

Tile maker not floored by customers

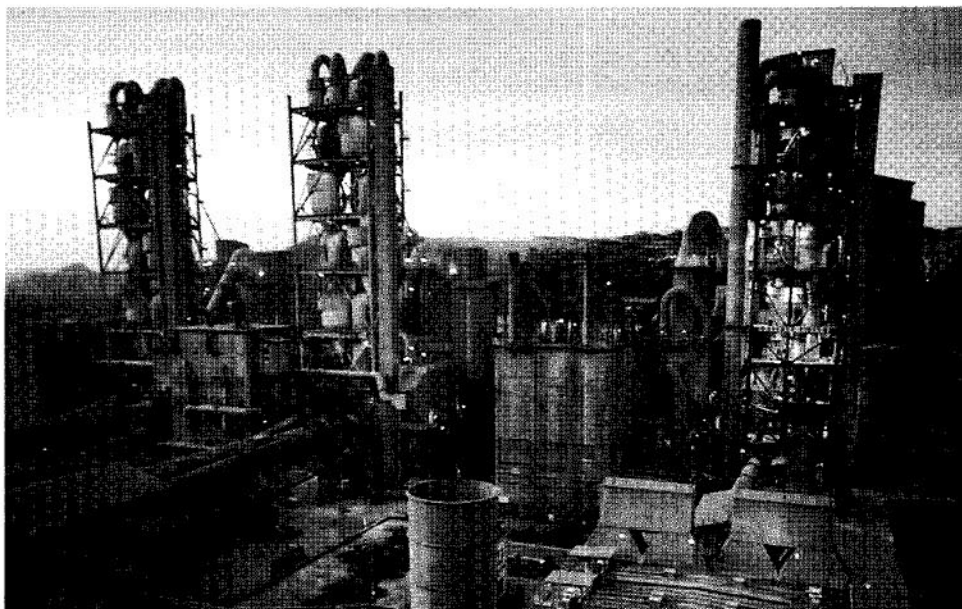
Innovative printing system codes tiles and boxes, making everyone happy

By **CINDY GRAHL**, CONTRIBUTING EDITOR

Customer demand is materially changing the way products are designed and distributed, a truism that holds across all industries, even with do-it-yourself home supplies.

Home market retailers such as Home Depot and Builder's Square sell to their own customers not only by the box, but by the piece of tile, for those DIY-ers who need only a bit of touch-up in a corner. At the register, this means that each piece has to be bar coded, using a U.P.C. code. And in an era where the customer is king, these home construction outlets are able to dictate to their suppliers just what they want in the way of delivered goods.

"Retailers in the home markets are the most demanding," says Jed Durbin, production supervisor for selection at



TileCera's Tennessee plant has reaped savings by bar coding individual tiles.

TileCera, a tile manufacturer based in Clarksville, TN.

TileCera was well used to bar coding, having been coding its cartons using a labor-intensive labeling process and superannuated dot-matrix printers. But printing bar codes on tile meant a new approach beyond sticky labels, and the initiative from its home market customers sent the tile maker looking for help outside. It went to three vendors, each of which installed a prototype system for one to two months. "We looked at the pros and cons," says Durbin.

It began with ISO 9001

The TileCera installation began long before the coming of the customer demand for individual tile bar codes. It began when the factory won ISO-9001 certification, a process which made the company see the need for a product job

order, or PJO, around which to organize the production flow and hang all subsequent data collection. All of the information on a product run—the specifications, colors, names and numbers—are now included on a PJO sheet.

That's come in handy for this installation. When operators are running a project, they can enter the PJO number into a Linx IV terminal's keyboard and swipe an employee badge with magnetic stripe to identify themselves. The fast and user-friendly screen prompts the user to the next entry, asking for job number, product number, production number, shade and tile name, all of which are provided by the operator. This data is checked against the PJO data available on line in the database to see if it is valid. That database supplies a description and U.P.C. code. Downloading the message takes a quarter-second.

FACTS AT A SCAN

TILECERA

User:

TileCera, Clarksville, TN

Application:

Tracking tile in house and during shipping

Technology:

Bar coding

Benefits:

- ▶ Greater savings compared to other labeling options (up to \$6.80/thousand).
- ▶ Compliance with retailers' demands.
- ▶ Ability to use stand-alone printer systems.
- ▶ Production flow organized around project job orders.
- ▶ Easy generation of a number of status reports.

