saint clair systems
TEMPERATURE & VISCOSITY CONTROL

Case Study

Inline Paint Heater Fails During Midwest Winter

Summary: An industrial pipe & tube manufacturer, in North America, ran into issues applying coating to their pipe during manufacturing. Cold weather overwhelmed their inline paint heater and production was cut in half.

Issue:

The company invested in automating their pipe coating line while converting to 100% solids, UV-cured coating material. The line was located near a bay door and the production area would become cold. The inline paint heaters were unable to keep up and a temporary structure was built around the coating area and heated with electric space heaters. This allowed them to keep some production going but it was understood that this needed to be temporary.

Analysis:

At the request of the coating supplier, we reviewed the existing coating line and found that the inline paint heater did not have sufficient capacity to support the rate of production. Additionally, the location of the inline heater was too far from the point of application making it impossible to maintain the desired dispense temperature. Finally, shortly after our review, the heater remained on during a line stoppage, cooked the material, and destroyed the heater.

Solution:

Saint Clair Systems provided a simple, cost-effective, heat only, temperature control unit. Using our patented Coaxial Hose Heat Exchangers, we were able to control the material temperature at the point of application. Additionally, the system design prevented the runaway heat condition that ruined the inline heater.

Results:

The company was at full production immediately upon implementation and replaced inline heaters throughout their plant. They achieved consistency through point of application control and reassurance by preventing uncontrolled heat from destroying the coating and the material heating system.

See page 2 for additional details.

Company:
North American Pipe & Tube Manufacturer

Location:
Midwestern United States

Material Used:
100% Solids, UV Cured Coating.

Summary:
When companies chose to use 100% Solids, UV Cured Coating, it is generally recommended that they "heat the paint."

Choosing a standard inline paint heater can be an economical choice, but there are times when it may not be the best fit.

For this manufacturer, operating in colder conditions exposed the inadequacies of the inline paint heater.

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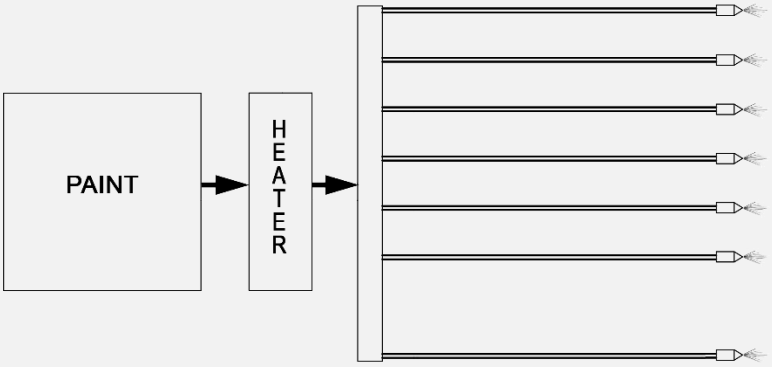
BEFORE



To the left is a simplified schematic of how they were operating.

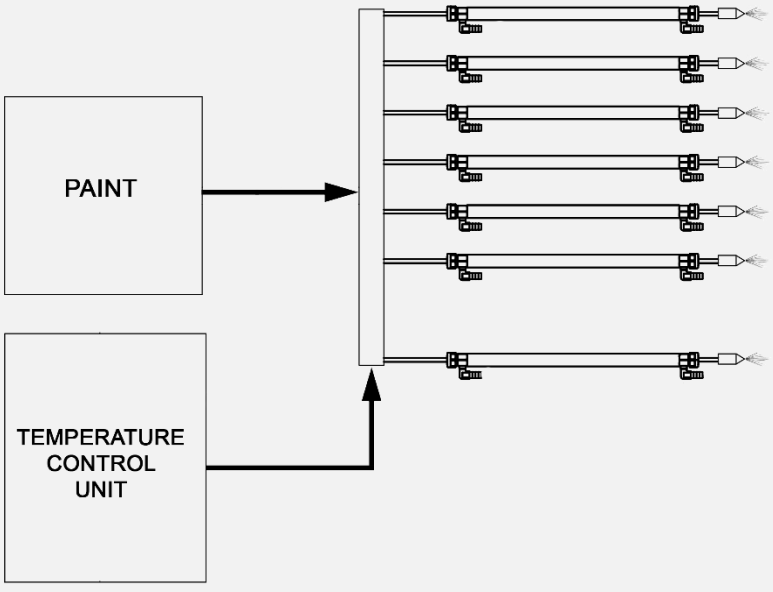
The paint made a single pass over the inline heater. Given the small surface area of the heating element, and the paint flow rate, there was not enough time to adequately transfer heat into the paint.

The heat that was absorbed by the paint was quickly lost as the surface area of seven separate dispense paths, exposed to colder temperatures, pulled the paint below its optimum dispense temperature.

AFTER

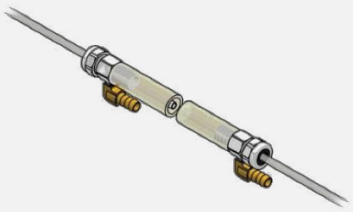
To the right is a simplified schematic of the system that replaced the inline paint heater.

The inline heater was removed from the paint flow. Each of the seven dispense paths was equipped with our patented Recorable Coax Flexible Tube-In-Tube Heat Exchanger.



Instead of losing heat as it approached the dispense point, the paint was absorbing heat provided by the Temperature Control Unit. As a result, the paint was at its optimum temperature **at the point of application.**

Recorable Coax Flexible Tube-in-Tube Heat Exchanger



Converts your existing material path into a heat exchanger.

Designed to be removed and reattached, allowing the material tube to be changed as required for easy system maintenance.

Ideal for painting and for controlled motion applications.

Non-conductive version available for electrostatic applications.