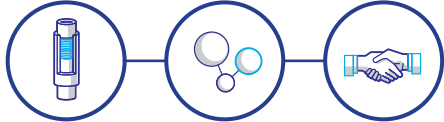


# CARBON CAPTURE

APPLICATIONS



CONNECTIONS

MATERIALS

SOLUTIONS



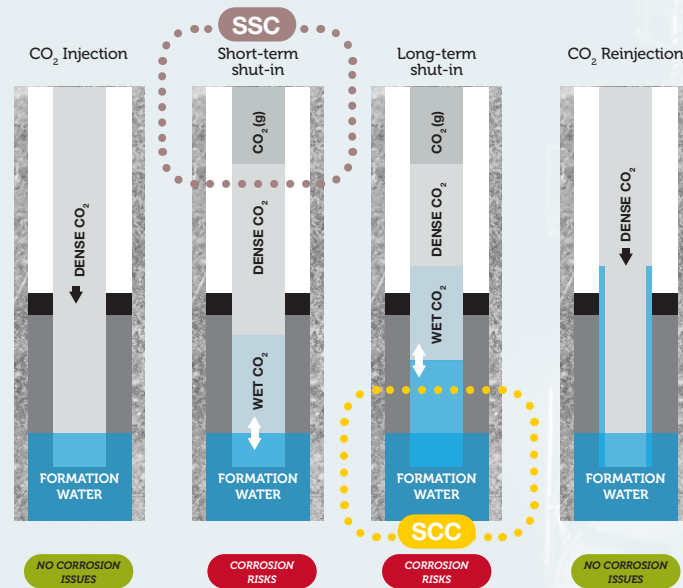
Your challenges,  
**OUR**  
SOLUTIONS

STORAGE  
TRANSPORTATION

# OUR ANSWER IS A VERY COMPETITIVE RANGE OF TUBULAR SOLUTIONS FOR EVERY ENVIRONMENT

Using our extensive Oil & Gas expertise, we can offer Carbon Capture Utilization and Storage (CCUS) operators the right tools to overcome extreme temperature, high pressure and corrosion challenges.

## YOUR CO<sub>2</sub> STORAGE CHALLENGES



**Sulfide Stress Cracking (SSC)** is due to the condensed water on the pipe walls and wellheads resulting from long or short shut-in conditions.

Mixing CO<sub>2</sub> stream and brine at the bottom results in localized corrosion, uniform corrosion and **Stress Corrosion Cracking (SCC)** risk.

**Very low temperatures** can jeopardize material toughness.

## YOUR CO<sub>2</sub> TRANSPORTATION CHALLENGES

**Preventing corrosion and managing pressure** are two major challenges to the integrity of the pipelines and the long-term success of CO<sub>2</sub> transportation.



**CO<sub>2</sub> Corrosion** - H<sub>2</sub>O and impurities (H<sub>2</sub>S, NO<sub>2</sub>, SO<sub>2</sub>, O<sub>2</sub>) affect the fatigue behavior.

**Hydrogen Induced Cracking (HIC)** is more prevalent in sour service environments due to wet H<sub>2</sub>S.

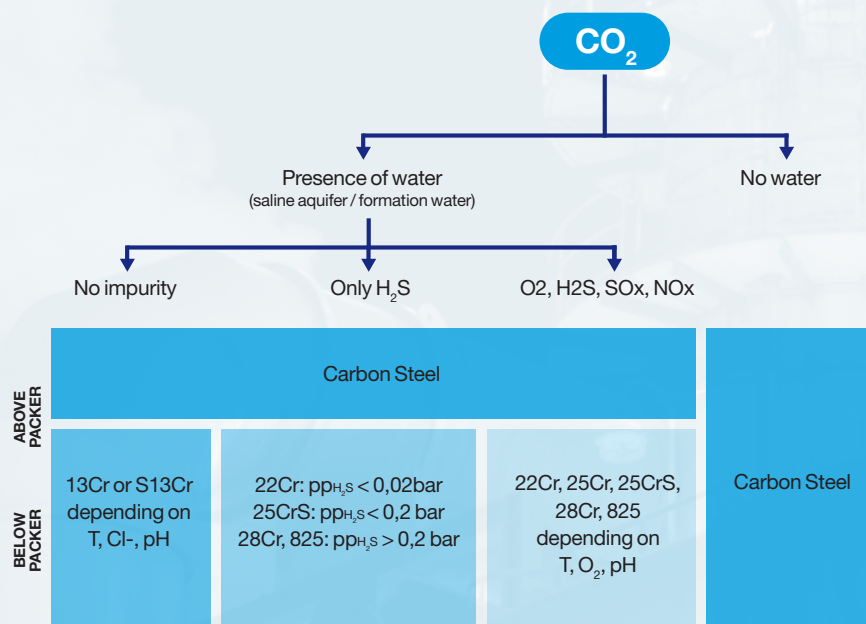
**Pressure – Running Ductile Fracture (RDF) propagation** is a unique fracture mode in high-pressure gas pipelines.



