

Massive Asian gas reservoir overcomes high flow rate and corrosive CO₂ challenges

The solution cleaned up 100 MMcf/d of gas from drilling fluids, eliminated the operator's difficulty in meeting fluid acceptance criteria, and helped swiftly move the well from development to production in a field with nearly 20 Tcf of proven reserves.

The objective

The operator at a large Asian gas field was faced with the challenge of processing a complex fluid with high CO_2 content being produced at flow rates exceeding 100 MMcf/d. The wells were in a remote location, more than 3,000 km from the nearest land base. The company had set a high bar for production goals to meet the country's gas demand and required a fit-for-purpose fluid preconditioning package to achieve those objectives with safety being a major consideration in the design.

Given the remote location of the field, with a target mobilization of two weeks, there was no room for error, requiring flawless deployment of the requested package. Detailed planning was necessary to ensure compliance with the operator's production targets. Logistics had to be arranged and suppliers managed to deliver a solution securely and efficiently.



A separator and a custom-designed choke manifold were used to withstand the harsh fluid conditions.

The solution

Production ExPRESS* rapid production response solutions offered the type of fluid preconditioning services needed by the operator. By combining advanced surface well test equipment, customization, and domain expertise, Production ExPRESS solutions enable more sustainable, fit-for-purpose preconditioning solutions to ensure processed fluids meet the operator's strictest acceptance criteria. Using the latest technologies, produced fluids are collected, separated, and treated in the most efficient manner possible—generating earlier returns and saving considerable opex.

The Production ExPRESS solutions team designed a customized fluid preconditioning package specifically for the project using surface well test equipment with advanced safety features while also considering the rig's limited deck space. The customized package had all the requirements needed to face the complexity of ultrahigh flow rates while also withstanding the harshness of CO_2 .

The package included a specially designed 7½ in flow tee with a custom-built high-capacity double-block sand filter. A SIL 2-rated electrical emergency shutdown system was included to secure the process in case of emergency. This was integrated with a blowdown assembly, reducing the exposure of the crew to highly pressurized equipment.

The results

The solution permitted the cleanup of 100 MMcf/d of gas from drilling fluids, enabling the gas to be captured and prepared for production. The CO_2 level of 10% to 12%. was managed in a way that did not cause any safety issues. The solution eliminated the facility's difficulty in meeting fluid acceptance criteria, achieving the operator's objective of delivering production from the country's premier natural gas reserve without hindrance.



Case study: Freeing up a massive gas reservoir, Asia

The fluid preconditioning operation exhibited remarkable agility by swiftly advancing the well from the development to the production phase, enabling the rig to quickly proceed to the next well in the block.

The project was delivered in a timely manner despite all the design complexities. Collaboration with several teams ensured that all the requirements were met, leading to a successful first well in 2018. Since then, SLB prepared 10 more wells with each producing approximately 80 MMcf/d of gas. The high-flow-rate cleanup solution enabled the operator to access nearly 20 Tcf of proven reserves in the natural gas reservoir.

SLB continued to exceed operator expectations throughout the campaign with continuous design improvements, setting a high bar for outstanding service delivery.



A separator, steam exchanger, and choke manifold were tested predeployment.



A sand filter was customized for the project in a larger size to handle high gas flow rates.



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