



Before

Introduction

Catalytic Products International (CPI) was recently engaged by a Western Colorado Gas Processing Facility to review the existing amine treating acid gas process and the air pollution control equipment installed in an effort to help optimize the units and make improvements to the reliability of the entire system.

Background

The customer operates two amine treatment trains at this facility. Each train has a standalone Regenerative Thermal Oxidizer installed to treat the off gas prior to atmospheric release. The regenerative thermal oxidizers (RTO) are air pollution control devices that treat the volatile organic compounds (VOCs) and Hydrogen Sulfide (H₂S) that are created during the gas treating process. RTOs thermally oxidize the VOCs and convert them to carbon dioxide and water vapor which can then be safely emitted to atmosphere.

The RTO's have had a number of serious maintenance issues over the last few years of operation. CPI was tasked to identify the cause and develop corrective measures. The primary concerns are:

1. Flashbacks in the RTO
2. Freezing in the ducting
3. Plugging in the media beds

These faults triggered the RTO to go into emergency stop mode and divert the waste gas stream to the safety flare. When this occurs, additional time and resources are required by the plant to address the following:

1. Diversion to the safety flare created a EPA reportable event
2. Diverting to the safety flare required 50% excess gas to be added to the waste stream
3. The time to resolve and re-start the RTO could be several days

Each of these issues resulted in hard and soft costs to the client through down time, increased natural gas usage, and maintenance costs.

The Process

CPI conducted an onsite process evaluation and equipment inspection of the amine train and associated RTO. The results of the evaluation and inspection lead to an engineering report that focused in on the client's main concerns and identified several other significant issues that CPI felt should be addressed. The report identified created a list of priorities based on safety, environmental effectiveness, manpower resources, and operating cost.

A thorough description of the root cause helped to identify slight process improvements that the plant could affect immediately. The report provided a detailed description of the work and changes that needed to be implemented. Lastly, the report provided a budgetary cost and implementation timeline for each task. The client was able to use this budgetary estimate as means to compare a new equipment installation to the suggested repairs.



The Decision Points

By providing a comprehensive root cause analysis backed up by a detailed description of the suggested changes the client was able to confidently request funding to implement a maintenance package to rebuild the existing RTO's. When compared to the cost of new equipment, the rebuild project saved the client over \$ 1,000,000 and the headaches associated with obtaining permits for new air pollution control equipment.

Scope and Outcomes

CPI provided engineering services, fabrication, and installation supervision for the project. The plant would contract the installation labor services directly with local support contractors. After the equipment was repaired, our Field Technicians provided re-commissioning and operator training services.

CPI met or exceeded each of the client's three key deliverables:

1. Eliminate Safety Shutdowns
2. Avoid CAPEX and Reduce OPEX
3. Minimum implementation timeframe



After

The reduction in safety shutdowns allowed the client to realize ongoing operational cost savings by not diverting to the safety flare. The timeframe and cost to affect these important changes not only saved substantial money, but the time frame for completion was 1/3 of the typical time frame for a new equipment installation.

Catalytic Products International takes pride in not only providing innovative solutions to new air pollution control challenges, but we take pride in developing custom maintenance solutions that address safety, compliance and extended return on your investments.

For more information about this or any of our other custom engineered solutions, please contact us.

Thermal Oxidizers, Regenerative Thermal Oxidizers, Catalytic Oxidizers, Heat Recovery Systems, Energy Conservation, Repair and Retrofit Services, Maintenance Services, Engineering

