

Upgrades Improve Cement Plant's Production, Safety



Rinker Materials Corp., West Palm Beach, FL, is one of the largest producers of bagged cement, ready-mix concrete and concrete block in the U.S. In order to increase productivity at its cement terminal in Port Everglades, FL, the company recently made changes that helped its packaging process run smoother and produce bags that were closer to target weight goals, while providing a safer environment for employees. The company determined that it needed a three-phase upgrade: an in-motion checkweigher, data-collection software, and a packer upgrade.

The small amount of space available in the existing conveyor line at the Port Everglades plant made installation of a checkweigher a challenge. Normally, heavy-duty checkweighers require 4 ft. of linear space to properly weigh a bag. Rinker required a checkweigher to be installed in only 3 ft. of space. The plant also needed a product rejector powerful enough to remove off-spec. bags from the production line, yet able to be located within the same space. The location of the bag-flattening incline conveyor immediately after the checkweigher also made it more difficult to obtain accurate weights of the bags. This was a challenge because the immediate slope at the infeed of the incline causes bags to create a downward force on the checkweigher as they go up the conveyor, potentially altering bag weights.

To obtain optimum bag weights, Rinker needed the ability to collect data that would enable it to analyze weights and generate reports. The challenge here was that the company's management office is located in a different building than the packing warehouse, separated by a busy road. Any cables that might be needed would have to be hung high overhead the road or dug into the ground, which would be expensive.

To design and implement the upgrades, Rinker's contracted with Thompson Scale Co., a Houston, TX-based maker of checkweighing systems, packaging machinery controls and production scales, and Choice Bagging Equipment, a Taylor, TX-based supplier of bagging equipment. According to Port Everglades terminal manager Juan Alvarez, the changes could not come too soon at the facility because it still relied

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Published on Industrial Maintenance & Plant Operation (<http://www.impomag.com>)

heavily on manual labor. Just to weigh bags, says Alvarez, "We had to stop the process and have someone pull a bag and put it on a scale to check the weight. We were checking bag weights every 30 minutes, which was hard for our workers and took away from production time."

The plant's aging equipment was also costing the company time, money and accuracy. "The packaging machinery was getting old, and it required a lot of maintenance," says Alvarez. "We used mechanical scale beams that were only accurate up to plus or minus one pound. We wanted to get the accuracy to plus or minus half a pound. The other part was to increase the overall speed."

To automate the weighing process, Thompson designed a compact checkweigher with a space-saver reject ram. A reject device was built onto a support isolated from the scale, yet places the reject pusher plate directly at the discharge end of the scale. The plate is suspended from an oversized rodless cylinder capable of ejecting an off-spec. bag and returning to the home position before the next bag enters the scale, even at high production rates. A photo-eye is attached to the checkweigher to quickly terminate the weight, which allows for more accurate weighing in the tight space. This also assists in the bag-reject system by obtaining weights quickly. Thompson's StatPak-PC software, needed to obtain and analyze bag weights, was installed, and the challenge of sending the data to PCs in a separate office was solved by using a wireless modem. Now, production-line data is received in the remote office without the need to run wires. "We bag throughout the week," says Alvarez, "and every day that we do bagging, we monitor production rates at the closeout by running a report."

Rinker also wanted to upgrade its manual-control filling machinery to a system with automatic controls and a load cell. While Choice Bagging Equipment designed and fabricated parts for the filler upgrade, another firm upgraded the existing bag-placing equipment, and Thompson Scale provided the controls and technology to complete the process. Since the installation, "Our bag-per-man-hour rate has gone up," says Alvarez. "Before, our filling time was 12 to 15 seconds per bag. Now, it's 8 or 9 seconds. Another bonus is that only one person is needed to run the bagging equipment and he can see the automatic bag placer at the same time as the controller and easily check the weights of each bag. This has saved us many man-hours."

The system is also safer. "Our employees do not have to be near the conveyor belts anymore," says Alvarez. "They enjoy the improved safety and have more comfortable working conditions by not having to handle the bags to weigh them. Also, if we have reject bags, the checkweigher rejector pushes them off the conveyor without someone having to handle the bag."

Thompson's StatPak-PC software allows Rinker to quickly adjust production lines for improved output. "We track inventory better through the computer and analyze data such as bags per minute, total weight, and variance," says Alvarez. "The software helps us maintain a constant quality and weight on the bags, which even makes the appearance of the bags on the pallets look better."

Alvarez says the upgrades have simplified maintenance needs. "We can do it ourselves now," he says, adding that the upgrades have also eliminated almost 90% of spillage during bag filling, reducing dust in the area and greatly reducing reclaim.

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Source URL (retrieved on 04/01/2015 - 7:17am):

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