



## The Case for Mobile Printing in the Warehouse

### A SATO White Paper

Warehouse operators and logistics companies struggle with competing pressures that can adversely affect their profitability: customer demands for competitive pricing, low-cost or free shipping, and rapid response times on one hand, and increasing labor costs and supply chain complexity on the other. The larger volume of smaller and more varied shipments driven by e-commerce initiatives poses an additional challenge.

To stay competitive, warehouses and distribution operations have to find ways to maximize productivity, while also increasing speed and accuracy. A comprehensive strategy to achieve these results should include increased mobility – specifically, implementation of mobile printers to help drive down costs and boost productivity.

Mobile printers have proven their utility in cross-docking, quality assurance/inspection, receiving, and other warehouse operations by improving efficiency and accuracy, eliminating process bottlenecks, and enabling new levels of visibility.

Interest in mobile printers has grown significantly. Recent data from VDC Research indicates that the global mobile thermal printer market will exceed \$500 million by 2021. Technavio estimates the global market for all types of portable printers will have a compound annual growth rate of 18.75% from 2017 to 2021. This growth has primarily been driven by the increase in e-commerce around the globe.

As demand increases for these printers, manufacturers have responded with lighter-weight devices that support a wider variety of label media, wireless and wired communications,

and integration with a more significant number of mobile computer platforms and enterprise software systems.

The principal advantage of mobile printers is that they allow workers to print labels at the point of use or point of activity. In many warehouses, a single stationary printer may serve multiple bays on shipping or receiving dock. Each time an employee has to label a pallet (or label numerous cases from a pallet), they have to walk back and forth to retrieve the correct labels. The process not only wastes time but also potentially introduces errors. In a busy warehouse, the wrong label can easily be placed onto a pallet/carton, which degrades the reliability of the inventory data and can create additional delays or errors during putaway, picking, and, shipping.

The effect of e-commerce on the supply chain has only exacerbated this problem, further highlighting the benefits of mobile printing. According to VDC:

“E-commerce fulfillment and retailers’ omnichannel initiatives are transforming supply chains and how they operate. Retail, Transportation & Logistics and Commercial Services segments are the early adopters of mobile printing solutions and will continue to be the main segments driving growth for the mobile printer market through the forecast period (2017 to 2021). Omnichannel and e-commerce related trends will drive market interest and purchase of mobile printer products to support applications like cross-channel fulfillment, click-and-collect, online retailing, logistics services, and inventory management. End users, including postal/courier organizations, third-party logistics providers, as well as warehouse and DC operators are heavily investing in mobile investments to support the



handling, tracking, and transportation of the increasing number of online shopping shipments to consumers' homes, as well as SKUs as they travel across the supply chain."

By using mobile printers, the warehouse staff can create routing labels, label pallets, or re-label cases as pallets are broken down, and do so as soon as goods come off a truck. The printers can be used during receiving and shipping operations, for pick and pack operations, and to label containers or pallets in the yard. Mobile printers allow for faster and more accurate printing; they can enhance and improve existing cross-docking and ship-to-order processes as well.

## THE BENEFITS OF MOBILE PRINTING

Mobile printers can provide a substantial return on investment (ROI) in a warehouse or distribution center, primarily through improved productivity. Below is a list of the specific improvements and benefits that can be achieved via mobile printing:

### Lower Costs and Higher Productivity

Mobile printing can lower the cost of each shipment by making it possible for employees to complete more work in less time. A warehouse's cost per order can vary significantly by market. An analysis by F. Curtis Barry & Co. found that the average total warehouse cost per order usually falls between \$3 to just over \$4. However, this figure can be as high as \$9 for less efficient operators. For a warehouse that processes hundreds of thousands or millions of orders annually, that extra \$5 or \$6 per order represents an enormous cost.

