

## Piedmont Kiosk

Radical design and fabrication methods redefine appearance, durability and repairability of bill payment kiosks

### Developing a More Durable Kiosk

In the high traffic environment of wireless retail stores, automated bill payment kiosks fabricated of powder-coated sheet metal incurred scratches, dents, scuffs, and stains from pens, markers and spilled drinks. "As a result, wireless companies were incurring high costs to replace damaged kiosks or repair them in the field," says Tom Zaken, director of national program development at Creative Kiosk, Norcross, GA.

Today, Sprint wireless stores provide a new generation of kiosks that withstand more punishment than previous sheet metal units can and, when damage does occur, allow easier field repair at lower cost.

Creative Kiosks employed radically different design parameters and fabrication methods. Instead of relying on powder-coated sheet metal housings to satisfy cosmetic as well as structural requirements, the company's latest kiosks utilize an internal steel frame for support, and abuse-resistant membrane-pressed panels for the kiosk exterior.



*Exterior panels of Sprint bill payment kiosk membrane pressed with KYDEX<sup>®</sup> impact resistant sheet withstand more punishment than previous sheet metal units and, if damage does occur, allow fast replacement in the field at low cost.*

### Membrane-Pressed Panel Prove Impact- and Chemical-Resistant

The panels consist of 19mm (0.750") MDF board (normally melamine-backed) that is CNC-routed to produce three-dimensional shapes, then surfaced with 1.00mm (0.400") heavy-gauge KYDEX<sup>®</sup> L\* protective thermoplastic sheet that conforms to all top and side surfaces of the routed substrate. The resulting seamless panel is impact resistant, chemical resistant and, if all else fails, replaceable in the field.

The proprietary thermoplastic alloy exhibits notched Izod impact resistance of 801 J/m (15 ft-lb/in) (ASTM D-256), tensile strength of 42 MPa (6100 psi) (ASTM D-638) and Rockwell Hardness 94 (ASTM D-785).

Membrane pressing causes the sheet to conform to all three-dimensional surfaces routed into the MDF board including compound curves, intricate profiles, sharp details, undercut edges and wire management holes routed completely through the component. It's also easy to rout brand identification into the substrate and encapsulate the graphic with protective surfacing material at no additional material or labor cost. "It's like taking the handcuffs off of our designers," says Zaken. "Without the limitation imposed by materials that bend only in one direction, designers can create virtually any three-dimensional shape, satisfying objectives that were once mutually exclusive."

**KYDEX**<sup>®</sup>

ISO 9001:2000 | ISO 14001:2004 Certified

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*\*KYDEX<sup>®</sup> L has been replaced with KYDEX<sup>®</sup> XD. Please visit [www.kydex.com](http://www.kydex.com) to learn more.*

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### Kiosks Offers Improved Aesthetics and Ergonomics

In addition to designing components that are stylish, designers can ensure that kiosks are ergonomically correct, without the unsafe corners or sharp edges associated with sheet metal or high pressure laminates. The redesigned bill payment kiosks are safe and attractive with soft looking rounded edges and corners as opposed to sheet metal units "that looked like cold sheet metal boxes," Zaken says.

### Membrane Pressing Yields Manufacturing Efficiency

NCR, which provides kiosks for Sprint and other wireless companies, approached Creative Kiosk in an effort to improve both the appearance and the durability of its kiosks. Zaken says, "NCR wanted something smoother, more branded, with a flashier finish. We recommended KYDEX<sup>®</sup> sheet membrane pressed onto MDF board based on our excellent results in applications such as airline e-ticket kiosks and movie ticket kiosks."

Membrane pressing holds a manufacturing advantage over sheet metal fabrication, allowing production of panels in short time frames and short runs of tens or hundreds typical for kiosks. Membrane pressing is a relatively quick, semi-automated process compared with labor-intensive sheet-metal fabrication.

John Colby, Piedmont Woodworking general manager, adds that KYDEX<sup>®</sup> sheet is easy to membrane press. "It conforms to outside corners and deep recesses without thinning, maintaining uniform wall thickness and impact resistance in these areas." KYDEX<sup>®</sup> sheet in a standard red colour that matched Sprint's corporate red colour did not fade, deform, thin or break like other materials, Colby says, when stretched around a corner or curve.

### Kiosk Automate Payment

The typical wireless bill payment kiosk incorporates processor, software, bar code reader, touch screen interface, automatic check acceptor, bill acceptor, and check writing counter. At one of Sprint's 450 retail stores, the customer can scan the bar code on his/her bill or enter the phone number, credit card number or other identifier. The kiosk accepts payment – by cash, check, credit or debit card – credits the customer's account, and prints a receipt.

The company accepts tens of thousands of payments per month through the kiosks, providing convenience for customers and sales personnel alike – with fewer concerns about damage.

Creative Kiosk is a manufacturer of interactive kiosks located at 3042 Adriatic Court, Norcross, GA 30071, 770-448-2022, tzaken@creativekiosk.com, <http://www.creativekiosk.com>

Piedmont Woodworking is a manufacturer specializing in CNC routing and membrane pressing of specialty components for commercial furniture, store fixtures and kiosks, and residential furniture and cabinetry, located at 4250 Davis Academy Rd., Rutledge, Georgia 30663, 1-888-247-9009, [moreinfo@piedmontwoodworking.com](mailto:moreinfo@piedmontwoodworking.com), <http://www.piedmontwoodworking.com>

KYDEX<sup>®</sup> sheet is a proprietary thermoplastic alloy produced in 40 grades, 10 surface textures, 2500 colours and numerous granite, woodgrain and graphic patterns for membrane pressing, thermoforming, laminating and fabricating applications to ISO 9001 and 14001 quality standards by KYDEX, LLC. For information contact the Customer Service Department at 218 Richland Ave., W. Aiken, SC, 1-800-325-3133, [info@kydex.com](mailto:info@kydex.com), <http://www.kydex.com>



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### Membrane Pressing Side Panels of Sprint Bill Payment Kiosk

Membrane pressing encapsulates all but the bottom surface of flat or three-dimensional wood-core substrates by causing thermoplastic sheet to conform and adhere to all top and side surfaces including rounded corners, sharp profiles and fine details— even wire management holes routed completely through the substrate (shown).

After CNC routing, substrates are sprayed with adhesive, placed on a bed, covered with thermoplastic sheet and rolled into a membrane pressing chamber where the sheet is heated to 163°-200°C (325°- 395°F). A vacuum then draws the sheet onto the substrate as a flexible membrane physically presses the sheet onto all top and side surfaces, including undercut edges. Once cooled, excess sheet extending beyond the bottom surface is trimmed.

The three-dimensional capabilities of membrane pressing offer greater design freedom than flat laminating, and can improve durability when specialized thermoplastic sheet products that resist impact, chemicals and fire are specified.

If desired, outside corners and sharp edges can be beveled or rounded to reduce damage and/or improve safety. When total encapsulation of the part is desired, pre-laminated substrates can be utilized.



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