. In one project, H₂S levels were reduced from 4500 to 50 ppm.

Production optimisation

- › Monitoring and optimising production chemicals through independent verification of test data
- › Best-in-class work scopes and tender documentation for selecting chemical vendors.

Environmental data acquisition

- › Chemical tracking for PON15D using PonTRAX¹ – the web-based application developed by Xodus
- › Stock management, SCADA and automation options for controlling chemical injection
- › Managing key performance indicators for chemical and process systems.

Integrity management

- › Working with Xodus corrosion / materials engineers to create and benchmark integrity management systems for production and utility systems from subsurface to pipeline

- › Integrated erosion, corrosion, hydrogen-induced cracking (HIC), sulfide-stress cracking (SSC) and microbially induced corrosion into a preventative control matrix for oil and gas systems
- › Evaluating corrosion inhibitor performance following production changes.

Topsides process

- › Hydrate mitigation strategies – measuring the effect of methanol carry-over and selecting the best option for alternatives while minimising the impact on crude value
- › Devising a production strategy to reduce foaming and emulsion problems in separators
- › Identifying calcium naphthenate risk levels and mitigation options
- › Clean-up of produced water for disposal or re-injection.

Water injection

- › Identifying sulphate removal options for seawater injection and alternative approaches to Sulphate Reducing Bacteria (SRB) control
- › Using water analyses to highlight process deficiencies as part of a system optimisation
- › Examining the use of radioactive tracers for reservoir sweep analysis.

Equipment

- › Sizing and selecting chemical injection

Working at the extremes, production chemistry is responding to new challenges.



facilities including equipment material and elastomer selection, tie-in type and location, safety and control feedbacks, product delivery and injection quill selection

- › Storage design and risk assessment of chemicals at production facilities.

What makes us special

The production chemistry service from Xodus draws on the expertise of skilled staff whose backgrounds and experience are complementary. The skills-set covers all aspects of oil and gas production, from

reservoirs and wells to process infrastructure and facilities. We provide a complete account of the impact of fluid flow across the full scope of the project. This is particularly beneficial during the design stages of new projects or in assessing the potential for field redevelopment and asset investment.

Needless to say, our work is independent of hidden drivers such as targeting product sales or third party business interests and of course everything we do is underwritten by Xodus' commitment to quality and reliability.

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