Honeywell Intelligrated

Implementing a Real-time DC Asset Monitoring Program

Real-time asset monitoring programs — or the ability to connect machinery and automation systems via the industrial internet of things (IIoT) technologies — allow distribution center (DC) operators to reduce unplanned downtime, increase throughput, and maximize facility utilization. Effective implementation of these programs helps to reduce e-commerce order fulfillment complexities.

DCs Need IIoT

Compared to other industries, the distribution and fulfillment (D&F) sector is relatively new to the concept of connecting assets.

In the maintenance and energy sector, IIoT-driven predictive maintenance programs deliver a **10:1 return on investment (ROI)**.[i]

Only **2 percent** of executives identified supply chain performance as a focus of their digital strategies.[ii]

70 percent of material handling executives consider investments in Industry 4.0/IIoT technologies a top priority.[iii]

Underestimating the Cost of Downtime

While many DC operators recognize the potential of IIoT, most underestimate the true cost of downtime.

90 percent of companies say their top priorities are durability, reliability and uptime.[iv]

80 percent of businesses are unable to accurately estimate their downtime rates.[v]

Many underestimate downtime costs by **200–300 percent**.[vi]

Downtime creates a domino effect of DC issues:

- Depleted inventories
- Disruption to innovation
- Lost production
- Missed customer service level agreements (SLAs)
- Recovery costs
- Stressed equipment and systems
- Wasted labor and productivity
- Weakened brand loyalty and customer trust

Predictive Maintenance Programs Prove Their Value

IIoT-driven predictive maintenance programs are proven to improve processes and reduce operational costs:

- **25–30%** reduction in maintenance costs
- **70–75%** elimination of equipment breakdowns
- **35–40%** decrease in downtime
- **20–25%** increase in production[vii]

Utilize Control System Data

Leading retailers are implementing pilot programs that tap into the vast amounts of available data from machine control systems.

Hundreds of thousands of data points can be accessed from a control system.

Data extracted from programmable logic controllers (PLCs) alone is transient and offers no trending information or insights.

Software and analytics tools are needed to filter out the noise and deliver historical trends and actionable insights.

This step by itself can provide tremendous value and address performance issues:

Resolve conveyor faults that create repetitive jams.

Uncover scanner timing and read rate issues to prevent unnecessary recirculation.

Log the duration of downtime in pick stations, merges, transfers and recirculation loops.

Add Condition Sensors on Equipment Motors and Gearboxes

Add temperature and vibration sensors to provide deeper insights into system performance and predict equipment and system failures before they occur.

Leverage smart analytics software, machine-learning algorithms and artificial intelligence (AI).

Detect and track deviations from performance baselines.

Receive alerts when parameters exceed defined temperature and vibration thresholds.

Integrate Predictability Into Maintenance Procedures

Connect analytics insights to other fulfillment technologies and business systems to automate the creation of service tasks and make the transition to a true predictive maintenance model.

Computerized maintenance management system (CMMS)

Voice-directed maintenance and inspection technology

Augmented reality smart glasses for live troubleshooting

Gain Deeper Insights Into Equipment Health

A fully connected infrastructure delivers insights into real-time and historic equipment health that can be used to investigate a variety of issues that sap DC productivity, including:

- Current draw of a power control panel
- Forces from sustained impact from products on equipment
- Temperature and vibration of conveyor and sortation motors
- The time of an exception and its surrounding conditions

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iii. Subu Narayanan and Michael Coxon, "It's the last IT/OT mile that matters in avoiding Industry 4.0's pilot purgatory," October 8, 2018, https://www.mckinsey.com/business-functions/operations/our-insights/operations-blog/its-the-last-it-ot-mile-that-matters-in-avoiding-industry-40s-pilot-purgatory (accessed March 5, 2020).
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v. Graham Immerman, "The Real Cost of Downtime in Manufacturing," MachineMetrics, May 8, 2018, https://www.machinemetrics.com/blog/the-real-cost-of-downtime-in-manufacturing (accessed March 5, 2020).
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vii. https://www.energy.gov/sites/prod/files/2013/10/f3/omguide_complete.pdf