MAKE THE TRANSITION TO DATA-DRIVEN LIFECYCLE MANAGEMENT.

Put 99.9% Uptime Within Reach

Honeywell Intelligrated®

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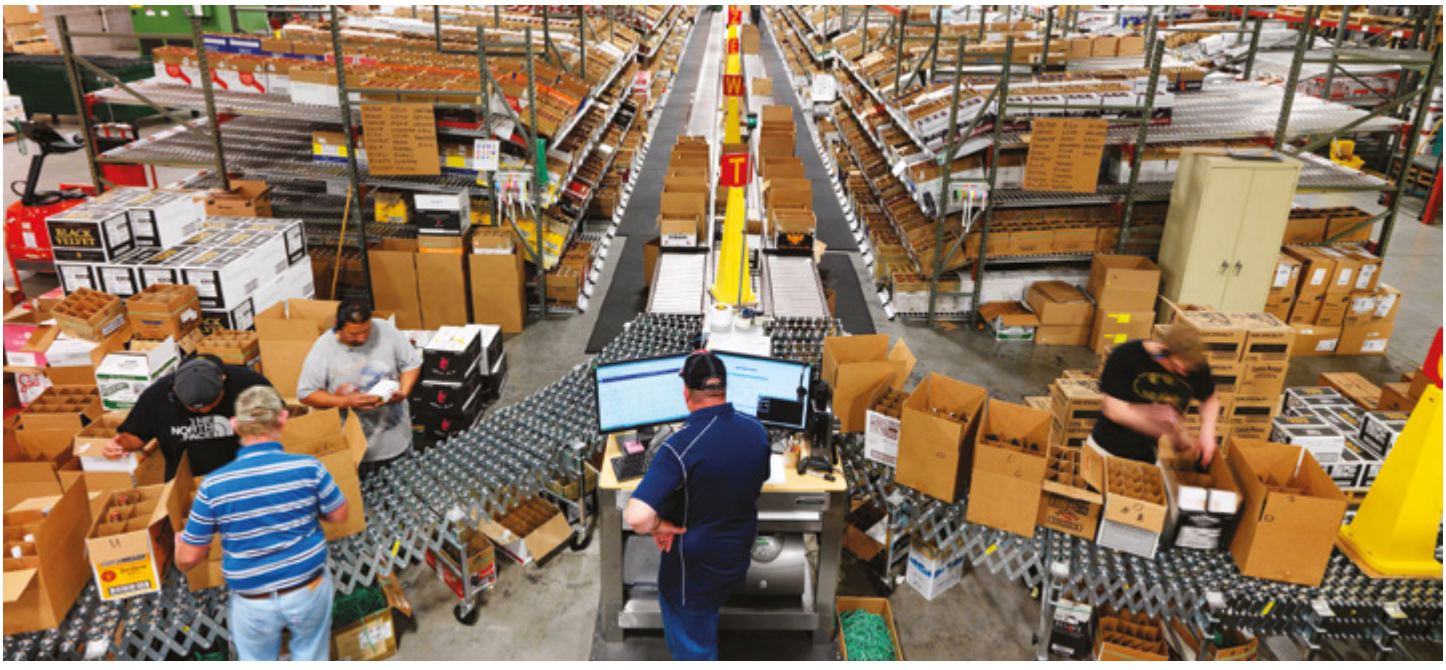
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INTRODUCTION

Today's e-commerce consumers demand fast order fulfillment and increasingly expect next- — and even same-day — delivery. Distribution center (DC) operators and supply chain leaders find themselves caught between rapidly changing market dynamics — such as labor shortages and the digital transformation from manual to automated operations — and unrelenting competitive pressures. To differentiate, retailers are pushing the fulfillment envelope and shortening e-commerce delivery windows to as little as two hours.

Succeeding in this hypercompetitive environment will require a new data-driven approach to lifecycle management. To reduce unplanned disruptions and increase reliability, DC operators must make a fundamental transition from traditional lifecycle management strategies of "react and respond" to a new paradigm of "analyze and predict." This white paper will explore how companies can embark on a journey to predictability with their lifecycle management programs — not only to improve reliability but also achieve newfound productivity and maximize uptime.



