

HORIZONTAL DIRECT-FIRED OIL TREATER FOR GOM-WEST DELTA

BACKGROUND INFORMATION

Delta Compression and Equipment provided a custom-engineered solution for an offshore oil producer in the West Delta area of the Gulf of Mexico. The project centered around designing, manufacturing, and delivering a 10,000 BPD Horizontal Direct-Fired Oil Treater tailored to the offshore facility's stringent requirements.

Managing offshore oil and gas production facilities in the GOM demands reliable and efficient process equipment to handle complex fluid separation. The producer's facility needed an upgraded oil treater to address operational inefficiencies and ensure compliance with stringent environmental and safety standards.

The challenging offshore environment required a solution capable of handling high volumes of three-phase fluid mixtures, while minimizing downtime and environmental impact. Delta Compression and Equipment was selected for their expertise in delivering tailored process equipment solutions.

PROBLEM STATEMENT

In June 2024, the customer received notice to cease production at the site due to a shut-in of midstream infrastructure not owned by the customer. To resolve the challenges faced at the West Delta field, the customer agreed to acquire the necessary midstream facilities. The acquisition allowed the company to restore pipeline service, but it also required increased liquids handling to process additional fluids. This drove the need for a larger oil treater to manage the increased volume. The operator faced a critical challenge to install the required equipment before the midstream sale closure and resume production, as reported to financial stakeholders. Various options were considered, including refurbishing old equipment or building a new vessel. After evaluating differences in cost, time, and labor, the customer elected to purchase a new vessel from a fabricator that could deliver within the desired 12-week timeframe.

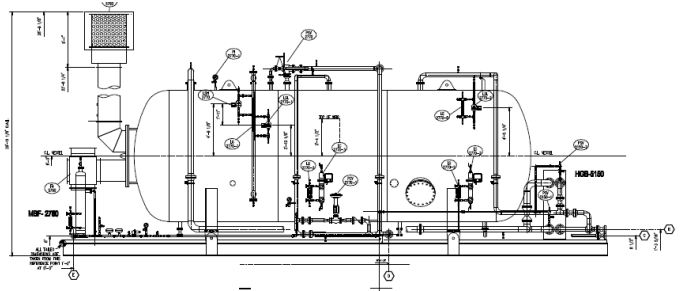
OBJECTIVES

Delta Compression and Equipment provided a custom-engineered solution for the West Delta facility to enhance oil treating efficiency and reliability. The project centered around designing, manufacturing, and delivering a 10,000

BPD Horizontal Direct-Fired Oil Treater tailored to the offshore facility's stringent requirements

The heater treater's design followed specifications outlined in the detailed datasheet included:

- **Type:** Horizontal oil treater with elliptical heads and a 12' OD x 30' S/S size.
- **Operating Pressure:** 75 psig at design temperature with corrosion allowance of 1/8" on all surfaces.
- **Internals:** Included inlet shroud, vane mist eliminator, vortex breakers, and a three-phase separator for optimal phase separation.
- **Safety Features:** Designed to ASME Section VIII, Division 1 standards and compliant with API RP 14C offshore operations safety requirements. Fully equipped with pressure relief valves, level safety shutdowns, and other critical instrumentation.
- **Skid Features:** Packaged as a self-contained skid with an integrated heat exchanger to minimize firetube duty and facilitate rapid installation on-site.



Project Goals

- Follow customer-provided specifications in full compliance with API RP 14C offshore operations safety requirements.
- Minimize environmental impact and comply with ASME Section VIII, Div. 1 standards.
- Utilize a fabricator-led design and engineering process to deliver a skid-mounted, self-contained solution within 12 weeks for ease of installation.
- Ensure robust performance under offshore conditions with high reliability.
- Deliver a skid-mounted, self-contained solution for ease of installation.

SOLUTION AND APPROACH

Innovative Features:

- **Burner System:** Equipped with dual burners for clean combustion and low NOx emissions.

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- **Integrated Heat Exchanger:** Plate and frame heat exchanger preheats the inlet stream using hot treated oil, reducing firetube duty.



- **Skid-Mounted Design:** The self-contained skid includes all necessary piping, instrumentation, and a control panel for plug-and-play deployment.



- **Roller Design for Maintenance Efficiency:** During the fabrication an engineered roller system was installed to enhance maintenance efficiency. This custom-designed roller assembly allows for the seamless removal of the burner system during maintenance or turnaround activities. By integrating this feature, the team reduced the time and effort required for routine inspections and repairs, ensuring minimal downtime and improved operational reliability.



RESULTS

- **Performance:** The oil treater met performance guarantees for oil retention time (60 minutes) and water retention time (30 minutes) with efficient phase separation.
- **Ease of Installation:** The modular skid reduced installation time and complexity.
- **Environmental Compliance:** The system's clean combustion and robust design minimized environmental impact and met offshore regulatory standards.

CONCLUSION

Delta Compression and Equipment successfully delivered a high-performance oil treater tailored to the demands of offshore operation. The solution exemplifies the company's commitment to innovation, quality, and customer satisfaction.

