

Gypsum Wallboard Drying

Temperature Monitoring of Gypsum Wallboard During the Sandwich Manufacturing Process



Q

Question

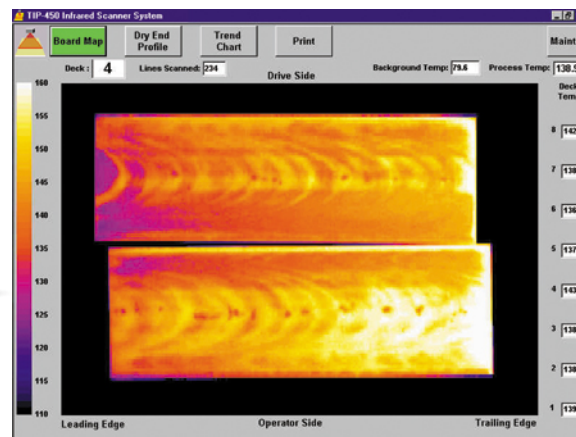
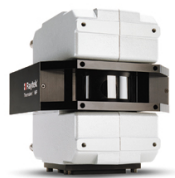
How do you insure the correct moisture content in finished wallboard to prevent brittle or sagging boards?

A

Answer

Situation Analysis

Gypsum is Calcium Sulfate CaSO_4 . This is a naturally occurring element. Initially, the gypsum needs to be physically refined down to a super-dry powder. This is usually done in a ball mill and then dried in a calciner. From there, the powder is mixed with water and several other chemicals in a mixing drum and then extruded out into a paper “sandwich.” It is very critical that this sandwich immediately start to harden and begin to crystallize. After a set amount of time, the continuous sheet of gypsum can be cut and transferred into a multi-deck drying-kiln where it spends the next 35-40 minutes. The moisture content of the boards after drying must not be too low or it will result in brittle and weak boards. If the moisture is too high, the boards will be heavy, which leads to sagging.



Real-time board map

A

Answer

Solution and Improvements

The TIP450E system is the most sensitive system available for evaluating final board quality. Scanning each set of boards with over 12,000 temperature points per second as they exit the drying operation, the system accurately measures the internal moisture of the board by relating it to its temperature. In addition, with this high resolution, the customer can see virtually any board defect that may exist. The dryer balance from deck-to-deck is displayed with averaging for up to 500 boards per deck. Overall board moisture is trended over time and includes alarm outputs for high or low moisture problems.

With a single Fixed IR sensor right at the dryer exit, the system watches for ambient air temperature losses and internally compensates for them. The detailed kiln balance of the TIP450E system allows the customer to adjust air dampers for maximum efficiency and board quality. The fuel savings and board quality improvements are typically very large. In addition, the complete board moisture monitoring and defect detection offers an unprecedented "X-ray vision" of the boards. The value of this system is readily apparent on the first day of operation with the ability to illustrate problems and root causes. The moisture trending allows the customer to carefully watch the overall quality over time for each of their recipes.

Raytek Product

Accessories

TIP450E System

Benefits

- Improved Product Quality
- Reduced Scrap
- Less Downtime
- Enhanced Data Recording for Analysis
- Energy Savings

For customized solutions to your process, please contact:

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