

ADVANCED CARBON MANAGEMENT SOLUTIONS

Leading the Way to Net Zero



CARBON MANAGEMENT SOLUTIONS

Accelerating your Path towards Net Zero

The transition towards renewable energy sources is leading to significant changes in revenue streams and business models. Traditional fluid testing technologies, originally designed for the oil and gas sector, often fall short in meeting the stringent requirements of Cleantech applications like Carbon Management. With the Cleantech market for Net Zero rapidly expanding, operators are increasingly in need of quick and accurate data to minimise project risks and make informed investment decisions.

The unique thermodynamic properties of CO₂ and phase behaviour compared to natural gas present new challenges during operational events such as start-up, shutdown, depressurisation, fluctuating CO₂ supply, and potential leaks. Moreover, impurities will be present in CO₂ at various stages from capture to storage. fluidXlab revolutionises the characterisation of CO₂ with new technology that requires less fluid volumes than traditional methods, reducing time-to-field deployment and ultimately reduce project risk.

LEVERAGING YEARS OF EXPERTISE, fluidXlab SPECIALISES IN COMPREHENSIVE CO₂ MANAGEMENT SOLUTIONS ACROSS THREE KEY AREAS:

CARBON MANAGEMENT

CO₂
GEOLOGICAL
STORAGE

CO₂ ENHANCED
HYDROCARBON
RECOVERY

CO₂ CAPTURE
AND
TRANSPORT

CO₂ GEOLOGICAL STORAGE

Solutions for Integrity and Performance Assessment

Carbon Capture and Storage (CCS) stands as a critical technology in the fight against global warming. However, ensuring the safe and effective implementation of CCS demands meticulous planning and testing. A thorough evaluation of all pertinent factors is crucial for successful deployment.

SERVICES ENSURING SAFE CO₂ GEOLOGICAL STORAGE

FLOW ASSURANCE

- ▮ Solid Precipitation
- ▮ Hydrate Formation
- ▮ Chemical Screening

ROCK-FLUID INTERACTION

- ▮ Contact Angle
- ▮ Gas Adsorption Test
- ▮ Specific Surface Area (BET)
- ▮ Batch Reactor

FLUID CHARACTERISATION

- ▮ Dynamic Viscosity
- ▮ Density
- ▮ Decomposition Test
- ▮ Recombination/Synthesis

SCAL

- ▮ Relative Permeability
- ▮ Capillary Pressure
- ▮ Core Analysis
- ▮ Injectivity test
- ▮ Core Flooding

PETROPHYSICAL PROPERTIES

- ▮ Reservoir Rock Mineralogy, Porosity, Permeability
- ▮ Cap Rock Mineralogy

PHASE BEHAVIOR/COMPATIBILITY

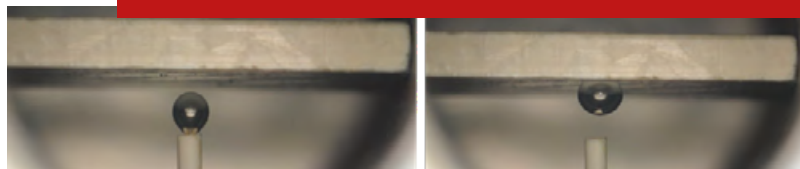
- ▮ Constant Composition Expansion (CCE)
- ▮ Constant Volume Depletion (CVD)
- ▮ Vapor-Liquid Equilibrium (VLE)
- ▮ Diffusion (Gas-Gas, Gas-Liquid)
- ▮ Solubility (CO₂ in Brine, Water in CO₂)
- ▮ Interfacial Tension (IFT)
- ▮ Dispersion Test

CAPROCK INTEGRITY

- ▮ Threshold Pressure

This is where fluidXlab steps in. We offer a comprehensive suite of testing services, including caprock integrity, SCAL (Special Core Analysis Laboratories), rock and fluid interaction assessments, phase behaviour studies, and flow assurance analyses, fluid characterisation and petrophysical properties measurements. Our solutions minimise project risks and maximise the success of your CCS project.

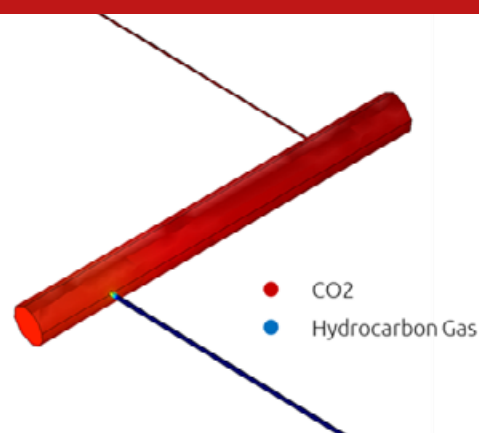
FLUID-FLUID / FLUID-ROCK INTERACTION TEST



Interfacial Tension (IFT)

Contact Angle

GAS DIFFUSION STUDY



CO₂ ENHANCED HYDROCARBON RECOVERY

Unlocking trapped Hydrocarbons while injecting CO₂

fluidXlab is at the forefront of pioneering research, conducting a diverse range of laboratory tests like phase behavior, flow assurance, rock-fluid characterisation, petrophysical properties, fluid properties and SCAL aimed at utilising captured CO₂ for enhanced hydrocarbon recovery. Our cutting-edge experiments involve fluid and gas mixtures, including CO₂, and hydrocarbons, all while adhering to the highest health, safety, and environmental standards. These critical services contribute to maximising the benefits of the recovery process while minimising any potential risks.