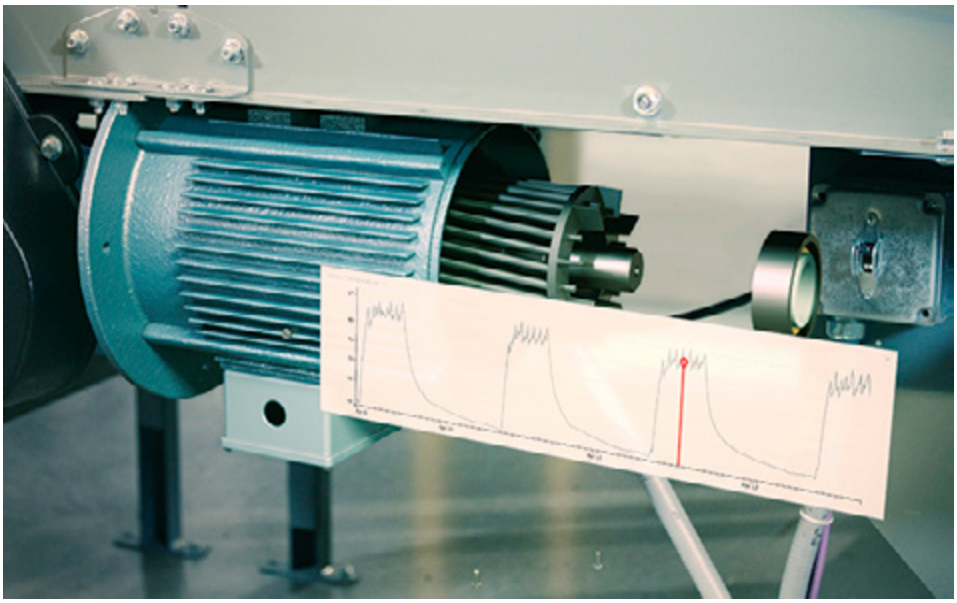
CAN YOU AFFORD TO OPERATE YOUR DC BLINDLY?

1

It's a familiar story: DCs have been slow to adopt advanced technologies that monitor, record and analyze operational data. Traditional methods of preventive maintenance (PM) and reactive responses to issues in DCs are providing adequate results but can lead to unpredictable consequences.

McKinsey reports that in the retail sector, for example, only 30 to 40 percent of the potential value of DC operational data has been captured. In a related supply chain industry report, nearly two-thirds of companies confess to not utilizing any technology to monitor the performance of their operations.

Meanwhile, other industries, such as the energy sector, have built data utilization into their operations. From power plant output to oil platform production, these companies analyze every bit of data to gain even the smallest amounts of efficiency out of a process.



THE VALUE OF OPERATIONAL DATA

Potential benefits of predictive maintenance programs based on data collected throughout business processes can include:

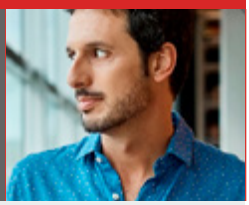
- **70–75%** elimination of equipment breakdowns
- **35–40%** decrease in downtime
- **25–30%** reduction in maintenance costs
- **20–25%** increase in production
- **10X** return on investment

Yet even with escalating e-commerce challenges, many businesses continue to run DCs with little to no reliance on the operational data that they already own. Instead, they rely on intuition and feel, hoping to meet throughput targets or business objectives. But as consumer service level agreements (SLAs) dictate ever shorter cycle times, this approach doesn't always deliver desired outcomes.

Unplanned equipment and system outages can create a domino effect of inefficiencies and potential profit losses — from production downtime and idle labor to delivery/shipping truck delays and disappointed customers. It's a vicious cycle that, if perpetuated day after day, silently can erode a company's bottom line.

An emerging (and arguably better) alternative is to leverage the untapped power of predictive maintenance technologies. By doing so, DC operators can reduce the amount of unplanned operational disruptions they experience — and potentially even eliminate them.

WHAT ARE YOUR MOST CRITICAL NEEDS?

