

**Developer:**

ProSep is a technology-focused process solutions provider to the upstream oil and gas industry. The company designs, develops, manufactures and commercialises technologies to separate oil, water and gas generated by oil and gas production.

**Technology:**

ProSep's Osorb media is a superior water treatment technology that selectively removes hydrocarbons from water and has the ability to be regenerated in-situ and reused without a loss in efficiency.

**Background:**

In 2015, ITF coordinated its first truly collaborative JIP between two Middle East NOCs, Qatar Petroleum (QP) and Petroleum Development Oman (PDO), and oil, gas and water treatment specialist ProSep, to develop an offshore-capable, oil-in-water removal and media regeneration package.

The JIP focused on enhancing and proving the regeneration and reuse of the media under real world situations.

**Challenge:**

With constantly increasing water cuts and utilisation of EOR techniques leading to an annual rise in the global volume of produced water, the management of produced water to maintain environmental protection and economic efficiency is one of the oil and gas industry's greatest challenges.

The ability to minimise these costs and maximise water reuse remains a high priority concern for operators aiming to optimise recovery from reservoirs, extend field life, and meet stringent environmental targets.

One of the largest technical challenge hurdles for Osorb, however, is the regeneration cycle. The regeneration of the media has been completed but key information related to it still requires collection from field operations.

**Action:**

Both QP and PDO cited similar requirements to treat difficult produced water streams. QP was seeking to replace current water treatment technologies with one that could reduce the amount of waste generated, utilities required, and size of systems. While PDO was searching for a technology that was suitable for treating the produced water generated



during chemical enhanced oil recovery (CEOR) in operations such as polymer floods and alkali surfactant polymer (ASP) floods.

ProSep has now concluded the final stage of its ITF-led JIP with QP, PDO and other JIP members. A field trial commenced in July 2016 and an Osorb system was designed, engineered, and built to complete the testing at PDO's Marmul water treatment plant.

The Osorb system was installed to treat the water coming into the plant, directly from the production separators. A small slip stream of the produced water was treated for nine hours each day. Samples of the inlet and outlet produced water were collected twice each day and analysed in the PDO laboratories at Marmul.

The data gathered in the trial is now being used to optimise the design and system process to reduce capital costs as well as the operation costs for owning an Osorb system. Furthermore, the skid that is currently being used will be available for further testing should additional process flows be identified.

**Result:**

The field trials have produced a significant amount of information from several water treatment and regeneration cycles. Data is currently being analysed to verify the water treatment capabilities, validate prediction models, and identify means to optimise the system moving forward.

The JIP will culminate with the integration of a commercial unit into a customer produced water stream for extended trials. It is anticipated this technology will offer significant benefits to global operators for the treatment of produced water for reinjection or discharge.

**Quote:**

Ryan McPherson, General Manager, Middle East for ProSep said:

*"This ITF-led project represents a significant step in the evolution and development of Osorb media. To be part of a JIP with two national oil companies in the Middle East has been a tremendous experience, with all parties truly collaborating towards a shared goal. The ability to regenerate the media in-situ is fundamental to full-scale technology implementation. The field trial will enable ProSep to create a regeneration process that is both economically and operationally practical for operators."*

Wail Saif Salim Al-Harrasi, Corporate Technology Advisor at PDO, added:



*“This JIP is of great importance to PDO as it has the potential to resolve some of the challenges associated with EOR activities, such as de-oiling of polymer contaminated water and enabling the reuse of spent polymer, which in turn reduces the overall cost of EOR.”*

ENDS