

UNLEASH



INSIDE THE DIGITAL TRANSFORMATION TAKING PLACE IN DISTRIBUTION AND FULFILLMENT OPERATIONS

The distribution and fulfillment sector is experiencing a historic transition in the way it conducts business: from manual to automated operations; analog to digital processes; limited visibilities to real-time insights. It's part of a new industrial revolution that many refer to as the digital transformation, and in our industry, it's largely driven by the unrelenting acceleration of e-commerce.

For most companies attempting to succeed in this hyper-competitive market, it's becoming more apparent every day that yesteryear's fulfillment strategies can't keep pace with today's (and tomorrow's) consumer expectations. In many cases, survival in this environment will depend on how quickly companies can adapt and embark on their own digital transformations.

FLASH

THE POWER OF DC CONNECTIVITY



In an industry that has been relatively slow to digitize, this may sound like a daunting proposition. But in reality, it's far more accessible and tangible than one may imagine. The first step in this journey is to build a connected distribution center (DC) infrastructure — one that leverages the power of industrial internet of things (IIoT) technologies to connect equipment, control systems, automated processes, robotics and workers. While the impacts of this step are immediate, the long-term implications are immeasurable — laying the foundation for ongoing, future expansion and continuous improvements via machine learning and artificial intelligence.

MOVE THE NEEDLE TOWARD UPTIME

In the e-commerce distribution and fulfillment world, surprises typically come in the form of business disruptions, and many DC operators just accept them as normal occurrences. Every day, they troubleshoot equipment failures or expend valuable resources clearing repetitive bottlenecks that lead to extended periods of downtime or throughput losses. Expecting downtime should not be the status quo.

Every hour of downtime results in lost revenue. When you consider the costs of overtime, reallocated and idle workers, shipping and truck expenses, it can all quickly add up to significant losses. And while the clock is ticking, your cost per case shipped continues to rise and your hard-earned consumer loyalty is also on the line.

The whole point of a connected infrastructure is to avoid these losses by systematically moving the needle toward uptime.

What's more, most DC operators are satisfied with a day-to-day approach to the management of their fulfillment centers. Not only are they unaware of the root causes of daily disruption; they also don't compile this data from a historical perspective to monitor and detect sometimes obvious trends. In many ways, it's like operating with blinders on, ignoring daily transient data without seeking any insights to improve performance.

A connected infrastructure potentially transforms this transient data into actionable historical intelligence — thereby removing the blind spots that prevent operators from achieving unprecedented uptime and throughput levels.

This is why the digital transformation is sorely needed in our industry. DC operators simply don't know what they don't know. To stay competitive, they'll need new approaches to increase reliability, improve utilization, and maximize productivity.

REMOVE THE ELEMENT OF SURPRISE

With all the talk today about IIoT, machine learning and artificial intelligence (AI), sometimes it can be difficult to cut through the noise and figure out what's the point of all this technology. Simply put, it's about removing the element of surprise — and why Honeywell Intelligrated is taking a focused approach to connectivity in the DC. While we provide all the tools and technologies needed to help DC operators make the digital transformation — some of which we'll discuss herein — it all starts by asking one simple question:

WHAT IF YOUR BUSINESS WAS SO INTELLIGENT, SO CONNECTED, THAT NOTHING CAME AS A SURPRISE?

Quite simply, *that* is the point. Take a moment to imagine what life in a “no surprises” environment would look like, and what that could mean to your operations:

- Detecting potential equipment failure and fixing it before it breaks
- Squeezing every ounce of productivity out of your existing workforce, assets, equipment and systems
- Identifying the root causes of repetitive jams and other DC inefficiencies so they stop occurring
- Enabling visibility to all facilities, systems and processes for real-time and historic analyses
- Retaining the key employees who make your operations tick
- Achieving throughput rates that were once considered unimaginable
- Lowering the cost of each case shipped
- Limiting unplanned downtime and associated labor costs
- Growing revenue from all of the above benefits

From this perspective, it's easy to see why connectivity matters.

ENTER THE CONNECTED DISTRIBUTION CENTER

The Connected Distribution Center from Honeywell Intelligrated was designed specifically for those retailers and manufacturers seeking to eliminate surprises. Regardless of how far along your company is on the transformation from manual to automated operations, the Connected Distribution Center can deliver immediate and long-lasting results.

By connecting operational assets that contribute to DC productivity and effectiveness — from machine-level sensors, system controls and smart devices to workers, automation systems, robotics and the cloud — we're aggregating data from all inputs to deliver vital information on asset health and facility performance in real time.

The Connected Distribution Center gives enterprise managers and DC operators access to intuitive live dashboards, accessible mobile apps and insightful software for comprehensive visibility into their production operations. Together, these powerful tools give them the abilities to make informed decisions and act with decisiveness — regardless of whether their scope is a single asset or the entire enterprise.

Backed by a wealth of historic performance data, operators can quickly identify trending issues to remove bottlenecks and unlock the hidden potential of existing facilities. And for those seeking a long-term solution that will take them into the next generation of warehouse automation, the Connected Distribution Center is built to scale and adapt to the business expansion challenges of tomorrow.

Let's look at a few examples of how all this translates into significant bottom-line improvements.

