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2023 Cycle Counting Automation Guide

A Vimaan eBook

Warehouse KPIs Are Dependent on Your Inventory Accuracy

Warehouses and distribution centers operate from several important KPIs, including order fulfillment accuracy, order lead time, capacity utilization, throughput, reverse logistics, and labor productivity.

All these performance indicators can be positively or adversely impacted by the facilities overall inventory accuracy.

Most industry professionals recognize the importance of inventory accuracy as it measures how well the recorded inventory levels (found in the WMS or ERP) match the physical inventory levels on the warehouse floor and racks.

Benefits of Inventory Accuracy

Reduced Stockouts and Overstocking
Accurate inventory records help warehouses maintain optimal inventory levels, reducing the risk of shrinkage or overstocking. Both have their own negative financial implications.

Increased Efficiency
Accurate inventory records enable businesses to streamline warehouse operations, reducing the time and resources required to manage inventory and fulfill orders.

Improved Profitability
Accurate inventory records help warehouses avoid costly errors such as write-offs and misplacing inventory; leading to better financial performance.

Better Supply Chain Management
Accurate inventory records enable businesses to track inventory levels and monitor inventory movement throughout the supply chain; improving supply chain efficiency and reducing costs.
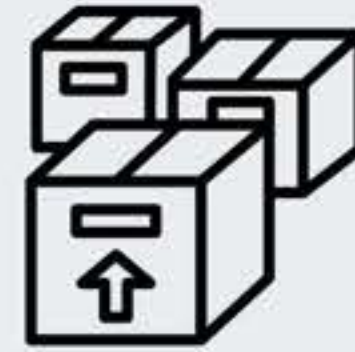
Problems of Inventory Inaccuracy

| Lost Sales | Excessive Labor | Stockouts | Over Stocking | Inefficient Warehouse Operations | Increased Costs |

By prioritizing inventory accuracy and implementing best practices such as **regular cycle counting**, businesses improve their inventory management processes and achieve greater success.

Importance of Inventory Accuracy

A good inventory accuracy level is generally considered to be **above 95%**. This means inventory records are within 5% of the actual physical inventory levels in the warehouse. That being said, even for a warehouse that has 95% accuracy rates can still generate significant operational savings and sales with each percentage point increase.

Achieving and maintaining a high level of inventory accuracy is critical to the success of any business that relies on inventory to operate. However, the ideal inventory accuracy level may vary depending on the industry, the size of the business, and other factors.

For example, businesses with high-value or perishable inventory may require even higher levels of accuracy to avoid losses due to theft or spoilage.

Top 5 Ways to Improve Inventory Accuracy

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Regular Cycle Counts
These are scheduled, periodic counts of a subset of inventory items to verify the accuracy of inventory records. Cycle counting is also helpful in assessing storage bin utilization and discovering damaged goods.

Barcoding and Label Scanning Technologies
These tools help automate the inventory tracking process and reduce human error.

Warehouse Management Software
Whether you use a WMS or ERP, these tools provide real-time visibility into inventory levels and locations, making it easier to track and manage inventory accurately(but beware of the data, if you have bad or incomplete data coming in, then that will be the data used to run your operations).
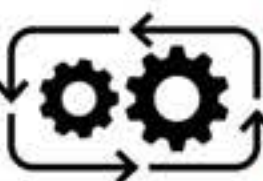
Standard Operating Procedures (SOPs)
These are documented procedures for handling inventory, including receiving, storage, picking, and shipping. Following these procedures consistently can improve accuracy.

Warehouse Associate Training
Proper training will help employees understand the importance of inventory accuracy and how to follow SOPs correctly.

WMS - You Want The Truth?

A very common response to improving inventory accuracy is deploying a credible Warehouse Management System (WMS). Warehouse managers understand the value of a good WMS and have persuaded their CFOs to invest heavily in securing and deploying these platforms.

A typical WMS deployment can cost a warehouse more than hundreds of thousand dollars, along with monthly or annual maintenance fees.

Following these investments, warehouses quickly realize that a good WMS is not the silver bullet they hoped it would be.

Benefits of a WMS

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Real-Time Visibility

WMS helps warehouse managers easily track and report on inventory status by providing real time visibility into reported inventory levels, locations, and movement across the warehouse

Increased Efficiency

With this inventory data, it becomes easier to identify and resolve discrepancies such as stockouts, overstocking or missing products.

Reduced Human Errors

A WMS benefits from inventory scanning to automatically capture inventory data and update inventory records in real-time, reducing the need for manual data entry.

