

Enerflex in action

Centralized Processing Facilities: Sustainable Solutions Flowing Together

Our client partner required a centralized processing facility to gather and treat a gross inlet flow of 170,000 BPD (barrels per day) to accommodate growth found in their small and medium fields. The facility required 150,000 BPD water treatment capacity, 38,000 BPD emulsion oil export with a maximum of 10% BS&W, and 9,200 standard m3/day associated gas handling. This involved implementing on-plot facilities including a gross handling system, water treatment, and water injection solutions to provide water for injection back into the fields. Environmental stewardship was a priority in the design of the gathering station, ensuring zero routine flaring of harmful gases and efficient wastewater management for reuse in injection activities. The project was to be contracted under a DBOOM (Design, Build, Own, Operate, Maintain) basis, inclusive of an operation and maintenance contract.

Solution

Gross inlet fluid (a mixture of oil, water, and associated gas) enters the facility through an inlet manifold and is routed to Enerflex's Separon® Desanding Hydrocyclone to separate bulk solids. Fluid from the desander is then sent to Enerflex's patented Enhanced Gas Flotation Tank (EGFT®) for the separation of oil, water, and associated gas. The EGFT replaces multiple pieces of primary and secondary treatment equipment within a single tank, eliminating the need of a FWKO (Free Water Knock Out) along with multiple trains of CPI's (Corrugated Plate Interceptor), IGF's (Induced Gas Flotation), and their associated pumps, valves, and instrumentation. With a required OIW (oil-in-water) outlet of <50 ppm and TSS (total suspended solids) <20 ppm, the treated water from the EGFT is sent to a water injection pump for re-injection, reservoir pressure maintenance, or disposal. The EGFT is designed to reduce BS&W (Basic Sediment and Water) below 20%. Emulsion from the skim oil chamber is then pumped from the EGFT to a coalescer vessel to reduce to 10% BS&W before being exported for further treatment. The released gas from the EGFT is routed to the Vapour Recovery Unit (VRU) where it is compressed and converted to power in the power generation unit enabling zero routine flaring. This project aligns with our client's commitment to Net Zero Emissions by 2050 and the World Bank's Zero Routine Flaring by 2030 initiative. The facility was completed in 17.5 months from contract to operations and is poised to contribute significantly to Oman's diversified and sustainable economy.



Outcome

Enerflex has designed a facility that achieves an average OIW outlet of 26 ppm from an inlet of 20% OIW. This project attained both foreign investment and In-Country Value (ICV), providing sustainable growth to our client's core oil and gas business while reducing costs and emissions. It was completed safely and in record time, with 1.9 million LTI-free man hours worked. Implementing our EGFT solution resulted in a water treatment footprint of 40,000 m^2 compared to 138,000 m^2 as seen in traditional EPC solutions based on FWKO's, CPI, and IGF trains. This reduction in space, steel tonnage, and major equipment, decreased the tonnes of CO_2e during build and construction by 40% compared to traditional facility designs. Operational benefits include an estimated 30% reduction in on-going power consumption and 30% less chemicals consumed. Our pioneering approach not only maximizes oil recovery but also sets new standards for sustainable practices in the oil and gas industry.



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