According to most estimates, labor accounts for half or more of the cost of warehouse fulfillment. Data from the U.S. Bureau of Labor Statistics and Salary.com put the median hourly wage for warehouse employee at around \$14. (In some facilities, the hourly rate might be much higher.)

How does mobile printing help reduce these costs? Primarily by reducing the amount of traveling which employees, have to do to complete their work. A warehouse employee may walk up to 11 to 12 miles per day. Average walking speed is roughly 3 miles per hour (or 4mph to 5mph if they are in a hurry), which means employees may be spending anywhere from two to four hours per day just walking. That is \$28 to \$56 per employee, per day, only to travel across the warehouse.

Some of that walking is unavoidable – not every piece of inventory can be placed close to the packing or shipping

area. However, if you can cut down on time wasted walking between a fixed printer station and the actual point of activity the time saved can translate into higher productivity and a lower cost per order.

Cutting down on walking also improves worker safety, reduces fatigue, raises employee satisfaction and reduce turnover. Also, by reducing the amount of travel time across the warehouse, you can also limit the time lost to delays or distractions encountered along the way.

### Improved Accuracy

By allowing workers to print labels at the point of use, with the goods right in front of them, mobile printing also reduces labeling errors in the cross-docking or shipping/receiving area. Labeling errors can lead to picking and shipping errors. The cost of those errors will vary based on the product but can range from \$50 to several hundred dollars in additional labor, returns processing, call center time, and return/outbound shipping costs.

### Reduce Bottlenecks

Mobile printers also allow warehouses to distribute printing across their operations, which can reduce bottlenecks at stationary printers. Companies can even shift the initial labeling activity further back into the supply chain – to pick-up. Drivers can label pallets or cartons when they are received onto a truck, so they arrive appropriately labeled at the distribution center. The procedure cuts down on labeling activity at the receiving dock.

### Improve Drop-Ship Operations

The same holds true for ship-to-order or drop-ship operations, which can streamline inventory management by making it easier for companies to sell inventory that is held by another supplier or distributor. For companies acting as drop-ship suppliers to other companies, a mobile label printer can make it easier for staff to print quickly shipping labels for these items as they are picked or packed.

Since goods may be shipped on behalf of a variety of different third-party sellers, employees can easily print customer- or order-specific labels as needed and accurately apply them to the correct items. The alternative – batch printing the labels either before or after goods are picked/packed – can result in costly labeling and shipping errors.

### Better Routing/Storage Tracking

Routing labels can be placed on totes or pallets used to move goods inside of a warehouse, and usually include barcodes that guide slotting those goods to the right location. A



mobile printer can be used to generate these labels prior to an inventory move, for example by a forklift operator. The creation of mobile routing labels is more efficient and accurate than batch printing or retrieving routing labels from a central printer before an individual tote/pallet moves.

#### **Streamlined Quality Assurance/Control**

With the right labels placed on goods during the pick/pack/ship process, it will be easier to conduct quality checks using barcode scanners. Also, QA/QC labels can be quickly generated and applied as shipments are inspected.

#### **Enhanced Connectivity**

IP-addressable mobile printers provide a direct link to enterprise systems anywhere in the warehouse, even without a handheld or mobile computer. The enhanced connectivity makes it easier for employees to complete their printing tasks regardless of location or computer availability.

### **CHOOSING A MOBILE PRINTER**

Mobile printers for warehouse/logistics applications have benefited from some technological advances over the past several years. Also, a few new manufacturers have entered the market. There are a few key selection criteria to keep in mind when selecting the correct mobile printer. Those include:

**Communication:** The need for multiple wireless communication options in the mobile device has only gotten more complicated. Companies have deployed a wide variety of mobile computers in the enterprise, from rugged devices based on various flavors of Windows Mobile to newer tablets and smartphones based on Android or iOS.

