

CASE STUDY

ZEECO

COMPLETE HRVOC PIPELINE FLARING & MONITORING SOLUTION

SITUATION

In January 2025, a specialty chemical company near Jones Creek, TX, contacted Zeeco about upcoming propylene pipeline work involving decommissioning, nitrogen packing, and recommissioning a pipeline segment to increase capacity.

Although the company initially requested only flaring equipment and services, Zeeco helped them understand local regulations that mandate specific flaring technology, monitoring, and recordkeeping, particularly the Texas Commission on Environmental Quality (TCEQ) rule 30 TAC Chapter 115 Subchapter H, which governs the flaring of Highly Reactive Volatile Organic Compounds (HRVOCs). The customer wanted to install a temporary combustion and monitoring system that fully complies with TCEQ regulations during their pipeline upgrades.

CHALLENGE

Temporary flares are commonly used in various industries, including petrochemical pipelines and the downstream petrochemical sector, for routine pipeline maintenance within and between facilities. The main challenges with these systems involve their instrumentation and monitoring needs.

- Proven pilot verification
- Waste gas flow rate monitoring with flow instrumentation
 - With temporary piping, it can be difficult to accommodate manufacture L/D placement requirements for the selected instrument
- Waste gas speciation
 - This is typically done with a gas chromatograph setup for detecting HRVOC concentrations
- Waste gas Net Heating Value (NHV)
 - Typically done with a calorimeter for controlling waste gas enrichment
- Air assist monitoring for the flare tip to ensure smokeless combustion
 - Can be done with compressed air or from VFD-controlled forced air fans
- Recording of environmental data
 - Done with manual technician logs and onboard computers connected to monitoring equipment

Pipeline decommissioning, nitrogen packing, and recommissioning pose many challenges for flaring and record-keeping. These include fluctuating flare gas composition caused by nitrogen being packed into and evacuated from the line, available utilities, limited and unimproved plot space, and tight timelines throughout the project to minimize line downtime.



ZEECO Rental Flare System.



Gas Chromatograph Operating & Datalogging System.



Gas Chromatograph.

SOLUTION

The customer began by providing pipeline dimensions, content data, and the project timeline. Zeeco helped its customer understand local flaring, monitoring, and recordkeeping requirements to ensure a safe and environmentally responsible project. Zeeco handled all aspects of flaring and recordkeeping, including supplying the temporary flare, piping, instrumentation, utilities such as power and propane fuel, and all personnel needed to set up and operate the equipment throughout the project.

The next step was to conduct a thorough walkdown at the jobsite. Zeeco mobilized the Rentals team to visit the location, gather information about the site's plot space and flare tie-in point, and develop an operational plan for the customer's project. After the walkdown, Zeeco confirmed the project scope and finalized plans with the customer. As the project approached, the Rentals team supplied several pieces of equipment, controls, instrumentation, and personnel to ensure a smooth operation, meet customer needs, and comply with TCEQ requirements:

- 52' tall hydraulically lifted, fan-air assisted flare trailer
 - No cranes were needed to lift the flare system
 - 100% smokeless flaring of HRVOC compounds
 - 40CFR60. 18 compliant exit velocities
 - VFD adjustable fan speed
- Waste gas flow meter with pipe spool to comply with manufacturer L/D requirements
- Interconnect piping for waste and utilities
 - Including a knockout drum to protect the system from liquid pipeline contents
 - Including valving to carefully control pipeline contents sent to the flare
- All interconnecting electrical connections
- Propane & vaporizer for enrichment of inert nitrogen-rich streams and flare pilot fuel
- ZEECO emissions monitoring trailer with:
 - Gas Chromatograph and sampling system for full speciation of waste gas
 - Hydrogen Argon, Nitrogen, and Calibration Gas cylinders
- Sample probe, heated sample line, and sample pump for direct gathering of flare gas samples
- Air compressor and on-board filter/drier for instrument air supply
- On-board backup generator
- On-board computer for datalogging instrument outputs and Zeeco technicians for manual recording of monitoring data

➤ Temporary generator

- Containment berms included for the area

Zeeco also provided our combustion specialist team to set up and fully operate this equipment during the project. Technicians stayed in close contact with the customer and other involved vendors to smoothly coordinate flaring operations with planned pipeline work.

RESULTS

By partnering with Zeeco to operate the temporary flare system and monitor the flare gas stream, the project maintained TCEQ-compliant flaring of HRVOC compounds, ensured thorough documentation for regulatory compliance, and operated efficiently to keep the project on

schedule. The system safely eliminated harmful chemicals, protecting both the environment and public health. Zeeco's experts ensured the timely completion of the project, allowing the pipeline to be quickly restored to active service. This support enabled the customer to focus on pipeline maintenance and modifications, while Zeeco managed the pipeline contents and ensured adherence to environmental standards. As a result, the customer successfully completed the project on time and achieved enhanced production following the pipeline upgrades.



ZEECO Rental Flare.