

Expro Excellence Expertise in Well Flow Management solves challenge on major environmental project

Well Flow Management



Objectives and background

- A multinational energy company in Australasia is operating a Carbon Capture and Storage (CCS) project and had encountered injectivity challenges on pressure support wells that were integral to the success of the project
- Fluids were being pumped via an Electro Submersible Pump (ESP) installed in a CO₂ storage formation to an adjacent pressure support well in order to regulate the pressure in the storage formation. The fluids contained unexpected fine solids which resulted in a loss of permeability in the pressure support well, limiting the customer's ability to sequester CO₂ into the storage formation
- Design parameters required processing of 40,000 bpd of corrosive water or fluids, at temperatures up to 120°C and pressures up to 1,315psi across two separate sites
- A solution was required for implementation with expedited delivery to support in meeting the customers intended target
- Additional ultra-fine hydrocyclone units capable of removing in-line solids further down to 3 microns were also deployed to the project as contingency for even finer solids removal; or to maximize the lifespan of second-stage filter elements
- Expro's ultra-fine solids-removal systems allowed our customer to achieve their objectives with an immediate increase in the injection rate of the fluids into the pressure support well

Value to the client

- Expro's solution enabled the customer to steadily sequester large volumes of CO₂ to minimize the environmental impact of their overall field production
- These packages also provide the customer with opportunity to gather valuable reservoir/production data which can be utilized to optimize the design of the overall CCS project plan
- Within six months of being approached with the challenge; Expro had designed, constructed and mobilized the first solids-removal package to the job site, commencing operations in March 2021. The second package was operational only two months later
- This project has been operated and maintained with the ethos of "keeping it safe" which has translated to:
 - o Zero HSE incidents
 - o Zero hours of Non-Productive Time (NPT) and minimal downtime to the customer
 - o Over 40,000 man hours spent on the project to date, allowing for maximum utilization of the CCS facilities
- Expro is proud to be applying its 50 years of Well Flow Management expertise onto many new global initiatives to protect our environment: enabling CO₂ sequestration in conventional energy production, and also supporting development of new alternative energy sources for the future. CCS is critical to a lower carbon future and essential to achieving the net zero goals of the Paris Agreement

Expro Excellence

- Expro's team of Well Flow Management experts were consulted to provide a bespoke, ultra-fine solids removal solution allowing no particles above 5 microns in size to pass (for comparison: human red blood cells are ~7µm), whilst minimizing pressure loss across the system;
- Expro selected each package with two stages of solids filtration:
 - o Stage 1 consists of x2 hydrocyclones in parallel, removing solids down to 10 microns in size; each rated to 100% flowrate capacity, yet configured with differing range efficiencies - to maximize separation efficiency across the entire range of flowrates during production
 - o Stage 2 consists of x2 filtration units in parallel allowing pass-through of particles 5 microns in size (absolute). Configured in a duty/standby arrangement, each are rated to 100% flowrate capacity

Safety



Environment



Contact

For further information please contact:
welflowmanagement@expro.com
 or visit
expro.com/welflowmanagement