With a WMS, cycle counting can be more efficiently managed and tracked, allowing for more frequent and accurate counts that provide near real-time visibility and reporting.

Can You Handle The Truth?

Every experienced warehouse manager understands that data capture (and the process used to accomplish it) is the root of their accuracy challenges. The continual process of cycle counting is time consuming, labor intensive, costly, and prone to errors no matter how efficient your team is.

Even with the use of barcode scanners, cycle counting is still slow, inconsistent, and intrusive to other warehouse activities. This is why more and more warehouses have begun to embrace cycle count automation as a means of capturing inventory status quickly from the floor to the ceiling.But as warehouse managers and leading solution providers (like Vimaan) have discovered, the ideal cycle count automation needs to:

✓ **Keep the safety of employees first and not be disruptive**

✓ **Reliably operate for extended periods of time**

✓ **Capture as much useful data as possible, which requires much more than simple barcode scanning**

Benefits of Cycle Counting

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Reduced Need for Complete Physical Inventory Counts

By counting a smaller subset of inventory on a regular basis, you can identify and address issues before they become significant, which will save you money in the long run

Increased Visibility

Cycle counting improves your ability to identify and fix mislabeled, misplaced, and missing stock.
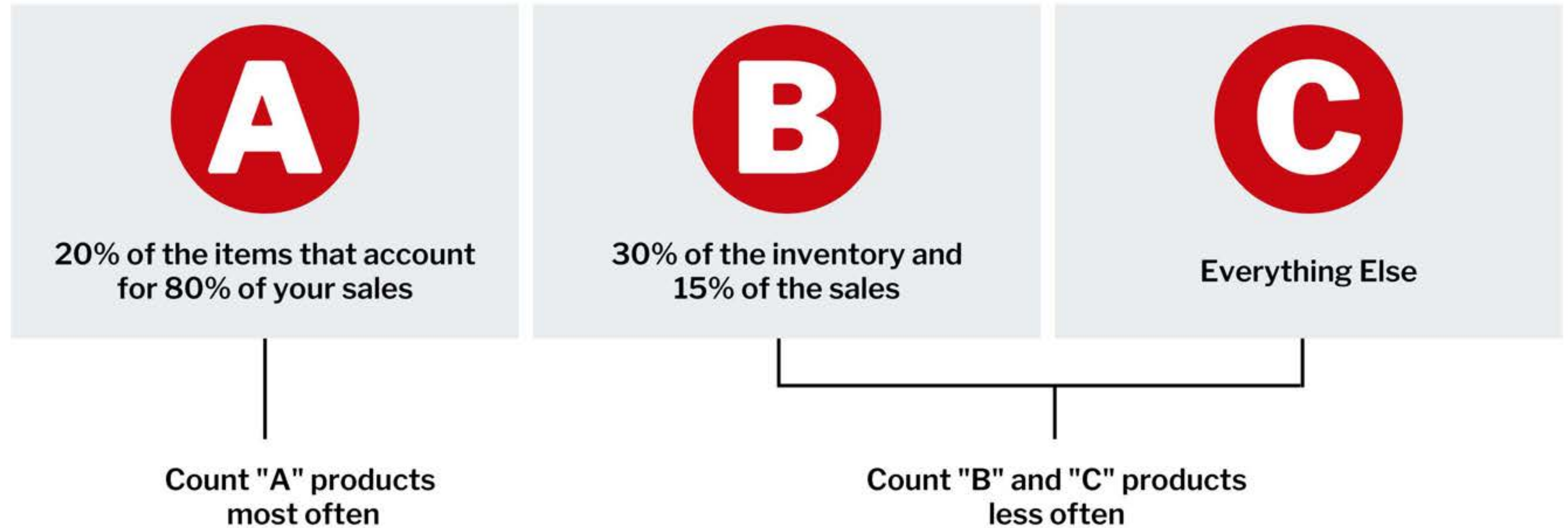
Eliminate Need for Complete, Annual Assessment

Automated cycle counting solutions can eliminate the need to make a complete, annual assessment, saving your organization considerable expense and time.

ABC Cycle Counting Technique

One of the most common cycle counting methods is the ABC technique that follows the pareto methodology. This process entails dividing stock into three separate categories.

A

20% of the items that account for 80% of your sales

B

30% of the inventory and 15% of the sales

C

Everything Else

Count "A" products most often

Count "B" and "C" products less often

Challenges with Inventory Cycle Counting

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Incomplete Coverage

Because cycle counting involves counting only a small subset of inventory items each day, there is a risk that some items may not be counted for an extended period, potentially leading to inaccurate inventory records for those items.

