

HEAT TRACING AND LEAK DETECTION SOLUTIONS FOR AUTOMOBILE PLANT OIL DEPOT

PROJECT DETAILS

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| Client: | A Global Leading German Luxury Automobile Manufacturer |
| Location: | Shenyang, Liaoning Province, China |
| Completion Date: | February 2015 |
| Contract Scope: | Engineering design, site survey, material supply, on-site construction supervision and commissioning |
| Applications: | Leak Detection and Electric Heat-Tracing Solutions |
| Technology: | nVent RAYCHEM Self-regulating Heat-Tracing Systems, nVent RAYCHEM NGC-20 Control and Monitoring System, nVent RAYCHEM TraceTek Leak Detection System |



KEY CHALLENGES

The heat tracing needs for the automobile plant faced many challenges, first of which was the extreme local climate, with a minimum ambient temperature of -25°C, which made maintaining the temperature of the oil within the pipe and equipment very difficult. These extremely low temperatures often cause an increase in the viscosity of the oil, which in turn affects the flow of the oil and associated process fluids, which in turn affects the overall operations of the plant. In order to maintain the temperature of the pipelines between 18°C and 30°C, the use of an electric heat-tracing system was required. In addition to the temperature maintenance requirement, there were additional environmental health and safety issues to address concerning underground leakage, pollution, and fire and explosion hazards, given that the majority of the pipe was buried underground.



SOLUTION

In order to meet the customer's production and safety requirements, nVent Industrial Heat Tracing Solutions integrated the electric heat-tracing system with the leak detection system to provide the client an innovative solution consisting of the following:

- Self-regulating heat-tracing cable
- TT5000 leak detection sensing cable
- NGC-20 electronic heat-tracing control unit

This allowed the plant a maintenance-free heat tracing system that was suitable for the harsh environmental conditions, and further provided a state of the art leak detection system for the underground portions of the piping system in order to mitigate any potential damages to the pipe that would result in any environmental impact.

PRODUCTS

- Electric heat-tracing system: Self-regulating heat-tracing cable, NGC-20 control unit. nVent RAYCHEM QTVR self-regulating heat-tracing cable was chosen to be installed on the surface of the tanks uniformly in active/standby form, to maintain the temperature of the oil pipeline in the tank body.

Main materials used in the electric heat-tracing system:

| Product Name | Model | Quantity |
|--------------------------------------|------------|----------|
| Self-regulating heat-tracing cable | QTVR | 2000 m |
| Electronic heat-tracing control unit | NGC-20-C-E | 21 |

- Leak detection system: TT5000 sensing cable + TTSIM-1 sub-control module + TTDM128 Master Control Module. The TraceTek TT5000 sensing cable is installed in the slotted and perforated PPR plastic pipelines, and buried in parallel with the buried trench, with a total of 6 leak detection circuits installed.

BENEFITS

- Self-regulating heat-tracing technology reduced the energy consumption with accurate power output adjusted to the varying heat losses of the equipment required for the process.
- The use of properly certified self-regulating heating cable and connection kits ensured that the heat-tracing installation is reliable and ground-fault protection is available throughout the system.
- Centralized monitoring system with local control capability (NGC-20) provided information on the status of heat-tracing circuits, failure alarms, minimum/maximum values of temperature, etc. Better reporting enabled predictive maintenance which reduced the TOC of the plant and improved its performance.
- The use of the electric heat-tracing system, TraceTek leak detection system, and the connection of the upper end PLC system achieves the automatic and real-time monitoring of system operation status, to detect any leak in a timely matter.

With decades of experience in designing, manufacturing and installing heat management systems, nVent was able to provide a comprehensive solution to the client's automobile plant's unique needs. The use of multiple heat trace technologies, a unique controller platform, leak detection solutions, and intelligent design around underground heating requirements ultimately lead to the success of this project.

nVent provides unique solutions for various applications and offers a full suite of optimization strategies customized for a given application resulting in the highest reliability and performance at a reduced CAPEX/OPEX for the project.

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