DE-RISK CO₂-ENHANCED HYDROCARBON RECOVERY PROJECTS

FLOW ASSURANCE

- ▮ Asphaltene Onset Pressure / Temperature
- ▮ Wax Appearance Temperature
- ▮ Salt precipitation
- ▮ Chemical Screening

ROCK-FLUID INTERACTION

- ▮ Contact Angle
- ▮ Gas Adsorption
- ▮ Specific Surface Area (BET)
- ▮ Batch Reactor

FLUID CHARACTERISATION

- ▮ Composition
- ▮ Density
- ▮ Dynamic Viscosity
- ▮ Recombination/Synthesis

SCAL

- ▮ Relative Permeability
- ▮ Capillary Pressure
- ▮ Core Analysis
- ▮ Injectivity Test
- ▮ Core Flooding

PETROPHYSICAL PROPERTIES

- ▮ Reservoir Rock Mineralogy
- ▮ Cap Rock Mineralogy

PHASE BEHAVIOR/COMPATIBILITY

- ▮ Constant Composition Expansion (CCE)
- ▮ Constant Volume Depletion (CVD)
- ▮ Differential Liberation Expansion (DLE)
- ▮ Swelling and Separator
- ▮ Minimum Miscibility Pressure (MMP) – Slim Tube*/ Rising Tube
- ▮ Multiple Contact
- ▮ Diffusion (Gas- Gas, Gas-Liquid)
- ▮ Solubility (CO₂ in Brine, Water in CO₂)
- ▮ Interfacial Tension (IFT)
- ▮ Dispersion Test

ASPHALTENE ONSET PRESSURE (AOP) DETERMINATION

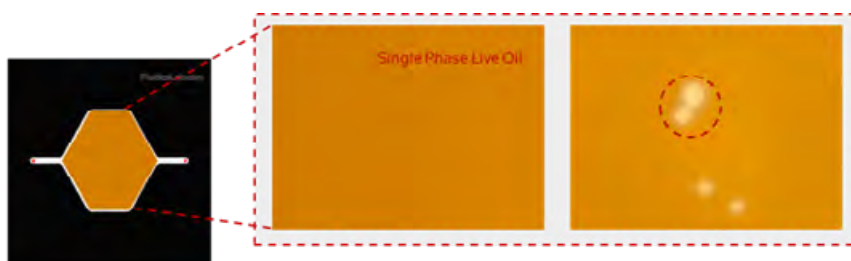


4000 psia

AOP
2080 psia

1790 psia

SATURATION PRESSURE DETERMINATION



CO₂ – HC Gas Condensate Phase Behaviour (CCE Test)

CO₂ CAPTURE & TRANSPORT

Enable Efficient and Safe Operations

In carbon management, capturing CO₂ before its emission and transporting it via pipelines are crucial for optimising this complex process, necessitating thorough studies and analysis. Phase behaviour studies support pipeline design and predict potential issues like hydrate formation, ensuring safe and efficient transport. Corrosion studies guide material selection to prevent leaks and ensure pipeline integrity, safeguarding the environment. Flow assurance analysis guarantees smooth, reliable CO₂ flow by mitigating challenges like pressure drops and wax deposition and fluid properties analysis, which is crucial at every stage of CO₂ transport.

SUPPORTING YOUR CO₂ TRANSPORT AND CAPTURE TECHNOLOGIES

CARBON CAPTURE

Select the optimum liquid or solid adsorbent.

- ▮ Magnetic Suspension Balance (MSB)
- ▮ PVT Cell
- ▮ Wetted wall column and continuous flow system

FLOW ASSURANCE

We ensure smooth, efficient CO₂ flow by analysing potential flow challenges and designing solutions.

- ▮ Solid Precipitation
- ▮ Hydrates Formation Analysis

FLUID CHARACTERISATION

- ▮ Dynamic Viscosity
- ▮ Density
- ▮ Composition
- ▮ Recombination/Synthesis

PHASE BEHAVIOUR

We help you design reliable pipelines by accurately predicting CO₂ behaviour under various conditions.

- ▮ Vapour-Liquid (VL) and Vapour-Liquid-Liquid (VLL) Phase Behaviour with impurities
- ▮ Solubility (CO₂ in Liquid / Liquid in CO₂)

CORROSION STUDIES

We identify the most suitable materials for your pipeline, preventing leaks and environmental damage.

- ▮ Pipe Material Studies

DEW POINT MEASUREMENT



Partnering with fluidXlab enables you to confidently address the complexities of CO₂ transportation, paving the way for a cleaner and more sustainable future

CONTACT US TODAY

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LOOKING FOR A PARTNER WHO'LL MAKE A DIFFERENCE?

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