Inconsistent Counting

Cycle counting is typically performed by different employees or teams, which can lead to inconsistencies in counting procedures and inaccuracies in the count results. Additionally, human errors such as miscounting or overlooking items do occur.

Time-Consuming

Cycle counting requires time and resources to plan, schedule, and execute the count activities, which can be a significant burden for businesses with large inventories.

Lack of Visibility

Cycle counting does not provide **real-time visibility** into inventory levels or locations, which can make it difficult to quickly identify and address inventory issues.

Disruption to Operations

Depending on the frequency and intensity of cycle counting activities, it may cause disruptions to normal operations, such as delays in shipping and receiving.

Cost

Implementing cycle counting can be expensive, requiring investments in technology and training, as well as the cost of labor and potential production downtime.

Cycle Counting Can Be Highly Labor Dependent

Even though cycle counting is less disruptive than a total inventory count, warehouse workers must be assigned to do it, and it takes time. Traditional cycle counting requires lots of man-hours, especially when using manual methods. And many warehouses still count inventory by carrying clipboards, paper, and pencils. As a result, manual cycle counting is one of the least preferred warehouse assignments.

The labor-intensive nature of traditional cycle counting is costly and not completely reliable; as a result more and more warehouses are embracing automation to:

✓ Reduce cycle counting costs

✓ Keep employees safe, and on the ground

✓ Limit the number of required warehouse workers

✓ Improve overall inventory accuracy

The Need for Cycle Count Automation

Overall, cycle counting can be an effective inventory management technique when properly executed, but it is important to be aware of these potential problems and take steps to mitigate them to ensure accurate inventory records and efficient operations.

While cycle counting requires ongoing effort and resources, the labor intensity can be reduced through the use of technology, such as barcode scanning, computer vision and inventory capturing solutions that easily supports cycle counting at the floor level along with the highest storage bays.

Auditing inventory in high bay shelves can be a challenging task for warehouses due to the height of the shelves and the difficulty of physically accessing and counting inventory. Workers are often asked to climb ladders or be raised by scissor lifts to scan and document SKUs. These precarious tasks are dangerous and place workers at risk. However, there are several methods that warehouses can use to audit inventory in high bay shelves, including the use of warehouse drones.

In the mid to late 2010's the promise of using warehouse drones to keep workers safe and improve inventory accuracy was actively being explored. These aerial drones were being used to conduct inventory audits in high bay shelves by scanning barcodes on labels in an effort to provide near real-time updates on inventory levels and locations. However as drones gained entry to more and more warehouses they began to experience some unavoidable turbulence.

The Rise AND FALL of Warehouse Drones

Cycle counting in warehouses needs to account for inventory stored from the floor to your highest bays. To reach the highest bays warehouse associates have braved the heights of a warehouse to scan as much inventory as possible. This typically entails warehouses using forklift work stages that include platforms allowing personnel to be raised to access tall shelves. While OSHA regulations allow for this sort of practice, these platforms need to be designed in accordance to strict standards (ANSI/ITSDF B56.1).

> ## Needless to say, many workers are uncomfortable being raised to these heights.

Additionally, this process can be slow and take workers away from other warehouse activities. This is why warehouses began considering drones as a safer approach to high bay cycle counting.

Issues and Feedback for All Warehouse Drones

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Battery Life

One of the primary challenges with warehouse drones is their limited battery life and flight time. No matter the drone or manufacturer, drones can only fly for limited amounts of time before they need to be recharged (and eventually replaced). Warehouse drone solution providers are very upfront about their battery shelf life, no company admits to a charge long enough to support a >20 minute mission. The battery range quoted is typically 15 minutes on average, and some are as low as 12 minutes.

Shortened Mission Times

A 20-minute battery charge does not equate to 20-minute cycle count missions. If the drone is programmed to return back to its launch pad for re-charging, it needs enough battery life to adequately return. This means the drones need to always stay close by the stations or cut their missions short by up to 50% so they can return home. This means a 20-minute cycle count mission is typically shortened to 12-14 minutes and then it's time to recharge or change the battery packs.

Not So Autonomous

Most major drone providers describe their vehicles as autonomous or self-flying. This is a common way to describe these missions, but it's a misnomer. All warehouse drones require some monitoring by warehouse associates, solution provider employees, or sometimes both. This labor needs to be on hand to change battery packs, transfer data, and even monitor drones to ensure uptime and collision avoidance. This also typically requires special warehouse training.

