

The Edge of Technology

BY SUZANNE VAN GILDER

Adapting groundbreaking technologies to make unique manufactured goods cuts two ways, like a v-groove. On one side, it results in products that look and perform unlike anything else available in the marketplace, often at lower cost. On the other, a significant effort is required to educate customers about what is possible. “It doesn’t take a lot of effort to understand HPL and TFL. People are pretty familiar with the products,” says Layne Cardellini, account manager for T.C. Millwork, Inc. “A lot of times it is easier to talk to individuals directly about what we do, but a challenge to tell the story to a company that has done things one way for its entire existence. It is hard for them to change their paradigm.” Yet, between the two edges of innovation and education is the fold, a sweet spot that has more possibilities than most specifiers ever consider.

T.C.M. (technology, creativity, manufacturing) is comprised of three inter-related, complementary business models. T.C. Millwork produces millwork, casework and lighting products, while SpecTrim is focused on building products and TRICON construction does planning, general contracting and installation. “We’re pretty much full service. We make a lot of innovative products. Retail store fixtures are one of the main things. And we do it a little differently than many of our competitors. This tends to help us and hurt us at the same time,” says company owner Art Kubach, a trained cabinetmaker, technology junkie and visionary. “Technology interests me a lot, and I have a pretty good feel for markets,” says Kubach. “I think the biggest advantage that we have is that I

don’t look at my marketplace with blinders. We go to every industry and say, ‘okay, how do we integrate that into my product? Or how do I create a new product with it?’ That is all I do, really. That is the trick. You have to take the blinders off. It is a race to keep obsolescence away from our door. That’s the way we look at it.”

For all the actual production that happens in manufacturing, not a lot is said about creativity. Maybe the connotation is more foofoo and artistic than the average woodworker or engineer is likely to embrace. Mechanism and systems are alluring in their logic and predictability, but from a design perspective, predictable products are both passé and vulnerable to imitation. And in many ways, the design community relies on fabricators to know what is possible. “From an architectural perspective, everybody is squeezed for time and money,” says Kubach. “But don’t be lazy. Don’t cut and paste the same old tired stuff over and over again and change the finishes.”

CREATIVITY: MATERIALS

T.C. Millwork introduced films for surfacing into the retail arena in 1982. “We now have three hot melt reactive PUR laminating lines that we have been running for eight or nine years now. We adopted it right from the automotive industry when they started using it,” says Kubach. “And we’ve been through them all. As an early adopter I’ve gone through all the pain and suffering. Now we use a reliable adhesive company that not only supplies our glue, but also brings the application engineering, which is so important as it relates





to PUR adhesives. It is 100% solid and zero VOC's. It's great to work with and gives me the ability to laminate virtually any film to any surface, be it laminate, steel, aluminum, MDF, it doesn't matter. We do laminations we could never do before." The advantage of the PUR is that it allows T.C. Millwork to introduce hybrid composites for the fixtures industry. This gives customers unprecedented options for value engineering, while at the same time improving performance and enhancing the look of the product.

One of the hybrids goes by the name Ven4ma. The construction goes like this: a highly decorative pre-finished top film (PVC, PET, OPP) is laminated to a very impact-resistant thick PVC or ABS substrate of the same base color to create an extremely durable, 50mil thick material. Think vinyl HPL that requires no edgebanding. That enhanced film is then laid up on MDF. "What that does for my customers is it gives them the option of having a very high-performance, high-end look without the cost associated with it," says Kubach.

CREATIVITY: PROCESSES

Part of the benefit of the hybrid material is a superior end product, but it also allows for extraordinary innovations and efficiencies in processing, material handling and assembly, all of which improves accuracy and reduces cost. "Take a set of nesting tables a retailer would typically use, for example," says Kubach. "My competitor builds that table out of 25 parts. We build it out of five." To accom-

plish this, T.C. Millwork starts by laying up the decorative sheet on one side of a substrate. From there it goes to the CNC routers, which are all equipped with c-axis aggregates that allow for efficient v-grooving. "I am able to v-groove right down to the back of that sheet, so all my parts are together, they are never detached. We don't have piles of skids with different items that need to be sorted." From the mill, the still-hinged parts go to assembly where they are quickly folded into seamless finished products.