CO<sub>2</sub> cloud from a rupture test performed at DNV GL Spade Adam / Image: DNV GL

## OUR CO<sub>2</sub> STORAGE SOLUTIONS

### MATERIAL SELECTION FOR CCUS CORROSION



### VAM® CONNECTIONS QUALIFICATIONS



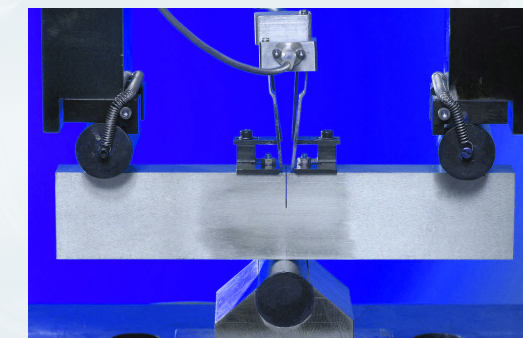
Vallourec's comprehensive tests have proven that VAM® connections can withstand the conditions required for carbon capture storage while keeping full tightness and integrity.

## OUR CO<sub>2</sub> TRANSPORTATION SOLUTIONS

### MATERIAL SELECTION

Vallourec offers a range of seamless tubular products to help operators address these challenges and avoid leakage or a blow-out.

Our material expertise enables us to provide the right grades with optimized mechanical properties and weldability.



Our Research & Development teams conduct **Crack Tip Opening Displacement (CTOD)** tests to characterize crack propagation risk.



### WELDED CONNECTIONS

Operators require tightly sealed tubular solutions to ensure the safe transfer of CO<sub>2</sub> from storage stations into underground wells. Vallourec's line pipes are welded together by our subsidiary Serimax.

Serimax has the welding equipment and know-how for your carbon capture utilization and storage projects. Since 1978, Serimax has been offering versatile, quality welding services worldwide. [contact@serimax.com](mailto:contact@serimax.com)

Serimax is one of the very few worldwide to excel in **orbital low hydrogen welding**.



# OUR SOLUTIONS IN ACTION



Scan the QR Code to download our solutions paper

**CARBON CAPTURE UTILIZATION & STORAGE**

**SOLUTIONS PAPER**

BY LEILA FARAMARZI  
CCUS Director

About Leila Faramarzi  
Leila Faramarzi joined Vallourec's Energy Transition Department in 2020. As CCUS Director, she heads Vallourec's strategy in projects, market and business development for CCUS. She holds a PhD in Carbon Capture from the Technical University of Denmark (DTU). Leila has 10 years of international experience in CCUS including her most recent experience at Equinor (formerly Statoil) in Norway.

**vallourec**

Vallourec has partnered with **SINTEF Energy Research**, a renowned Norwegian Research and Development Organization with profound expertise in thermodynamics and the phase behavior of CO<sub>2</sub>, to gain the insight that will help ensure the safety and reliability of VAM® connections for CCUS projects.

**Scan the QR code to learn more.**



## VALLOUREC'S ROLE IN THE SAFE DEPLOYMENT OF CCUS INFRASTRUCTURES

Learn more about how Vallourec's expertise, products and services benefit the CCUS market.

**World Oil®**



View the webcast on demand.



## NEED MORE INFORMATION?

Information is available online on [solutions.vallourec.com](https://solutions.vallourec.com) or by scanning the following QR code.



[solutions.vallourec.com](https://solutions.vallourec.com)

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