Supply Chain Executive		Operations Manager		Maintenance Manager	
Lower cost per case shipped		Deal with ever-increasing production targets		Complete maintenance in shorter windows in operational schedules	
Seek ways to increase company uptime and productivity		Eliminate bottlenecks and optimize the flow balance through the DC		Train and retain technicians	
Improve efficiency in existing operations to avoid capital expenditures for a new distribution center		Achieve visibility into data to help improve productivity		Trusted source for technical information and assistance	

INCREASE OPERATIONAL RELIABILITY THROUGH PREDICTIVE MAINTENANCE

2

Durability, reliability and uptime are the top priorities when evaluating any DC automation technology investment, according to 90 percent of companies that responded to a recent survey by Modern Materials Handling. Nearly as important, according to the same survey: 81 percent closely consider the total cost of ownership, speed to ROI and maintenance throughout the lifecycle of their investments.



One key metric on which the use of data can have a significant impact is DC uptime. Not only is uptime vital to meeting daily throughput targets and gauging overall operational effectiveness, it's often where traditional lifecycle management strategies fall short. Specifically, maintenance operations need **to transition from conventional strategies of "react and respond" to "analyze and predict."**

By adopting predictive maintenance strategies, DC operators can reduce the amount of unplanned operational disruptions they experience — and potentially even eliminate them.

Businesses immediately can reap benefits by connecting machine-level sensors and control system data to a robust analytics software platform. Connected infrastructures help DC operators keep systems running at peak productivity levels — continuously accumulating data on equipment and system conditions to provide real-time statuses and insightful analytics of overall system performance. Advanced machine learning (ML) algorithms detect equipment degradation and process inefficiencies quickly to identify conditions that could inhibit productivity or cause unplanned downtime.

What's more, **DC operators don't need to be data scientists to benefit from these insights.** Information is easily accessible through live performance dashboards and alerts which operators can access from anywhere and at any time for:

- Real-time notifications of issues affecting an asset or process
- Actionable insights to improve productivity
- Visualizations of key system parameters and metrics along with historical data trends for optimizing maintenance and operations
- The abilities to predict and avoid unplanned downtime

Organizations that adopt a data-driven lifecycle approach are positioned to win.

START YOUR JOURNEY TO PREDICTABILITY

As DCs become more automated, traditional lifecycle management programs become obsolete. To protect system investments and maximize uptime, DC operators should not ignore the wealth of operational data that is readily available to them.

DC WITH TRADITIONAL MAINTENANCE PROGRAMS		DC WITH DATA-DRIVEN LIFECYCLE SERVICES
Frequent Disruptions →	Fewer Disruptions →	No Disruptions
Data is inaccessible	Data provides insights	Data analysis is automated
Equipment is run to failure	Maintenance is part of operation	Predictive maintenance is optimized
Downtime inhibits production	Actionable insights drive productivity	Unplanned downtime is eliminated

WHAT DOES "DATA-DRIVEN" REALLY MEAN?

Components of a data-driven lifecycle services program include:

- **Assessments —** Gain a deeper understanding of asset and system conditions from industry and equipment experts; develop reliable parts and asset management plans.
- **Augmented reality technical support —** Interface with original equipment manufacturer (OEM) support and engineering teams with augmented reality, "smart glasses" solutions that allow information to be shared for fast troubleshooting and diagnostics.
- **Engineered solutions —** Implement robust solutions to the most difficult process and operational challenges; utilize simulation tools prior to implementation to minimize disruptions.
- **IIoT infrastructure —** Connect critical assets and systems (such as sortation) to enable proactive, predictive maintenance capabilities. Infrastructure utilizes machine control data, sensors, software, cloud storage and data analytics.
- **Training —** Train technicians about the safe operation and servicing of new automation systems; refresh staff training needs as needed.

DEFINE YOUR CRITICAL BUSINESS OUTCOMES AND ACHIEVE THEM

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Although uptime is critical, it's not the sole metric to consider. Every business defines its own success by establishing priority outcomes against which they measure performance. Whether it's hitting daily throughput targets, maximizing labor productivity, or increasing annual profits, DC operators have defined objectives they must achieve.

Reaching these goals requires the ability to address the fundamental building blocks of operational success. Whether companies choose to accept these responsibilities themselves or partner with a lifecycle services provider — such as an OEM — each of the following building blocks must be present to achieve critical business outcomes.