INCREASE EQUIPMENT RELIABILITY

It's estimated that the cost of downtime in an average DC can be more than \$10,000 per hour, depending on the scale of the operation, its expected throughput rates and the amount of labor employed. Over the course of one year, this can add up to significant losses for e-retailers. By connecting equipment and asset sensors to our data platform, DC operators can systematically improve equipment reliability, reduce unplanned outages, and limit associated labor costs.

Traditionally, DCs utilize calendar-based maintenance programs, where material handling equipment and systems are serviced according to a predefined schedule, regardless of the fitness of the assets. Supporting programs like these requires significant budget allocations for service crews and spare parts inventories.

In a connected DC, where assets can be proactively and continually monitored, operators can reap the financial and operational benefits of a predictive, condition-based maintenance model. Consider the impacts on an average DC:

- Reducing downtime by 0.5 percent = \$100,000 annual labor savings
- Cutting preventive maintenance spend by 20–35 percent = up to \$40,000 annual savings
- 30 percent reduction in spare parts and 20 percent drop in inventory = \$140,000 annual savings

This example illustrates how a predictive model can net \$280,000 in annual savings through marginal increases in uptime and subsequent maintenance spend reductions.





CONNECTED ASSETS

One of the easiest ways to illustrate the value of a connected infrastructure is to examine how it would work in the critical path of an outbound sortation system. Simply by connecting the control systems of line sorters, scanners, merge and transportation conveyors to the Connected Distribution Center data platform, DC operators will gain access to a virtual control room for:

- Performance dashboards of affected systems and sub-systems
- Trending graphs for easy visualization
- Mobile alerts of fault conditions via the Pulse app

Then, by adding machine-level sensors to key equipment — such as motor gearboxes and control panels — enterprise managers and DC operators can begin to unlock the platform's full potential for uptime improvements and predictive maintenance. Connecting assets on the outbound sortation system provides insights into the following key performance indicators (KPIs):

- Motor temperature, vibration and current draw
- Scanner read rates and sortation performance indicators
- Flow balance of the main merge point

As the platform gathers information on each of these systems, sub-systems and KPIs, it's able to develop trending data on performance and asset health. This is where enterprise managers and DC operators can begin to leverage the power of deep data analytics to achieve measurable uptime and throughput gains. Using our outbound sortation system scenario, operators can leverage these insights to detect and resolve a variety of issues:

- Sortation scanner misreads and "bad gaps" that overload recirculation conveyors
- Excessive conveyor motor vibration, indicating imminent failure
- Inefficient, manual activation/deactivation of merge lanes

At the end of the day, this translates into a lower cost per case shipped, improved labor utilization and a reduction in expenses due to idle or reallocated labor. The outbound sortation system is just one of many areas where enterprise managers and operators can utilize connected assets in the DC. As they integrate additional systems within the Connected Distribution Center data platform, they can expect ever-increasing asset reliability and performance gains in their operations.

IMPROVE UTILIZATION TO DRIVE THROUGHPUT

Enabling connectivity in an average DC can uncover opportunities to greatly improve throughput and labor utilization across all fulfillment activities. A connected DC can continuously monitor activities occurring in all fulfillment systems and processes and notify operators when they are not hitting targeted throughput rates.

By evaluating trending data to detect when systems and resources are underutilized, the system uncovers root causes for inefficiencies and reveals error conditions. This helps operators make the necessary real-time adjustments to remedy these situations.

In a 750,000 square-foot facility that operates 5,200 hours per year, processes 200 cases per minute and earns \$10 in revenue per case, increasing output by only 1 percent will result in 120 additional cases per hour, or the revenue increase equivalents of:

- \$1,200 per hour
- \$24,000 per day
- \$6,000,000 per year

With enhanced visibility into fulfillment activities, operators can identify how many jams per day are occurring, how long they will take to correct, and how much additional runtime is required to meet throughput targets. Armed with this real-time and historic information, they can take corrective actions to improve system and labor utilization.

MAXIMIZE DC PRODUCTIVITY

Finding, training and retaining qualified employees are among the most common barriers to consistent DC productivity. With a 40 percent annual employee turnover rate in the warehouse sector, DC operators are looking for every opportunity to reduce attrition rates.

The Connected Distribution Center analyzes labor activity using a patented algorithm to detect even minute changes in resource behavior which could indicate changes in job satisfaction and a higher probability of leaving. Armed with this information, DC operators can take the necessary steps to retain key employees or proactively replace them to limit production impacts.

In an average DC staffed with 400 direct labor resources across three shifts, each at a \$15 hourly rate, DC operators can use this data to limit attrition. In this scenario, a 10 percent improvement could save the operation \$420,000 annually.

BUILD A FOUNDATION FOR A CONNECTED FUTURE

Honeywell Intelligrated designed the Connected Distribution Center to help you address today's challenges while keeping an eye on the future. We've seen how connecting DC operations delivers immediate reliability, utilization and productivity gains. We're helping companies rise to the challenges of modern commerce by accelerating their progress along with their respective digital transformations.

But we've also engineered the Connected Distribution Center to help you prepare for an even more connected future. On each day that the system accumulates data, the potential for greater insights grows. As intelligent machine learning algorithms continue to improve on their ability to detect patterns of performance and asset fitness, the technology will enable operators to fine-tune productivity in real time.

It all starts by making the digital transformation today with the Connected Distribution Center. 

