MISSION CRITICAL MOBILE PRINTING:
A CASE FOR RELIABILITY

WITHOUT QUESTION, RESELLERS HAVE COUNTLESS ISSUES IMPACTING THE SUCCESS of their companies. Faulty and undependable products are more than mere annoyances; they affect nearly every layer of business, from wasted time, to repair costs, to lost opportunities, and arguably the most important of all: loss of reputation.

VARs who support mobility applications — in particular printers — have an even greater need for reliable products. The mobile workplace is the most challenging of all due to the environmental demands placed on its equipment. Frequent drops, extreme vibration, constant jarring, and excessive dust are just a few examples of the regular abuse mobile technology endures. Selection of the wrong hardware for this environment almost assures application failure.

Despite the maturity of the dominant vendors in the mobile printing space, significant differences persist in how these players design for reliability. Designing for mobility requires a profound understanding of the environment and a dedication to circumventing potential points of failure before the products are placed on the market.

Even subtle differences in the design and manufacture of mobile printers can translate into significantly increased ruggedness and extended lifespan. Printers that work day in and day out enable higher productivity, lower the cost of repairs, and significantly reduce the user's total cost of ownership. To earn lasting customer loyalty and positive word-of-mouth, VARs must recommend and deliver the best, most cost-effective products. They're entitled to expect the rugged mobile printers they deploy will live up to the ratings on their spec sheets throughout, and far beyond, the warranty period.

Only one company has the singularly unique experience and success of consistently designing products that thrive in the field mobile workplace. Only one company has 24 years of commitment designing and crafting printing solutions solely for the mobile environment. That company is O'Neil. Their 4t family of 4-inch direct thermal mobile printers, the company's best-sellers, have higher reliability ratings after six years of use in rugged field conditions than most other manufacturer's out-of-the-box reliability rates.

The Most Reliable Portable Printers

Proactive Designing

Selecting the best printers for customers' needs requires VARs to make informed choices based on the way rugged mobile printers are designed and made.

Designing a quality printer begins not on the drawing table, but in analyzing the market to gain an intimate understanding of the end user and his working environment. Attaining a clear picture of the daily rigors of the tasks of a job, and how the printer is handled, used, stored, managed, maintained, and most importantly, abused, goes beyond satisfying a particular set of specifications. It means translating those punishments into design features that will resist the insults of use and deliver consistent and reliable performance. Do this job well, and you'll have plenty of time to refine and modify a printer design as it sees years of field use.

98.06 percent of all O'Neil 4t printers sold in the past 12 months continue to run trouble-free. Over the past *six years*, 9 out of 10 printers in the entire 4t family have never experienced a single problem.

That's the methodology of O'Neil's 4t mobile printer product line, which touts outstanding reliability: despite operating in some of the most harsh and punishing environments there are, 98.06 percent of all O'Neil 4t printers sold in the past 12 months continue to run trouble-free. Over the past *six years*, 9 out of 10 printers in the entire 4t family have never experienced a single problem. And they continue to perform beyond six years; beyond the lifespan of many other electronic devices.

Those extremely high success rates are a result of O'Neil's proactive design approach: a single-minded dedication to printer design based on a unique understanding

of each printer's intended environment, and then, with this fundamentally sound platform in place, subsequently refining it to even more precisely accommodate users' needs.

Each month, members of O'Neil's design, new product introduction, service and repair, engineering and operations departments meet to discuss every O'Neil mobile printer model with the goals of enhancing functionality and customer satisfaction. Any printers sent for service are analyzed for cause and frequency, and every single issue is subsequently engineered out of the product design, with the goal of a perfect mobile printer for its application.

O'Neil has been designing mobile printers since 1981 and launched the 4t product line seven years ago. This review process has been applied to the 4t each month since the line's inception. Seven years of constant refinement and enhancement enable the 4t to surpass every other mobile printer in the industry in reliability.

Over time, the 4t's communications options have expanded from RS-232 to include IrDA, Spectrum 24, 802.11b and Bluetooth communications. Accessories such as mag stripe/smart card reading and new cradle, charging and mounting options and have been added. Unlike some competitors' models, those additional features lived up to O'Neil's famed reliability from inception because they were rooted in the 4t family's finely honed mobile design principles.

What's Different

Every aspect of the design of each O'Neil printer contributes to its extremely high reliability rates. Here are just a few ways this scrutiny has led to superior design:

▸ Connections are always the primary point of vulnerability; users tend to pull on cables and drop the unit. Unlike other brands, all O'Neil 4t communications and power ports are internal and connections are made at 90-degree angles. Corners are reinforced, so all the stress is put on the reinforced cable and not on the connection.

▸ Most mobile printer cases use injection-molded plastic, which can become brittle in cold temperatures. O'Neil printers use polyethylene, which retains its strength in harsh conditions, and O'Neil engineers have developed unparalleled expertise in blow-molding to perfect its use.

▸ Internal case reinforcement is key to its structural integrity. O'Neil's current, 6th-generation case is rife with baffles, air pockets,

Sixth generation highly-engineered polyethylene cases retain strength in extreme conditions.

rounded corners and double-wall construction that provide critical shock absorption. The internal construction is more akin to the casing of a power tool than the consumer electronics other printers resemble inside.