A modified version of this approach is used to make extremely strong shelves. "Some companies had a major problem. With the weight of their products, their shelves would constantly sag. They tried steel and reinforcement, but nothing worked," says Kubach. "Another advantage of the hybrid is that it is very lightweight. So we built what is basically a torsion box, like an airplane wing, that has very little deflection over the span. We have it down to such a science that it is nearly the same cost of a regular shelf." For this product, a film composite is miter-folded to wrap around a hollowed out MDF core. The resulting shelf is strong and seamless, requiring no edge banding. "It takes me less than 30 seconds to fold the shelf, and there is no edgebanding, so it has a nice front edge," says Kubach. "I would literally have to shear the entire glue line on both sides of that shelf for it to fail. We've tested it with 450 pounds of bricks, and the shelf never failed, the metal brackets did."

CREATIVITY: TECHNOLOGY

T.C. Millwork's facility is outfitted with equipment from many different manufacturers, Biesse, Onsrud, Weeke, Holzma, Koch. "We buy machines specific to what we do," says Kubach. "Every one of our routers is equipped with C-axis aggregates so that we can do v-grooving." An in-house programmer writes code that can relate the geometry necessary for intricate folding into programs that run on any machine, regardless of platform, without additional conversion. "If one of my bigger machines goes down and we already have stuff loaded, with the press of a button I can load it onto another machine," says Kubach. The programmer, who incidentally wrote the code for the Palm Pilot, has also made the operation truly screen to machine. The initial 3D drawings are done in AutoCAD Inventor, then with a couple of clicks the program optimizes and generates G code, cut lists, and bill of materials, all of which are transferred directly into T.C. Millwork's ERP system.

Another somewhat unique in-house capability is plasma treating related to the heavy use of the PUR reactive hot melt for laminating. The process requires an optimal dyne level. "If you are below a certain surface energy on the product then the adhesive is going to have a hard time grabbing, which can result in delamination," says Kubach. "PET, OPP, and PVC all have very low surface energies, so they are pre-treated. We have extremely high quality standards, and with the plasma treating we have 98-99 percent success."



T.C. Millwork AT A GLANCE

- Incorporated 1993
- Privately owned and operated
- Located in Bensalem, PA
- 400,000 square foot facility
- 110 employees

TCM Family of Companies Includes:

- T.C. Millwork, Inc.
- TRICON Construction
(construction, general contracting and installation)
- SpecTrim Building Products

Markets Served:

- Retail: Big box, Shop in shop, specialty, brand identity
- Gaming: Casino slot machine bases and interior millwork
- Hospitality: Hotels, resorts, restaurants
- Institutional: Banks, offices, lobbies
- Healthcare: hospitals, long-term care facilities



CREATIVITY: SALES AND SOLUTIONS

“I tell my salespeople, ‘Don’t go sit in front of a customer and be a “me too” company. Anybody can be a “me too” company. You need to be more than that,” says Kubach. “And pay attention to the little details. If you do that, the big things will take care of themselves.” Of course, sometimes T.C. Millwork has to simply bid to spec, which is the downside to new products; people don’t know to ask for them. But the sales team works tirelessly to get the word out. And Kubach keeps them on their toes by constantly developing new products, processes and solutions. The next big thing in the works is a product with an enhanced topcoat that is beyond a level-five floor finish. “It will really blow the lid off the vinyl industry,” says Kubach. “The Europeans are using it like crazy.” The topcoat is extremely scratch-resistant, made from PUR intermixed with UV coatings. After a lot of experimentation, Kubach is looking at investing \$2 million in equipment to bring the capability in-house. “We’ve almost figured out how to fold it up,” says Kubach. “At the end of the day this product is super durable, but if I can’t make it seamless, I still have the same issue as plastic laminate.” **s&p**

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Riken USA Corporation produces foils for 3D laminate for seamless cabinet doors, office furniture and store fixtures using Japanese printing technology. Vacuum and membrane press the most complex dimensional profiles on routed substrates in solid colors, patterns and wood grains with satin, matte, desktop and contemporary high-gloss finishes.

New items – Graphit, Terra Grau, Champagne Metallic, Circle Line



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