Find a printer that supports the latest wireless standards, including the various iterations of Wi-Fi/802.11, Bluetooth, and Near Field Communication (NFC). The selection will make the printer easier to integrate with your existing mobile infrastructure and ensure the longevity of your investment, even if other parts of your mobile environment change. Also, NFC support means your mobile printer can receive data from an NFC-supported scanning and data device without a PC or cabled connection.

**Security:** Printers are no longer “dumb” nodes on the network. Mobile printers include much more onboard intelligence, and (like mobile computers) can create vulnerabilities on the corporate network if they are not sufficiently secured. Find mobile printers that support the latest Wi-Fi 3 security standards such as WPA2.

**Durability:** Warehouses are harsh environments, and mobile printers are frequently bumped or dropped (sometimes from forklifts or catwalks). Look for a printer with high durability ratings that can survive multiple drops to concrete, and include shock resistance and durable operator keys. The savings you may realize from buying cheaper but less durable printers will eventually be eaten up by unit replacement costs.

**Media Capacity:** You will not see very high productivity improvements if your employees have to replace label rolls multiple times per shift. The use of linerless media can help improve productivity by making it possible to have more labels per roll, which means the number of media changes per shift can be minimized. In fact, linerless media can increase roll capacity by as much as 40%. Further, employees do not have to worry about disposing of liner waste, which saves time and makes the labeling solution more environmentally friendly.

**Battery Life:** Likewise, battery failures at mid-shift will also degrade productivity. New smart batteries include onboard intelligence that helps maximize the capacity of the battery. The battery needs to last a full working shift (8 hours at a minimum). The extended battery life can reduce the amount of time wasted changing batteries or retrieving charging equipment or cables.

Higher capacity and smarter batteries also reduce the overall investment in batteries and spares, minimize power consumption for charging, and improve the total cost of ownership for the printer.

**Software Support/Management:** The mobile printer should offer drivers for conventional mobile devices, as well as support for commonly used barcodes and label design solutions.

For companies worried about managing additional mobile devices on the network, there are central management and configuration tools available that can make it easy for the IT department to deploy and support mobile printers. For example, the SATO All In One Tool (AIOT) uses a graphical tree structure to organize connected printers, making it easy to find and configure any mobile printer at any location. With NFC support, mobile devices can also be used to retrieve printer configurations from a mobile device quickly.

**Accessories:** Make sure you can get the appropriate holsters, carrying cases, or vehicle mounts for the printer that it can be successfully implemented in your warehouse. The use of proper accessories will ensure that you can expand the use of mobile printers to as many positions/employees as possible.



## CONCLUSION

Warehouses are under more pressure than ever before to deliver goods faster and at a lower cost. Mobile printing can provide the productivity improvements needed for a warehouse operator to succeed in this highly competitive market.

They do this by enabling improvements in efficiency, accuracy, and quality, which lowers the average cost of each shipment while increasing throughput, and making it easier to conduct cross-docking or ship-to-order operations.

With mobile printers as part of broader mobility and efficiency strategy, warehouses can do more in less time and in a way that benefits customers, employees, and the bottom line.

### About the SATO PW2NX Mobile Printer

The SATO PW2NX Mobile Printer is a direct thermal printer that fulfills the requirements for the mobility applications outlined in this paper.

### About SATO

SATO (TOKYO:6287) strives to be the most trusted Auto-ID solution provider worldwide, bridging the last inch of the last mile for customers in manufacturing, logistics, retail, food & beverage and healthcare through cutting-edge tagging solutions. With a 5,000+ strong global workforce and 78 years of expertise, SATO engineers value-added solutions that boost accuracy, sustainability, labor, and resource savings, provide reassurance and enable emotional connections. For the fiscal year ending March 31, 2018, it reported revenues of JPY 113,383 million (USD 1.02 billion\*). More information about SATO can be found at [www.satoworldwide.com](http://www.satoworldwide.com), [LinkedIn](#), and [Twitter](#).

\*Conversion is based on an average exchange rate of 1 US Dollar = 110.85 Japanese Yen

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