Only with all of these lifecycle management building blocks in place is it possible for companies to achieve their critical business outcomes consistently — even if their goal is 99.9 percent uptime.

BUILDING BLOCKS FOR OPERATIONAL SUCCESS	
1. **Data visualization and analytics**	Leveraging data is essential for companies hoping to achieve continuous operational improvements. **Much of this data already exists within control systems and simply needs analytics tools and visualization software to deliver real-time production insights.**
2. **Resident technicians and supervisors**	Modern DCs are comprised of complex systems and automation technologies. An on-site staff of qualified technicians is imperative to ensure smooth, reliable operations.
3. **Spare parts management**	A robust spare parts management program is essential for delivering efficiently planned and corrective maintenance activities.
4. **24/7 technical support**	When complex issues arise, technicians need access to expert OEM support to help troubleshoot issues and accelerate equipment repairs and issue resolution.
5. **Technical advisers**	Individuals with extensive facility experience and equipment expertise are needed to troubleshoot and advise the best course of action on a given piece of equipment or technical issue.
6. **Field engineers**	A core of field engineers is helpful for bolstering an on-site staff in a variety of situations, such as accelerating preventive (planned) maintenance processes or identifying flaws in a system's design.
7. **Asset management and assessments**	DCs must have periodic assessment programs in place to evaluate both equipment and operational performance. Assessments are essential for developing multi-year, asset management plans to allow for modifications, upgrades and obsolescence.
8. **Engineering center of excellence**	As the needs for modifications and upgrades are identified, this team of engineers can help ensure proper design and implementation of these improvements.
9. **Training**	With continuous industry growth, high attrition rates and a shortfall of qualified technicians, the need for training is more critical than ever. Training helps enhance your existing technicians' skillsets while aiding in the recruitment process.

MAKE THE CULTURAL SHIFT TO EMBRACE DATA

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> Like any new technology or process, embracing the power of data in the DC will require an organizational cultural shift in order to transform lifecycle and asset management programs.



Data-driven insights that enable predictive maintenance programs and shed light on performance issues can be perceived as a threat to employees and stakeholders alike, many of whom are either content with the status quo or fear a disruption in their standard modes of operation.

DC operators can help lead the crucial transition to a data-friendly culture by implementing the following best practices:

1. **Establish transparency —** Give everyone in the company access to the same data so they can learn from the information and insights and then contribute to problem solving.
2. **Promote cross-functional trust —** Transparency inevitably brings issues to the surface. Rather than focusing on recrimination and creating fear, it's essential for all departments to build trust and work together on resolutions.
3. **Align the organization to business outcomes —** Once priorities and goals have been clearly defined, leadership must make sure that everyone across the business is working to achieve them. This also means everyone must understand what has value and what does not.

For companies that have been slow to adopt data, the good news is that they quickly can catch up to (or surpass) their competitors. This process starts with obtaining comprehensive, objective assessments of both equipment condition and operational performance. This critical step prepares DC operators to establish a collaborative relationship with a lifecycle services solutions provider who leverages data to develop lifecycle management plans with robust system modeling. DC operators also will need to invest in technologies that enable data acquisition, visualization and analytics and deliver real-time actionable insights.

When selecting a lifecycle management partner, make sure they possess the industry expertise and comprehensive capabilities to complement your internal team's competencies and provide the know-how to modify, upgrade and transform your DC with a data-driven infrastructure. And as your organization makes this necessary digital transformation, make sure your lifecycle management partner augments these emerging technology capabilities with traditional boots-on-the ground support, such as:

- **Providing** dedicated technical advisers who share advanced knowledge directly with site operations and maintenance teams
- **Optimizing** spare parts management
- **Expanding** training of DC employees in new automated material handling technology
- **Supporting** in-house technicians 24/7/365, including through the use of technologies such as augmented reality glasses that boost technician competency

HONEYWELL INTELLIGRATED CAN HELP

Honeywell Intelligrated creates tools to help companies embrace data utilization in their lifecycle management programs. Not only do we provide our customers with the building blocks to success, we're helping them integrate our foundational connected solutions to deliver the insights needed to achieve their business outcomes.

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