Issues and Feedback of Warehouse Drones

Constant Prep-work and Precautions

In order for a drone to complete a safe and error-free scan of an aisle, all obstacles need to be removed. This includes obstacles on the ground AND in the shelves. Rotating blades push down on air to maintain their lift. And IT IS VERY COMMON for drones to become disabled due to foreign objects like:

- Shrink wrap
- Packing Tape
- Stray corrugate
- Loose labels

and other debris getting stuck in rotors.

Glorified Flying Barcode Readers

Most warehouse drones search and scan barcodes found on pallet and shelf labels. While the barcodes are helpful, they only provide half the picture.

Alternatively, Vimaan cycle counting solution includes full, high resolution, image "reconstruction" of the face of the shelf, including barcode reading, label text reading, item dimensioning, empty bin reporting, damage detection, and discrepancy reporting against the WMS,

Slow

Drones can reach heights a lot easier than workers, but one thing they don't tell you is that cycle counting with drones is excruciatingly slow. You may see videos of drones zipping around warehouse, those devices are not scanning a single thing.

Because the field of view on drones is so small, they need to spend time on each label ensuring everything is captured appropriately. A congested bin full of items could take a drone a few minutes to capture all the labels.

StorTRACK Air

Vimaan was one of the very first solution providers to offer warehouse drones for the purpose of inventory cycle counting.

StorTRACK Air from Vimaan was an aerial inventory robotic drone designed to fly around our customer warehouses and scan inventory providing real-time data on inventory levels, status, conditions, and locations. In fact, Vimaan has likely flown more inventory scanning missions from 2018-2022 than any other North American solution provider.

Based on these tens of thousands of missions (and working closely with some of the largest 3PLs in the industry) it has become clear that drones are not the cycle counting panacea the industry was hoping for.

Faster and Safer Cycle Counting

Up until 2023, Vimaan exclusively deployed drones to capture inventory data from shelves. Having flown more missions and conducted more inventory location scans than any other North American drone solution provider, the knowledge we have amassed has enabled the Vimaan team to become domain matter experts on the solution.

Instead of sticking with a solution with so many shortcomings, Vimaan has pivoted and has put its cycle counting and computer vision expertise to work to build a better mousetrap that is safer, more affordable, faster and more reliable than any cycle counting drone solution.

StorTRACK - Cycle Counting Done Right

Vimaan's prime directive is to design solutions based on customer needs and input. Vimaan engineers have spent years in warehouses around the United States to better understand persistent challenges involved with managing inventory. A WMS is a must-have to manage and track goods, but a WMS is only as good as the data it receives from the warehouse floor and shelves. This is why Vimaan has designed the next generation of StorTRACK, engineered to perfect the practice of cycle count automation in the warehouse.

StorTRACK is a mobile computer vision system in the form of a smart pallet, designed to improve the speed and quality of warehouse cycle counting. It enables fast scanning of warehouse racking to provide high frequency cycle counting. Lifted and maneuvered by pre-existing MHE, StorTRACK enables warehouses to use the same sensors to scan floor level inventory in addition to the 35' high storage bays (and every shelf in between).

