

The Customer

The Company is a leading manufacturer of silicone-coated papers, release films, specialty papers and blown film. Their products are used in a wide variety of applications including adhesives, coatings, consumer and personal care products, medical, transdermal patches, security labels and graphics.

The Process

The Company is monitoring the flammability levels of their multi-zone ovens that are used to dry the silicone-coated material. This material consists of solvents such as IPA, Heptane, Toluene, MEK and Xylene amongst others. The solvent level changes depending upon the product that is being produced, line speed, damper position, and in some cases, there are even solventless products going through the dryer. The company uses PrevEx Flammability Analyzers to monitor the % LFL of the varying solvent levels in order to stay safe.



The Problem

Since the Company's flammability concentrations vary from 0% LFL (waterbased) to very high % LFL depending on the position of the dampers (manual adjust type), they wanted to find a better way to utilize the solvent levels in the process in order to reduce their operating costs and become more competitive without compromising safety.

The Solution

According to NFPA-86, additional Solvent Vapor Analyzers can be installed onto the process to specifically control damper positions. By adding additional LFL Analyzers to safely automate the dampers, the amount of ventilation air needed to maintain a safe LFL level in the ovens would be minimized and thus save money.

To prove out the cost savings the Company took a two step process. The first step was to add a manual damper control set-up that had a three-way damper position. When they did this, they increased their average solvent load from 18% LFL to about 33% LFL, and thus were able to reduce their ventilation air by half. This allowed them to cut their natural gas usage by an average of 30%.

They were then able to use this savings to justify a fully automated damper control system in accordance with NFPA-86. This included the addition of separate PrevEx Flammability Analyzers and automated dampers in order to adjust the fan speed for independent control of the ventilation. As the solvent vapor concentrations vary from one production run to another, the ventilation rate is controlled accordingly.

Energy & Cost Savings

The implementation of this fully automated system gave them an additional 20% fuel savings by fine-tuning their controls in real-time mode and increased their average solvent load even more than 33% to about 39% LFL.

"This gives us an average of 5.5% reduction in gas usage per 3% LFL increase" stated the Plant Manager, whose process went from an average of 18% LFL to 39% LFL.

Not only did they optimize their energy for added fuel savings on their oven and oxidizer, they also saw electrical savings from their fan speed reduction.

Finally they saw production run speeds increase by 25%, which enabled them to supply products to their customers with a faster delivery schedule. They saw a payback in this fully automated system within 6 months after commissioning.

