



CASE STUDY: INNOVATIVE MODULAR SOLUTION FOR PRODUCED WATER

Produced Water Treatment (PWT) Package

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Project Overview

CECO successfully completed **Produced Water Treatment (PWT) Package**, supporting the operational requirements of **Abu Dhabi's prestigious oil & gas company**. The project involved the delivery of a high-capacity produced water treatment system engineered to handle **105,000 STBPD**, while adhering to stringent space, modularization, and execution constraints.

The PWT package was developed as a **multi-skid modular system**, requiring close coordination across process, piping, structural, layout, and mechanical disciplines. The design objective was to achieve optimal process performance while ensuring constructability, operability, and long-term maintainability within a restricted plot footprint.

Project at a Glance

- **Process:** Produced Water Treatment (PWT)
- **Capacity:** 105,000 STBPD (Stock Tank Barrels per Day)
- **Plot Size:** 30m × 14.2m
- **Skids:** 7 modular skids
- **Structural Steel:** ~127 MT
- **Piping Volume:** ~20,300 Inch Diameter

Engineering & Execution Challenges

The project presented several technical and execution challenges driven by high capacity requirements and compact modular design:

1. High Number of Inter-Skid Interfaces

With seven modular skids, interface management was critical to ensure alignment, connectivity, and system integrity during fabrication and site installation.

2. Dense Piping and Equipment Layout

Approximately 20,300 Inch Diameter of piping had to be routed efficiently within a limited plot area while maintaining accessibility for operations and maintenance.

3. Heavy Equipment and Structural Loads

The package incorporated significant equipment weights and structural steel tonnage, requiring careful load distribution and skid design optimization.

4. Logistics and Installation Constraints

Modularization had to support fabrication sequencing, transportation, and rapid site installation without compromising safety or performance.

CECO's Solution

CECO adopted a **modular skid-based execution strategy**, enabling parallel fabrication, improved quality control, and reduced site installation risks. Advanced 3D modeling and multi-disciplinary design reviews were used to manage congestion, inter-skid interfaces, and accessibility requirements. The modular philosophy ensured that process efficiency, reliability, and safety were fully integrated into the compact layout.

Project Outcome

The successful delivery of the Produced Water Treatment package demonstrates CECO's capability to execute **complex, high-throughput water treatment systems for demanding oil & gas applications**. The project highlights CECO's strength in balancing capacity, compact design, and execution certainty—delivering a reliable modular solution that meets both project and operational objectives.