StorTRACK - Cycle Counting Done Right
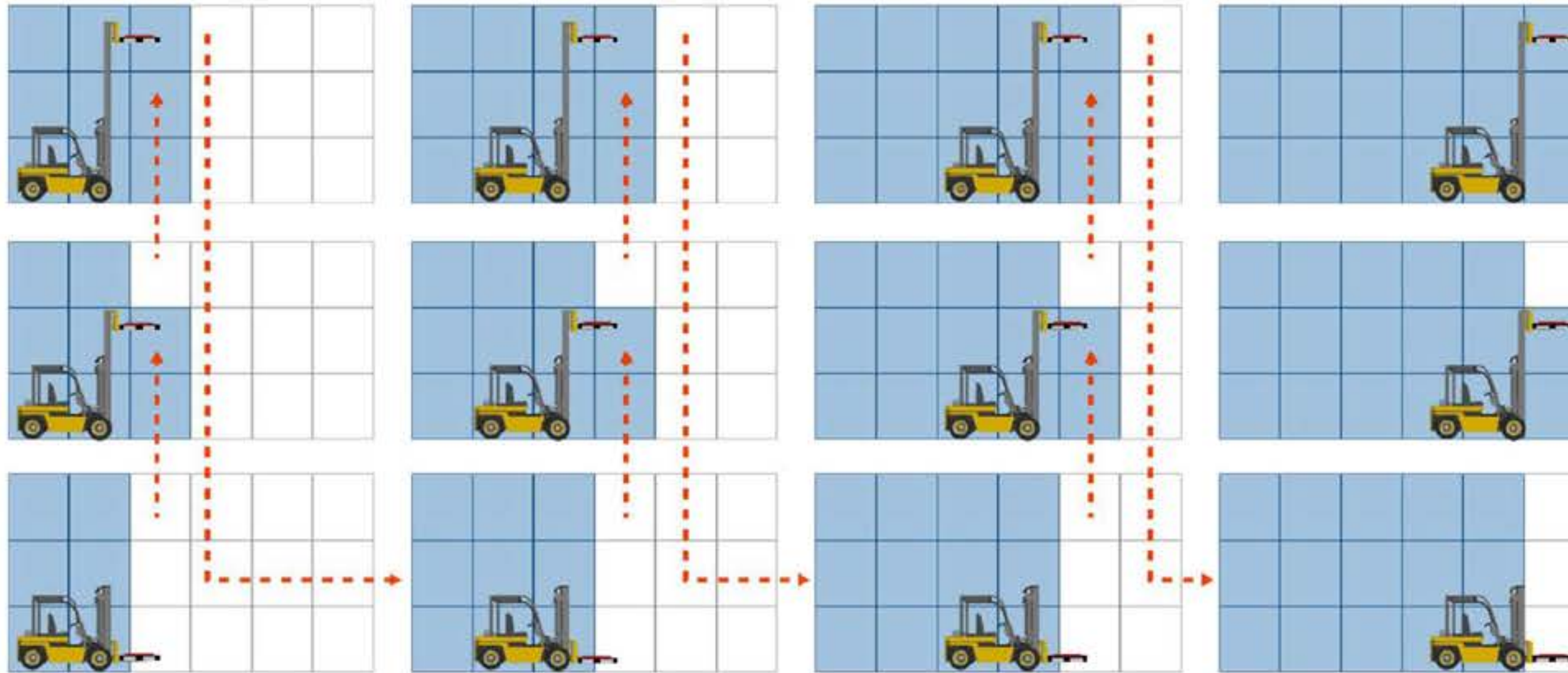
This portable system includes a software backend containing a pipeline to acquire, process, aggregate, and present data back to the end user. StorTRACK can be lifted by any MHE in the warehouse allowing operators to sweep warehouse racks in repeated vertical or horizontal scans. This allows a significant improvement in time to perform an inventory audit and provide more insights by processing camera images instead of a barcode scan.
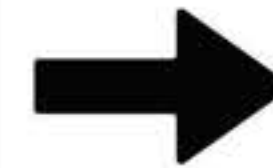
Why StorTRACK?

<10 seconds to fully scan a densely packed bin

8 hours to continue scanning without having to recharge

→ In that same time period, a drone would have **stopped 24 times** to change batteries

Advantages to the StorTRACK platform

✓ The fastest and most accurate cycle automation available

✓ Captures pallets, cases, and eaches – even in densely packed bins

✓ Safer, less expensive, more precise and >20X longer cycle count missions than drones

Achieve Success with Vimaan

While other solution providers deliver (not so) autonomous airborne barcode scanners, Vimaan has instead focused on delivering a more complete inventory management platform that delivers the warehouse 'truth' to a customer's WMS. This truth includes proactive alerts for discrepancies against the WMS, the validation of quantities, expiration dates, and part numbers. StorTRACK also provides an archive of searchable images of inventory locations, flagging of quality deficiencies, misplaced goods, and open storage space.

Less Headcount
Eliminates the need for teams of cycle counters manually auditing inventory

Safer Automation
No flying projectiles, polywrap entanglements, or risk of battery fires with StorTRACK

Longer Lasting
A single battery charge on StorTRACK lasts 8 hours, 24X longer than any drone

Extensive Audits
More than pallets, StorTRACK scans and captures put-away cases and eaches

Dense Scans
StorTRACK captures dense packed-in SKUs, even when repeated

Faster ROI
StorTRACK benefits combined with lower costs, delivers a return faster than any drone

For more information on StorTRACK or to receive a custom assessment of your cycle counting results contact our Cycle Count Automation Team.

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THE TRUTH IS HERE

Warehouse Inventory Vision and Verification
Precise and actionable insights from receiving to shipping and every step in-between

Contact Us: sales@vimaan.ai

www. vimaan.ai