

### The Customer

This Chemical Company is a leading supplier of performance polymers. Their products are used in a wide range of applications including adhesives, coatings, consumer and personal care products, sealants, lubricants, medical, packaging, automotive, paving, roofing and footwear products.

### The Process

The company uses flare stacks to dispose of the waste products collected from its various chemical processes. The waste products consist of gases and other unknown substances. The customer can use the waste gas stream to supplement the fuel supply that operates their flare stacks. They must identify the minimum heating value of the waste stream to determine whether it can be used as a standalone fuel source or whether it needs to be blended with a constant fuel source, natural gas.

EPA code 60.18 states for optimum combustion efficiency of the stack the waste stream must run at a minimum heating value of between 300-450 BTU/ft<sup>3</sup>.

Continuous monitoring of the waste stream is necessary to identify the minimum heating value and ensure proper combustion efficiency of the stack.

### The Problem

If the heating value of their waste stream drops below 350 BTU/ft<sup>3</sup>, natural gas must be added to the flare stack to keep it running properly. Since their waste stream is made up of a wide variety of gases, they needed an analyzer that would measure the total heating value of the unknown gases in the stream. In addition they wanted the analyzer to have a fast response time so it would quickly respond and activate their controls to modulate between the waste stream and natural gas.

### The Solution

The CalorVal BTU analyzer was the analyzer of choice for a number of reasons. It has the ability to accurately and continuously measure the direct BTU content of the varying waste gas stream. It is real time measurement and will quickly respond (< 4 sec) to the alarm set point and adjust the natural gas concentration as needed.

Not only does this solution optimize their fuel savings but it has also allowed them to meet EPA guidelines for maximum 98% destruction efficiency of their flare stack.

They purchased one analyzer for each flare stack and have noticed that their waste stream is typically higher than 350 BTU/ft<sup>3</sup>, which means that they very rarely need to use natural gas at all!

### Sensor Placement

The analyzer probe taps into the waste gas fuel line prior to the flare stack. Between the CalorVal probe and the flare stack there is a damper that controls the flow of natural gas into the flare stack. This damper is controlled proportional to the BTU readings from the CalorVal. The damper to the natural gas line closes when the calorific value of the waste gas stream is > 350/ft<sup>3</sup>, and opens when the waste stream drops below 350 BTU/ft<sup>3</sup>.

### SIC Code

- 2821: Plastics Materials & Synthetic Resins

### NAICS

- 32521: Plastics Material & Resin Manufacturing



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