

# First Class On An Economy Budget

**Check-in kiosk redesign delivers higher performance at a fraction of the cost**



**F**ew environments are more hostile to a kiosk than an airport. Rammed by baggage carts, side-swiped by luggage, kicked by children and doused with coffee, airport kiosks come into contact, in one way or another, with hundreds of hurried passengers every day. Despite this they must offer a stylish appearance and keep looking new years down the road. Sound like a tough design-build challenge? It gets even tougher when a new generation kiosk must be manufactured at one-tenth the cost of the kiosk it's replacing.

Such was the case with Delta Air Lines' freestanding e-ticket kiosk. Faced with the task, Creative Kiosk, Norcross, Georgia, turned to membrane pressing of three-dimensional components with rigid thermofoil, replacing the conventional sheet metal exoskeleton of traditional kiosks with an internal steel frame and yielding a combination of qualities not previously attainable.

"You would expect to see sheet metal on a kiosk enclosure being used in an airport environment because it is seemingly so durable," explains Tom Zaken, director of national program development at Creative Kiosk, which designs and fabricates a variety of products for Delta, including the check-in kiosk enclosure. "Unfortunately there are limitations with sheet metal in terms of flexibility and appearance. It has sharp edges, the finish is limited to bare metal or powder coating, and it can incur damage that is irreparable in the field."

STAND-ALONE IROP  
(IRREGULAR OPERATION) KIOSKS  
ALLOW TRAVELERS TO RESCHEDULE FLIGHTS.



RTF FILM CONFORMS TO ALL THREE-DIMENSIONAL SHAPES ROUTED INTO MDF SUBSTRATES INCLUDING COMPOUND CURVES, FINE DETAILS AND UNDERCUTS, WHILE MAINTAINING UNIFORM WALL THICKNESS WITH MINIMAL THIN-OUT. ONCE OUT OF THE PRESS, EXCESS FILM EXTENDING BEYOND THE BOTTOM SURFACE OF THE SUBSTRATE IS TRIMMED.

**“It required a complete rethinking of kiosk design that capitalized on new methods available to shape and surface three-dimensional components.”**

“And while laminates – both high- and low-pressure – have more flexibility in terms of surface finish, they still produce seams and sharp edges, and their durability in an airport environment is questionable,” he says, adding, “I’ve seen too many chipped laminate edges while walking through airports.”

“I haven’t seen the same kind of wear on components membrane pressed with rigid thermoformable film,” says Zaken. “Membrane-pressing also offers us increased design freedom because the film conforms to virtually any shape that can be routed into MDF board, including rounded corners, edge detail, deep recesses, and brand identification. It’s also seamless, easy to keep clean and cost effective.”

#### **SUCCESSFUL DESIGN REQUIRES THINKING OUTSIDE THE BOX**

In 1998 Delta introduced six self-service kiosks at Boston’s Logan International Airport. The kiosks, designed to allow Delta Shuttle passengers to save time while checking in for flights, were just the tip of a large and expensive campaign designed to purge inefficiencies from virtually every area of the air carrier’s operation. Hundreds of kiosks were to be deployed across America over the next several years.

The stainless steel enclosures were attractive but, at more than \$10,000 each, too costly for a national rollout. Maintenance also

proved expensive because damage to the enclosure required the entire kiosk to be removed for repair.

Zaken and his team worked closely with Delta to define precisely what qualities were required of the new kiosk. “Delta wanted a minimalist design that would be attractive yet durable, highly affordable to manufacture and maintain, and consistent with the company’s color scheme of stainless steel, white and burwood finishes,” he says.

“It was clear that merely improving on existing kiosk designs would not yield the radical improvements required by Delta,” says Zaken. “It required a complete rethinking of kiosk design that capitalized on new methods available to shape and surface three-dimensional components.”

“Instead of relying on the enclosure for structural support, we utilize an internal steel frame. For the exterior, we affix three-dimensional membrane-pressed panels clad in a rigid thermofoil (RTF) material from American Renolit Corporation that simulates stainless steel,” says Zaken. A burwood shelf on the front of the kiosk completes the overall look.

“With this design we’re able to manufacture the kiosks at one-tenth the cost of the original design,” he says. “And while the stainless steel design looked like a metal box, the new design, which has rounded edges and a softer



CREATIVE KIOSK PRODUCED A DELTA KIOSK AT ONE-TENTH THE COST OF THE ORIGINAL WHILE PROVIDING A SOFTER, MORE STYLISH APPEARANCE.

finish, is more appealing to the eye and hopefully more attractive to Delta's customers."

**RTF SAVES TIME AND MONEY**

Overall cost was reduced in many ways. "Not only is the Renolit film more cost-effective than stainless steel, membrane pressing also offers manufacturing advantages over sheet metal fabrication," says Zaken. The process allows production of panels in short time-frames and short runs, which is typical of the kiosk market. Membrane pressing is also a relatively quick, semi-automated process with low tooling costs.

Kiosk panels are fabricated of routed 3/4-in MDF board that is membrane pressed by Piedmont Woodworking (Rutledge, Georgia) with scratch- and mar-resistant Renolit film. Piedmont CNC-routes the MDF to produce rounded edges and drills pilot holes in the back to guide mounting screws.

Once routed the components are coated with adhesive and then heated along with the Renolit film. A vacuum draws the RTF onto the part as a flexible bladder presses it onto all top and side surfaces of the substrate. Exceptional formability enables the film to conform to any detail in the wood, including undercut edges, while maintaining uniform wall thickness with minimal thin-out.

Because the metallic-finished parts are seamless, they appear to be machined from solid stainless steel, providing the metallic look associated with Delta, while allowing for softer edges that minimize the possibility of injury to the user or damage to the kiosk.



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"The team at Delta also appreciated the ability to have a standard parts replacement system that would allow a single damaged panel to be quickly replaced onsite," adds Zaken. It is a system, however, that hasn't been used. "Even though some of the kiosks have been in airports for nearly four years, Delta has yet to order any replacement parts."

**DESIGN PAYS OFF**

Today, there are more than 860 Delta kiosks in 81 U.S. cities, and Zaken speculates that approximately 400 have stand-alone enclosures. In 2003 more than 20 million customers chose Delta's self-service kiosks to check-in for their flights, almost tripling customer usage in 2002 (7.4 million check-ins) and eclipsing the 2001 usage rate of 400,000 check-ins.

Over two million customers a month use Delta's kiosks to check in, check baggage, change flights, select seat assignment and more, and that number is growing. Kiosk check-in is reportedly increasing between 15 and 20 percent each month. There are also dozens of stand-alone IROP (Irregular Operation) kiosks which handle changes required by checked-in passengers, with a second run of these enclosures planned in several months, says Zaken.

Delta currently offers its customers access to more self-service kiosks than any other airline. And while it continues to roll out more kiosks, the airline is also expanding its self-service capabilities. In January, Delta announced that it was extending its self-service kiosk network to Continental and Northwest code share customers. All of which means Delta's check-in kiosks will handle millions of additional customers (along with their bangs, bumps, scrapes and spills) in stride.

