

# IN THE BRICK OF TIME

Automated feeding system increases production for a new brick manufacturing plant

**B**rick and Tile Corporation of Lawrenceville located in Lawrenceville, Virginia is a manufacturer of bricks for building both residential and commercial structures. Due to high demand of their products, Brick and Tile made the decision to build a new plant. It would be the fourth plant built since opening their doors in 1946.

The new plant would consist of state-of-the-art equipment and advanced processing methods. They had been manually weighing and feeding materials in their old process and wanted more automation within the new plant.

## Locating a supplier

In their research to locate the best equipment for their new plant, the production staff at Brick and Tile reviewed a number of suppliers. As part of the review process, personnel were sent to observe bulk material and handling equipment at the 2002 International Powder and Bulk Solids Show in Chicago.

While at the show, Brick and Tile Plant Manager, Bryan Dacus stopped by the AccuRate® booth where he witnessed a demonstration of the MECHATRON® feeder and the SolidsFlow® Streamout feeder. He came away interested and impressed and viewed the equipment as a potential fit for their new plant.

In the summer of 2002, Brick and Tile began searching for a turnkey supplier for their new plant

equipment. AccuRate's local representative, Pace Company of Richmond, Virginia, became aware of the project and contacted the company for the opportunity to bid the job. Because of their favorable impression of the AccuRate equipment at the Powder Show and Pace Company's ability to provide a turnkey system, they were given the chance to bid the project and were awarded the job in May of 2003.

## Defining the equipment and process

Implementing and designing the ideal system for Brick and Tile meant creating a process that would give them a highly accurate, traceable, and automated production facility. Working closely with the customer, Pace Company designed and implemented a system that met their needs. The system begins with sand being blown in from a sand silo where it is dispensed into a pneumatic pressure pod. After pressurization, the sand is blown over to an AccuRate DEA 300 Weighbelt through a filter receiver.

A second method for conveying sand to the DEA Weighbelt takes place from bulk bags stationed on the ground floor. The material goes through a pneumatic pressure pod and from there through the same filter receiver to the DEA. This process is all controlled through a recipe based PLC, which gives the operator the option to choose sand either from the silo or from the bulk bag. The PLC also provides Brick and Tile a more accurate and traceable way of managing materials going into their manufacturing process.

Dacus mentioned, "the old definition of recipe was how many shovels and buckets manually feed materials into the process." Now with the PLC, recipes and other pertinent data the company wants to accurately track can be done.

Another material brought into the process is clay. This is discharged from a bulk bag on the ground floor into a screw conveyor and up through an aero-mechanical conveyor into the AccuRate HC MECHATRON feeder stationed on the 2nd floor of the mezzanine. Because the customer wanted the



option of feeding different clay materials into the process, a diverter valve was placed above the HC feeder and one of the AccuRate MC MECHATRON feeders. This gives the customer the opportunity to do research and development work using multiple materials.

Additive materials are put into the process through bag dump stations located on the 3rd floor of the mezzanine. The materials arrive in 50-pound bags, are transported on pallets, and taken up an elevator to the bag dump area. To add a material, an operator lifts the bag dump station's lid and manually dumps material into one of 6 stations. These stations load materials into six AccuRate MC MECHATRON feeders. The feeders and bag dump stations work together by PLC communication. When a feeder calls for a refill, a valve will open and automatically fill the feeder to its preset limit. Once the weight is met, the valve closes and allows the operator to start the system as long as the recipe items are in automatic mode. If the feeder calls for a refill and it is not filled within a predetermined time frame, an alarm is sent to the PLC, which alerts the operator that the bag dump station is empty and will need to be refilled.

All materials batched from the HC and MC MECHATRON feeders and the DEA Weighbelt Feeder feed into a common covered belt conveyor. The conveyor takes the materials to a blender where they are mixed and then dispensed into pods on the ground floor.

The pods are transported up the elevator to the 2nd floor and positioned over the applications line where the brick column exits the extruder. The mixed materials are fed from the pods into the SolidsFlow Streamout feeders and vibratory feeders on the applications line. The PLC communicates to the Streamout feeders and vibratory feeders to spread a ratio of materials on the brick column. A variety of colors, textures, and highlights can be applied and changed to the brick column from the Streamout and vibratory feeders at any time. Up to 80 different recipes can be programmed into the PLC.

After the bricks are coated, they are cut, dried, fired in a kiln, and then packaged. From there, the bricks are shipped by truck or train to locations throughout the U.S. and Canada.

## Results

The equipment and plant operations have been a success since the installation in December 2003.

"We expect a 400 percent increase in production with only half the work force to operate this plant versus our previous plant," said Brick and Tile Senior Vice President Leon Williams III.

They are now also able to accurately measure and track the amount of materials needed for processing a wide variety of bricks. In fact, they expect to produce over 60 million bricks a year in the new plant. Each of Brick and Tile's objectives was met with the new equipment and system: greater accuracy, traceability, and automation.

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*For more information, contact AccuRate at 800-606-9250 or email [mktg@accuratefeeders.com](mailto:mktg@accuratefeeders.com).*

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