

Raychem Heat Management Solutions Provide Critical Operational Reliability for Refinery Converting Animal Waste Feedstock into Renewable Diesel



PROJECT DETAILS



Applications:
• Longline Heating



Location:
Port Arthur, Texas



Contract Scope:
Engineering, product supply, Commissioning and Start Up



Technology:

- Raychem Skin-Effect Longline Tracing (STS)
- Fiber-optic distributed temperature sensing systems (DTS)
- RAYCHEM Pipeline Supervisor (RPS)



Date:
2023

KEY CHALLENGES

Two major renewable producers in Port Arthur, Texas have partnered on a challenging project to deliver chicken fat as feedstock to a rail unloading facility, then through an underground line into the refinery. The underground line would be buried at depths ranging from 6 to 100 feet. Chicken fat and used cooking oil are two of the feedstocks being utilized in the refinery to produce renewable diesel. Routing this feedstock into the refinery involves the design of a one-mile-long heated underground pipeline. The owners of this project had significant civil and mechanical challenges designing and planning for the construction of an underground heated line to deliver chicken fat from the rail terminal to the refinery. The chicken fat and oil has to be maintained at a process temperature of 120°F (50°C) to keep them in liquid form.

The customer's mission critical objectives for the heat management solution include finding the optimal system design for this project that would keep critical processes running and manage the engineering and contractor challenges for construction, installation and future reliable operation of this underground heated line.

SOLUTION

Raychem engineers engaged our Strategic Applications Group (SAG Team) who specialize in longline heated pipeline applications where power distribution is limited in supply. The SAG team determined that a Skin-effect longline tracing system (STS) was the ideal solution for this project due to the fact that we could bundle technologies for optimum heat management system performance, such as:

- Pre-insulated/pre-fabricated piping systems that offer superior thermal insulation reliability and underground integrity by providing a homogenous temperature profile for the entire length of the pipeline
- Fiber-optic distributed temperature sensing systems (DTS) to measure the temperature of the underground pipeline every meter along its underground routing
- Raychem Pipeline Supervisor (RPS) predictive analytics software for comprehensive control and to safely manage temperature-critical pipelines
- Power distribution solution at one end of the pipeline

Process temperature maintenance of this key feedstock line was completed using directional drilling to install a one-mile-long, pre-insulated, STS heated, underground pipeline with the temperature being maintained at 120°F (50°C). The pipeline temperature is being monitored every meter along this pipeline using distributive temperature sensing technology. (DTS-Fiber optic). Raychem Pipeline Supervisor is ensuring feedstock flow assurance by monitoring the entire pipeline and providing the data required by operations to ensure this underground line is functioning as designed.

PROJECT FACTS

To meet the mission critical needs of this refinery conversion, our Raychem heat management solution included:

- Engineering design experts providing optimized design and support using TracerLynx 3D HMS Software
- Raychem STS Skin-effect longline tracing system with bundled technologies

BENEFITS

We met the customers' mission critical objective for operational reliability with our custom state-of-the-art engineered solution – Raychem Pipeline bundled technologies. This system revolutionizes heat management system performance, is safe, rugged, reliable, maintainable and offers accurate control. As more partnerships form to develop clean fuels and new process heating challenges arise, Chemelex is ready to meet the most challenging engineering and product requirements.

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