Risk Free Carbon Capture and Storage (CCS) monitoring

CO_2 tracers prove reservoir storage integrity or reveal source of storage leak

Objective

Carbon Capture and Storage primarily focuses on storage in depleted oil and gas fields. It is estimated that the global storage capacity for CO_2 in such fields are 300 Gt, which is a significant contributor to reducing human induced emissions. CO_2 can be injected for storage only, but also used for pressure support and miscible flooding. Either way, it is important to monitor the CO_2 remains underground and does not leak to the environment and can best be achieved by the use of tracer technology.

Solution

RESMAN tracers and methodologies are compatible with CO_2 – and at the same time, unique and distinguishable from the CO_2 itself or other molecules present in the sub-surface. Using RESMAN methodologies, extremely low detectability of tracer is possible. Therefore, a small tracer amount is sufficient to monitor large scale sub-surface flow patterns. For this reason, RESMAN's tracer methodology is well-suited to monitor the storage condition and possible movements of CO_2 in CCS projects. RESMAN tracers can therefore support CCS projects by acting as assurance that CO_2 is contained in the desired sub-surface location.

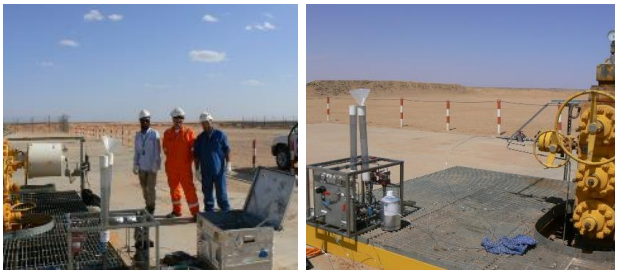

Fig. 1 – On site In Salah: RESMAN's injected CCS tracers to monitor CO_2 movement from CCS injectors.

RESMAN tracer technology is founded on unique chemical tracers, safe enough that they are approved for medical usage and satisfying environmental protocols in Norway, Europe and many jurisdictions world-wide. RESMAN tracer technology requires minimal amounts of tracers to be injected to detect down to parts-per-trillion (ppt) for decisive detection. A full storage project surveillance can thus be achieved by usage of kilograms of tracer, rather than tonnes.

Applications

In the past, our technology has been used to monitor and study movements in CCS projects in Algeria (Mathieson et al., 2011), in the Netherlands (Vandeweijer et al., 2011) as well as in Norway (Snøhvit).

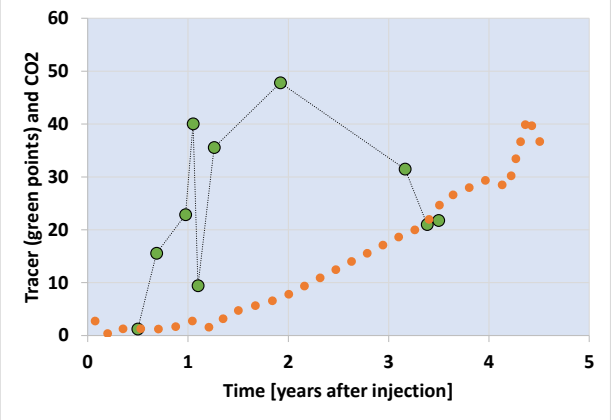

Fig. 2 – Tracer data (points) and CO2 as function of time in observation wells in the K12-B project, where RESMAN's CO_2 tracers were first piloted. (Data reproduced from Vanderweijer et al., 2011 - Energy Procedia 4:5471-5478).

References

Mathieson et al. "In Salah CO_2 Storage JIP: CO_2 sequestration monitoring and verification technologies applied at Krechba, Algeria", Energy Procedia 4, (2011) pp3596-3603

Vandeweijer et al. "Monitoring the CO_2 injection site: K12B", Energy Procedia 4, (2011) pp5471–5478

HQ +47 925 64 070 • Norway/EU +47 976 35 227 • UK/Africa +44 78 99 763 463 • Russia/CIS +7 977 956 48 43
M. East + +971 561154107 • Far East Asia +60 122 412 056 • Americas +1-504-239-7705
info@resman.no • www.resman.no