

TAC - Brief

Technology Applications Center News Update

Induction sets speed record for powder paint curing . . .

When a manufacturer of wooden broom handles wanted to expand production to manufacture metal handles, they asked the TAC for assistance.

Problem Statement: The use of wooden handle for mops and brooms is in a decline as more consumers prefer the look and feel of a decorative metal handle. For this customer to enter the market, they understood they had to have a competitive edge to gain market share. This meant having a process line that was faster than any other out there. The process heating equipment at the TAC offered this customer the opportunity to look at alternative heating methods for curing the powder paint that was to be used to give the desired color and feel to the new fashionable handles.

Out with the old... Using powder paint on metal handles was not new. However, what this customer wanted to do was to speed up the painting and curing times on the handle. The old way of accomplishing this was to cut the handle to length and hang each individual handle on a conveyor by sliding onto fingers or tings. The conveyor would then move the handles through the wash system, dry off oven, and finally onto the powder paint booth. Once the powder was applied, the handles move into the hot air oven for the thermal cure, often taking up to 20 minutes to cure the powder.

In with the new... Testing at the TAC resulted in several unique solutions being implemented to produce a process line that was faster than anything seen to date when put into production in 1997. The first innovation was to add the cleaning and powder application on line with the tube forming and welding. The second innovation came with matching the speed of the tube mill with the thermal cure time needed for the powder paint.



Thin wall tubing travels through a series of three induction coils.

A cure time of 3 seconds was needed and achieved by using induction heating to match the variable 300 – 600 ft/min process time. The powder applied tube passes through a series of induction coil which heats the metal handle to flow and cure the powder. After the powder is cured, the tubing is cut to length by using a flying guillotine. End caps are inserted and the handles are auto packaged for shipment.

This fully automated line was the vision of the customer and with help from the TAC, the dream was realized.

About the TAC: *Southern Company operates two Technology Applications Centers, one located in Atlanta, GA, operated by Georgia Power. And, the other located south of Birmingham, AL operated by Alabama Power. Both facilities are designed to assist Southern Company industrial customers with solutions related to heating processes. The use of both facilities is currently free to our customers.*