▶ Paper loading is removed as a point of vulnerability. Mechanisms to render paper loading simple often introduce easily compromised components such as springs and brackets. Those engineering feats become frequent points of failure. O'Neil's paper loading is designed to be easy without adding highly breakable design elements.

Validating Quality

Ensuring quality requires going beyond mere compliance to industry standard specifications. In fact, no industry standard exists for the drop test, so manufacturers define their own success. What appears to be an impressive rating may be less so when the testing protocol is closely evaluated. Manufacturers differ on the number of drops, ambient temperatures, whether the unit is on, which faces take the

impact, and the surface to which the unit is being dropped, including unpainted or painted concrete, as well as the number of printers used to complete a drop test.

O'Neil products undergo the industry's most rigorous lab testing to validate their ruggedness and their ability to continually perform to their stated specifications through the life of the printer. O'Neil uses a single printer tested at all temperatures and dropped on every surface. One printer must pass all tests; that is the O'Neil standard for quality.

The Ultimate Test: The Field

The most predictive indicator of reliability is a printer's failure rate in the field. Mobile printers fail because they have not been precisely engineered for the uses and abuses they will meet. Vulnerable parts begin to break under the strain, and service instances rise.

O'Neil printers largely escape this pattern because of the deep mobility and application expertise its engineers have brought to bear.

Individual user experiences reflect this reliability:

▶ Blue Rhino Corporation deployed more than 400 O'Neil printers six years ago to field reps. maintaining propane inventory; some units have been run over. Yet all printers deployed are still working in the field today, with no replacements.

▶ Harvesting sugar cane requires first burning, then hand-cutting crop. Five Central American sugar cane growers are using software from Electronics Shop S.A. to record quantities cut by each worker. But the rain, dust and ash defeated the mobile printer brands they tried within two weeks. The O'Neil 4t, on the other hand, has worked flawlessly for four years.

▶ Southern California Edison has seen its O'Neil printers outlast a generation of hand-held equipment and carry on to support a second deployment. "They just don't break," said Kerri Amarillas, project manager, customer service, field servicing and meter reading.

▶ Oxnard California Police Department uses O'Neil 4t RF units for issuance of electronic traffic citations. A unit was dropped from a police motorcycle traveling at 45 mph onto the roadway where it was subsequently run over by a passenger vehicle. Immediately following the incident, the 4t successfully printed a self-test receipt, having survived with minimal damage.

Reliability Lowers TCO

Total cost of ownership models enable potential users to measure the upfront and maintenance costs of a printer across its lifespan. But making the correct product choice is more than avoiding service calls. An important part of the calculation is the steady productivity of the workforce. For many users, failure in the field is not an option.

"Hardware downtime or failure represents the single greatest contributor to an increase in total cost of ownership."
— David Krebs, Mobile & Wireless Practice Director, VDC

When a printer fails in the field, it triggers a ripple effect on productivity and accuracy. Salespeople revert to the error prone, time-consuming manual processes the system was designed to replace. The impact can include: additional time filling out the form; manual errors in SKU numbers, quantities and prices; fewer sales calls; and time and potential errors in transcribing data into the system at day's end.

This not only impacts the output of one field rep., but has implications for the supply chain, since inventory systems, orders, promotions and the like are based on erroneous, manually collected data. That puts inventory productivity and customer satisfaction at risk.

The financial cost can be staggering. According to Venture Development Corp., the cost of system failure is not just isolated to the loaded labor rate of the employee but also lost revenue, which can reach $125 per driver per hour. Assuming a delivery staff of 10,000 drivers, 1 percent increase in mobile printer failure could potentially cost the company $100,000 in lost revenues.

"One of the most critical aspects of any successful enterprise mobility solution is its overall reliability," says David Krebs, mobile & wireless practice director for VDC. "This translates not only to the seamless functionality of the application software, but also the uninterrupted operation of mobile hardware and associated peripherals such as mobile printers. In fact, according to research conducted by VDC among current and potential users of mobile printers, reliability and price were viewed as the most critical purchase decision criteria.

"More importantly, hardware reliability is directly correlated to the total cost of ownership (TCO) of a mobile solution, with hardware downtime or failure representing the single greatest contributor to an increase in TCO," Krebs adds.

The success of the customer's application, in turn, impacts the continued success of the VAR that chose and deployed those units. Again, VARs must recommend the best, most cost-effective products for the application in order to earn lasting customer loyalty and positive word-of-mouth.

O'Neil engineers its printers to work, day in and day out, in their rugged environments without failure. A relentless focus on the proactive design and the continual refinement of the 4t family of printers has produced the best reliability rates in the industry, and therefore the smartest investment. ∎

O'Neil printer reliability study was conducted from 01/01/1999 to 12/31/2004 and included the O'Neil Microflash 4t, Microflash 4t 802.11b, Microflash 4t Bluetooth, Microflash 4t with smart card reader, Microflash 4t with magnetic stripe reader and all corresponding OEM printer products.