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## **STATOIL SELECTS SEAWATER SULFATE REMOVAL SYSTEM DESIGNED BY SUEZ AND HALVORSEN TEC FOR THE JOHAN CASTBERG PROJECT IN NORWAY**

- ***Contract Comes on the Heels of a One-Year Engineering Study and SRU Design by SUEZ and Halvorsen TEC for the Barents Sea Project***
- ***SRU Design to Feature SUEZ's Seawater Sulfate Reducing Nanofiltration Membranes and ZeeWeed\* 700B Horizontal Ultrafiltration System***

**After completing an engineering and design study for a seawater sulfate removal unit (SRU) system to help protect production wells for its Johan Castberg project in Norway, Statoil awarded a consortium, led by SUEZ and Halvorsen TEC, the contract to supply the equipment and complete the project.**

SUEZ will supply its seawater sulfate-reducing nanofiltration membranes and ZeeWeed\* 700B horizontal ultrafiltration system for the Johan Castberg (formerly Skrugard) project located about 100 kilometers north of the Snøhvit field in the Barents Sea. The equipment is expected to be delivered in the beginning of 2020, while the first oil is expected to be produced in 2022.

Signing of the equipment contract follows a year-long front-end engineering design (FEED) program, where SUEZ and Halvorsen TEC demonstrated the feasibility of the technology and associated expertise to meet project needs.

“Working jointly with Halvorsen TEC last year on the FEED study enabled us to really showcase how well this technology would work for them and how we can engineer the design to meet their specific requirements,” said Matt Boczkowski, director of marketing and growth initiative for SUEZ. “Sulfate removal is vital in the protection of production wells and for preventing barium and strontium scale. We are very happy to have our technology a part of the process.”

The SRU will allow Statoil to inject seawater at less than 20 parts per million of sulfate content and less than 20 parts per billion of oxygen. The SRU's injection capacity will be 1,188 cubic meters per hour. The SUEZ-Halvorsen TEC SRU package will include:

- SUEZ's seawater sulfate reducing nanofiltration membranes, which eliminate nearly all sulfates from the injection seawater, remove divalent ions from the seawater to prevent barium and calcium scale formation while leaving monovalent ions like sodium and chloride to pass through the membranes.

- SUEZ's ZeeWeed 700B horizontal ultrafiltration system, which has been widely adopted in the desalination industry and provides superior fine solids removal.
- Deoxygenation membrane technology from 3M.
- Full single-lift SRU.

The SRU will be installed on a floating production, storage and offloading (FPSO) vessel. During production, seawater is injected into oil reservoirs to maintain or enhance oil production. However, because low-quality injection water can cause scale and corrosion that will plug and sour the field, operators first process the seawater.

In addition to the core technologies, SUEZ also is providing the process guarantee for the entire unit, which is OnBoard\* and InSight\* ready. The latter are a service offer and digital technologies currently deployed on more than 40,000 assets globally. This technology and service combines advanced data and analytics to help operators make better business decisions, eliminate unplanned downtime and reduce operating costs. The implementation of this service will be evaluated closer to the start-up date.

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**About SUEZ**

*With 90,000 people on the five continents, SUEZ is a world leader in smart and sustainable resource management. We provide water and waste management solutions that enable cities and industries to optimize their resource management and strengthen their environmental and economic performances, in line with regulatory standards. To meet increasing demands to overcome resource quality and scarcity challenges, SUEZ is fully engaged in the resource revolution. With the full potential of digital technologies and innovative solutions, the Group recovers 17 million tons of waste a year, produces 3.9 million tons of secondary raw materials and 7 TWh of local renewable energy. It also secures water resources, delivering wastewater treatment services to 58 million people and reusing 882 million m<sup>3</sup> of wastewater. SUEZ generated total revenues of 15.9 billion euros in 2017.*

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