The chosen vendor, ID Technology of Fort Worth, TX, was selected because of an innovative approach that offered maximum efficiency while saving money. The vendor was able to integrate a Foxjet Model 7400 multi-tasking high resolution ink jet system directly into the existing tile stacking equipment. The result was direct printing of one-inch bar-code onto individual tiles, with 99.9% read rates. The same controller was also able to run additional printheads for the outer case coding needs through extended electrical umbilicals. These printheads provided product description, brand name, bar code and production information directly on the corrugated boxes to complete the application. "They went a different way to put together a complete package," says Durbin.

Special considerations of a tile plant

Beside the need to bar code each individual product, tile creates other problems for data collection. "It's a dusty environment," says Durbin—the printers chosen had to be able to withstand the mess. And only white body tiles can be printed, as scanners are confused by background on the red ones.

The terminal serves as the common interface between the two printheads on a Foxjet printer. One head prints each tile from the underside, and the other prints the box, and here's where tile gets tricky.

Since the tiles are coded from the bottom, the printheads were inverted from their usual position. "At the time, that hadn't been done before, and there was a lot of opposition to it, claims that it wouldn't work," says Durbin. "But we just found that it takes a little more maintenance." The other printers being considered needed yet more maintenance, says Durbin, but the heads needed only to be primed once to avoid dry-ups. And because the clean face of the printhead flows onto the circuit board underneath, Durbin notes, the circuit board itself had to be ink-proofed, using a special coating.

Also, he says, thought had to be given to post-sale problems—ink can migrate from the tile onto the adhesive or substrate below, so additives were used to create a barrier between the two surfaces. Plus, a refractory wash had to be used on the bottom of the tile so it would not stick to the



Customers demanded bar codes on each tile—and TileCera delivered.

rollers in the kiln when the tile was fired and create a rough print surface.

In addition to the tile bar coding, the system also is coordinating the printing of the box bar code, a procedure that entails an enormous amount of coordination.

Each operator at the boxing operation accounts for eight separate stacks of tile, sorting the products by measurement and by subtleties of shade. The system then sends the tile to the appropriate stack. When the stack reaches the right proportions, it gets pushed to a box erector and boxed, and the Linx then swings the box printer into action to print the right code on the box, denoting color, shade and tile quality. It's a lot to remember, and signals can cross, so timing is essential.

The Linx system therefore had to be able to communicate with the company's existing Nuovafima stackers. The stackers use a binary code and had no serial ports, so ID Technology had to create a program to convert binary to RS-232 instruction so the stackers would know what the product is and where it should go to be boxed.

A perfect fit

This type of innovative approach was exactly what TileCera was looking for. "All the other vendors wanted us to buy a network system to do what we wanted," says Durbin. "But this saved us money because we could buy a stand-alone printer system. And we had the versatility to add new data fields in house instead of waiting three weeks for a vendor to write new software.

"There were no major installation problems, just changes to be made to the

software. And we can tweak it to fit our needs," he adds. The system uses Linx Applications Interface 4.0, or Linx AI, as the BASIC language generator, so Durbin can write new programs and modify old ones with simple commands.

Durbin notes a soon-to-be improvement on the box printer: the installation of a swing arm. A guide pin will automatically set the distance and allow for easier print flow, overcoming vibration problems and allowing the close distance needed for a good, non-fuzzy print on the ultra-heavy tile boxes.

Palletizers are next

The next part of the project will place shipping container bar-coded stickers, printed by Datamax Prodigy printers, on the pallets of tile themselves to allow for in-house inventory. These, however, are not yet tied into the system. "We need to decide what data to collect and how often," says Durbin. "It's hard to decide what needs to be done, but it will tie into our distribution and warehousing system."

All of this collected data also resides in a Compaq Proliner 486 PC on Durbin's desk, which is linked to all of the tile production lines currently available—and four more are planned. This entire data collection network is connected to the company IBM AS/400, which is also accessible by modem from ID Technology offices in Fort Worth so the integrator can provide additional programming.

The PC-AS/400 interface alone, with no additional hardware, lets the system generate a number of reports by piece or by type. Meanwhile, the host can track finished goods production, work-in-progress, job costs, production yields by line, scrap, downtime and quality audits.

Savings stack up

So far, according to ID Technology records, the project has demonstrated a cost savings of 40% on individual tile pieces—\$1.20 per thousand for each tile imprint versus \$2 per thousand with labels—and a savings of 56% on outer case costs—\$3.50 per thousand for direct printing of the bar code and 40 characters on cartons versus \$8 per thousand for labels. It just goes to show, you work to please your customers, as TileCera did for its home market retailers, and you reap the benefit in efficiency and cost savings. ■