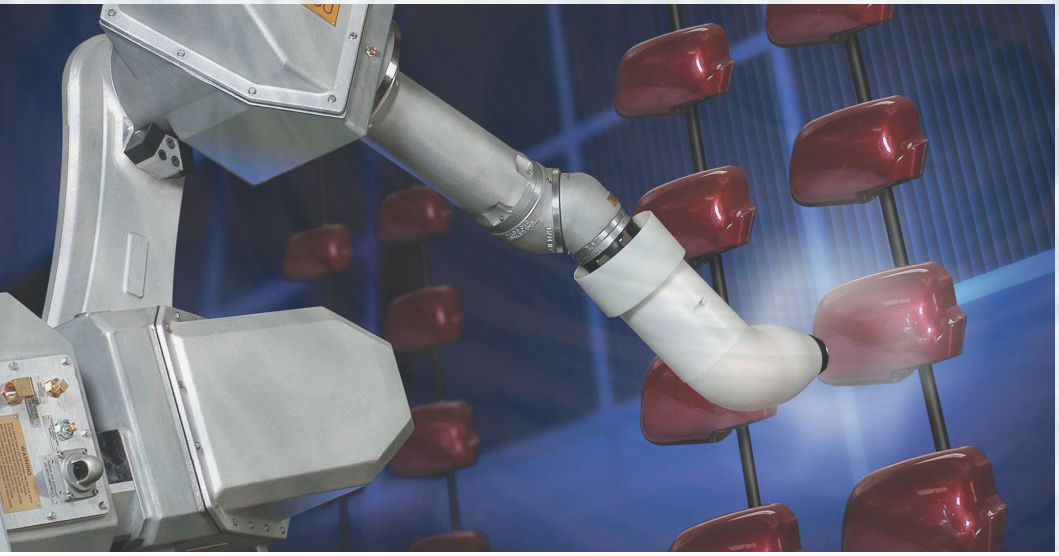
saint clair SYSTEMS
norcross Temperature & Viscosity Control

Process Temperature Control



Saint Clair Systems and a major supplier of electrostatic bells, cooperate in a study to pinpoint the cause of and developed a solution– for condensation related "spitting", electrical shorting and sub-optimal operation.

INDUSTRY CASE STUDY

CONDENSATION

THE PROBLEM

Parts suppliers painting with electrostatic bells were reporting condensation forming on the body of the bells. This caused significant downtime as the condensation "spit" onto the final product. Additional productive time was lost as the condensation caused electrical shorts in the highly charged painting process.

The parts suppliers were running at sub-optimal process rates to avoid condensation problems. Quality and productivity suffered as they made adjustments.

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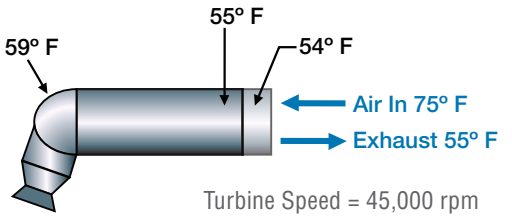
PROCESS TEMPERATURE CONTROL CASE STUDY

THE ANALYSIS

As it passes through the bell, the compressed air used to drive the bell expands and exhausts. The result is a refrigeration effect that causes the mass of the bell to cool. When the temperature of the bell drops below the dew point, condensation forms.

The common solution of heating the bell drive air with electric heaters did not work. The combination of the low thermal capacity of air and the requirement that the heaters be mounted outside of the explosion proof environment of the spray booth, meant that the air could not maintain heat long enough to be effective.

Temperatures before the heater was installed and after the bell was running for two hours.



Turbine Speed = 45,000 rpm
Booth Air Temperature = 86° F
Booth Air Humidity = 65%
Dew Point = 61° F

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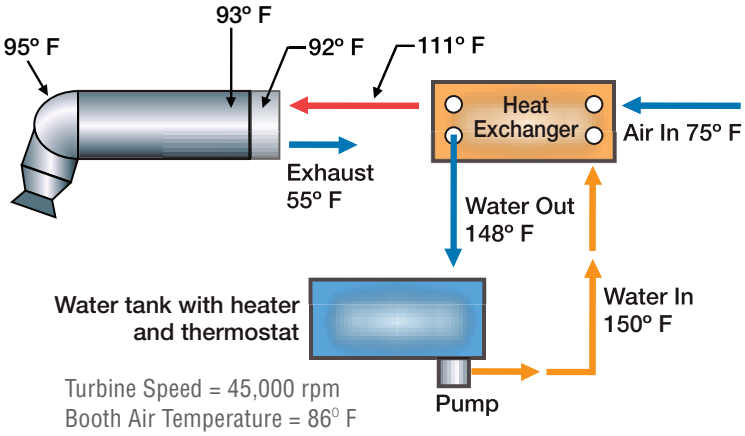

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THE SOLUTION:

Turbine drive air heating system

By heating controlled water outside of the spray booth and circulating it to a heat exchanger within 5ft. of the bell "drive air" inlet, the air was easily heated to 111°F as it entered the bell.

This patented solution provided a quick and easy install and maintained the "drive air" at 94°F. Comfortably above the dew point in the paint booth.

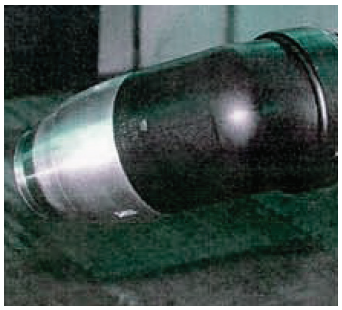
With a dew point of 61° F, applicator had NO condensation as temperatures were above the dew point threshold.

THE RESULTS

Our parts supplier was able to maintain a consistent bell body temperature of 92°F while the booth dew point stayed around 61°F

The condensation they were experiencing disappeared in less than 10 minutes and has been eliminated from the process. Their first pass yield was improved by 20%.

The ROI was less than 5 months.



Since 1990, Saint Clair Systems has supplied over 3,600 temperature control systems around the World. Our engineering team provides cost effective solutions to manufacturers that understand that quality and productivity are too important to leave to uncontrolled variables. If you are interested in controlling your process, please contact us or visit our website for additional information.

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