

Case Study: Building Products Manufacturer



Quad Plus®



Shingle Manufacturer Struggling to Keep Liquid Temperatures Steady

Objective

- Improve the temperature control system for liquid application.

Solutions

- Installed 4 control sensors to monitor the temperature of the process liquid in two places and the thermal fluid in two places.
- Reduced the size of the use tank and applicator pan to reduce the amount of liquid that required temperature control.
- Reduced the distance between the use tank and the applicator to minimize temperature loss through piping.
- Reduced the temperature of the thermal fluid to eliminate temperature swings.

Results/Benefits

- The temperature of the process liquid can now be maintained with a high degree of accuracy and within one degree of the ideal temperature.
- The manufacturer now enjoys longer process runs with virtually no disruptions caused by the application of the process liquid.

Background

A manufacturer of building products was experiencing difficulty maintaining a constant temperature of a liquid that was critical for the manufacturing process. In this case, the manufacturer needed to apply a seal down liquid to roofing shingles, and the application process required the liquid to be maintained at a constant temperature of 400° F, with a maximum variance of +/- 1 degree. If the liquid was too cool, it would fail to adhere properly to the shingle; too warm, and the chemical properties of the liquid would be changed.

The existing temperature maintenance process was based on older product lines, which did not require such strict variance controls. The manufacturer changed their materials and product formulas, and the system was attempting to maintain the temperature in the use tank with main thermal fluid temperatures much higher than the 325° F application temperature. The result was significant temperature swings in the seal down liquid as the use tank was filled and circulating. This led to considerable production interruptions due to the liquid being improperly applied or overheated liquid creating unsatisfactory products.

Quad Plus Solution

To avoid the continual interruptions to the production line to stop, adjust the liquid temperatures, and continue with the run, a new system for maintaining the liquid temperature was necessary. The old system was not equipped with enough control sensors, so the first part of the solution included installing four sensors. Two were used to monitor the temperature of the seal down in the use tank and applicator pan, and two monitored the thermal fluid used to maintain the tank temperature in two separate locations.

To further reduce temperature variances, the size of the use tank was reduced to limit the amount of liquid to maintain, and the distance from the use tank to the applicator was reduced to keep temperature loss through the piping to a minimum. Lastly, the temperature of the thermal fluid used to maintain the use tank's temperature was reduced, which eliminated the large temperature swings.

This new temperature maintenance system now monitors the process liquid temperatures continuously and can correct temperature movement within a few seconds. The manufacturer now enjoys longer process runs with virtually no disruptions due to the process liquid application.