

# ACETIC ACID MEASUREMENT IN CLASSIFIED CHEMICAL AREA

## BACKGROUND

Acetic acid is used as solvent in the oxidation of p-xylene to form terephthalic acid. The concentration of acetic acid is very to this process. Terephthalic acid is a precursor to polyethylene terephthalate (PET). PET plastic is a very important plastic which is used to make soda pop bottles and other food containers. However the location in which the sample would be collected is a classified area, thus making manual sample collection more difficult. The answer was an on-line process analyzer.

## ANALYZER SETUP

A Tennessee chemical plant selected a MINIChem to measure acetic acid in their terephthalic acid process. The analyzer was placed in a Class I Div 1 area. The requirements of the area classification were met by utilizing



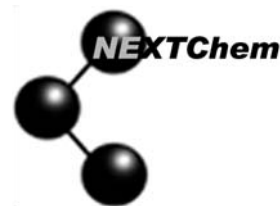
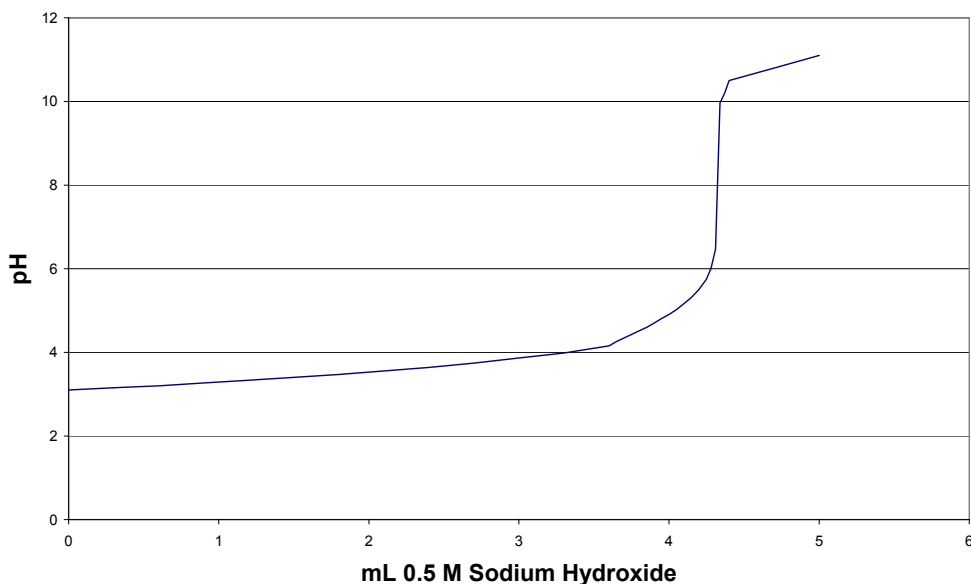
an X-Purge system. The end-user also required that the analyzer should be observed and controlled remotely, due to the classified area it was placed in. The solution was to place an Ethernet card in the analyzer. The end-user was able to connect the MINIChem to the plant "intranet" and assign the analyzer its own IP address. From the plant instrument shop personnel were able to see the titration curve on the analyzer "in real time" and could also make programming changes remotely. Because the sample was very concentrated a micro-dilution system (1 mL loop) was used for the sample collection. Micro-dilution sample systems require that the sample to be particle free, however the sample stream did contain a

large amount of polymer material. This situation was solved by the customer providing a stainless steel filter system. The backwashing of the filter was controlled by the MINIChem. The acetic acid measurement was made with a glass pH electrode and titrated with sodium hydroxide. The end-user decided to connect both the analog outputs (4-20 mA) as well as the serial connection. The serial connection was used to transfer data as well as the status of the analyzer via Modbus RTU to the end-users DCS.

## ADVANTAGES

- 1) Lab Accuracy On-line
- 2) Reliable Analyzer On-line
- 3) Class 1 Div 1 Purge System
- 4) Reduced Lab Man-Hours
- 5) Remote Monitoring & Control

Acetic Acid Titration



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