VENEER PLYWOOD MANUFACTURER ACHIEVES IMPROVED PRODUCT QUALITY THROUGH THERMAL FLUID SYSTEM REDESIGN

A manufacturer of high quality plywood for flooring applications operates two (2) thirteen platen veneer presses. The presses are heated by a petroleum based heat transfer fluid which is supplied by one common thermal fluid heater.

Product quality problems with glue vaporization (blowouts) and delaminations (under cures) were traced to a large (>40^{O}F) temperature difference between the fluid supply and return sides of the press platens. This problem was exacerbated by the fact that the 20 year old burner controls on the thermal fluid heater allowed temperature swings in the supply fluid of over 20^{O}F.

Two solutions were implemented to address the problem:

1. Supplemental pumps were installed on each press and piped to form a high-flow tempered oil loop. By increasing flow through the platens, the temperature difference between the supply and return sides of the platens is significantly reduced. In this case the temperature difference was reduced from more than 40^{O}F to less than 10^{O}F.

2. Evaluation of the existing burner and its control system revealed that the burner had only three output states: 1. Full Fire, 2. Low Fire and 3. OFF. The heater output was never exactly matched to the heat demands of the process and the fluid temperature changed constantly. As the existing heater was more than 20 years old and had become a maintenance problem, the decision was made to replace the heater with a new unit with a modern burner and controls. The new burner has a fully modulated flame with a turndown of 4:1 and is able to match heat output to process demands with considerable accuracy.

   NOTE: IT should be noted that burner upgrades can be applied to existing heaters without the need to replace the entire unit. Additionally, MUCH higher turn-down ratios are attainable when needed.

IMPROVEMENTS NOTED:

1. Blowouts and delaminations (under cures) were virtually eliminated.

2. Instances of warped boards (a condition also referred to as “cupping” and/or “bowing”) were significantly reduced.

3. Fuel costs were reduced due to increased efficiency of the new heater.

This approach can be applied to a variety of other process with similar results.