Roche Vitamins Inc., Belvidere, New Jersey, USA

Hydrochloric acid vapors contained by fluoropolymer coated duct

Background:

This Roche facility in Belvidere was involved in the pilot manufacture of innovative Vitamin C products. One step in the manufacturing process utilized a vacuum belt filter operation which created undesirable vapor by-products. These corrosive vapors were collected and removed via vent lines to be absorbed using a carbon bed process (scrubbed). The vapors involved were HCL, chloroform and alcohol. Although the concentrations were unknown it was confirmed that the vent system contained HCL liquid condensate. System temperature was generally ambient room temperature.

Challenge:

The original vent system was installed with Schedule 10 stainless steel pipe welded in place with only a few gasketed connections and transitions. This vent system was replaced every 6 to 12 months because of failure from corrosion pinhole leaks.

Solution:

As a permanent fix Resistoflex was considered. PSP® was eventually selected because it offered the same or better performance than PTFE lined pipe but at a substantial cost savings. Other features which appealed to Roche were the clean, light weight, stainless steel construction and the EZ single fastener band style joining system. PSP® coated components were perceived to be easier to install and maintain.

The vent system is made up of approximately 100 linear feet of 4" and 6" diameter pipe operating at a system pressure of -10" wg. The connections are Fab-Tech PSP-EZ™ band clamp. Connection to existing equipment was accomplished with custom ANSI style flanges. There are also some 2" and 3" diameter PSP-EZ™ pipe used to connect industrial vacuum pumps to the system. These pump connections are very similar to industry standard KF (sanitary) connections.

Conclusions:

This is an installation where periodic replacement of corrosive fume components was normal operating procedure. Roche Vitamin realized the economic benefits of the more permanent nature of fluoropolymer coated pipe. PSP® components have been in service at this facility for over 3 years and still show no signs of degradation from process gases.

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