

FIVE COMPELLING REASONS TO INVEST IN BATTERY DATA TOOLS



Philadelphia Scientific®
industrial battery innovation



Understanding and managing your battery assets are critical for the evolving forklift fleets in North American warehouses. As the logistics landscape continues to emphasize sustainability, operational efficiency, and data-driven decision-making, batteries emerge as a cornerstone for maintaining productivity and minimizing downtime. This eBook examines five pivotal reasons why robust battery data is indispensable, offering detailed insights supported by authoritative statistics and industry case studies.



1. OPTIMIZING BATTERY PERFORMANCE THROUGH DATA

Incorporating IoT and advanced data analytics into battery management has become a hallmark of cutting-edge warehouse operations. Monitoring critical battery metrics—such as charge cycles, temperature variations, and energy efficiency—provides actionable insights that extend battery life and enhance overall performance. These efforts resonate with the industry-wide shift toward integrating analytics to drive operational excellence.

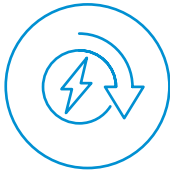
Advanced warehouse management systems (WMS) and enterprise systems (WES) enable seamless integration of battery data, creating a unified view of operational health. For instance, research from McKinsey & Company highlights that IoT-enabled analytics can increase asset availability by 5 – 15%.¹

KEY BENEFITS



Prolong Battery Life

Comprehensive monitoring tools can extend battery life by optimizing cooling and charging times.



Cut Operational Costs

Leveraging data analytics enables predictive maintenance, which helps detect equipment issues before they escalate. This proactive approach prevents costly breakdowns and repairs, leading to significant cost savings and reduced unplanned downtime.



Align Equipment with Workflow

Integrating battery insights into WMS/WES improves synchronization between equipment and operations, minimizing inefficiencies.

INSIGHT

A well-maintained lead acid battery has a lifespan of 1000 to 1500 charging cycles. Even if you charge a lead-acid battery for a short period, say 15 minutes, that counts as one charging cycle. This further reduces the lifespan of a lead-acid battery if you do not carefully charge it to 100% every time.²

1. [McKinsey & Company, Digitally-enabled Reliability: Beyond Predictive Maintenance](#)
2. [Williams Machinery, Everything You Need to Know About Electric Forklift Batteries](#)



2. ENABLING PREDICTIVE MAINTENANCE

Maintaining battery health is crucial for ensuring uninterrupted forklift operation. Predictive maintenance, powered by real-time data, allows organizations to preemptively address issues before they escalate into costly disruptions. Using IoT, manufacturers can see a 10 - 20% increase in equipment uptime and availability as highlighted in a Deloitte report.³

Using historical and real-time data, operators can identify patterns that signal potential battery performance issues. Deloitte reports that businesses adopting predictive maintenance tools experience a 20 - 50% reduced maintenance planning time.³

KEY BENEFITS



Minimize Equipment Downtime

Real-time data prevents unexpected breakdowns.



Lower Maintenance Costs

Efficient scheduling reduces unnecessary expenditures.



Avoid Operational Disruptions

Proactive issue resolution ensures continuous workflows.

CASE STUDY

A large e-commerce retailer implementing predictive maintenance in their fulfillment centers used IoT sensors and machine learning algorithms to monitor their complex network of material handling equipment. The impact was substantial. They saw a 25% reduction in equipment downtime, 18% increase in order processing speed, and a 40% decrease in maintenance-related delays.⁴

3. [Deloitte, 2023 Predictive Maintenance and the Smart Factory](#)

4. [IENSTITU, Predictive Maintenance in Supply Chain Operations](#)



3. SUPPORTING SUSTAINABILITY GOALS

While lithium-ion batteries often dominate conversations about sustainability, lead-acid batteries offer significant environmental advantages, particularly due to their high recyclability. 99% of lead-acid battery components, including lead and plastic, can be recycled into new batteries or other products, according to the Battery Council International.⁵

Efficient charging and proper maintenance of lead-acid batteries reduce energy waste and extend their lifespan, aligning with corporate sustainability goals.

KEY BENEFITS



Promote Recycling

Lead-acid batteries can be recycled effectively, minimizing environmental impact.



Achieve Sustainability Targets

Proper battery management supports corporate green initiatives.



Enhance ESG Reporting

Demonstrating sustainable practices improves stakeholder trust and brand reputation.

PRACTICAL INSIGHT

According to the U.S. Geological Survey, domestic U.S. recycling of used lead batteries and other lead-bearing scrap provided approximately 72% of the domestic demand for lead in 2019.⁶

5. [Battery Council International, 2020](#)

6. [US Geological Survey, U.S. Geological Survey, 2020, Mineral Commodity Summaries 2020](#)



4. ENHANCING OPERATOR EFFICIENCY

Battery management tools simplify tasks for warehouse operators by providing clear alerts for charging and maintenance needs. Automation in battery management reduces manual intervention and errors, allowing operators to focus on core responsibilities.

Warehouse environments increasingly benefit from such tools, which integrate seamlessly into workflows to ensure that battery maintenance is neither overlooked nor disruptive. Automated alerts, for instance, can reduce the risk of battery-related operator errors, ensuring forklifts remain operational when needed.

KEY BENEFITS



Streamline Operations

Automated alerts simplify battery-related tasks.



Reduce Human Error

Technology minimizes the likelihood of mistakes in battery management.



Boost Productivity

Ensuring forklift readiness enhances overall workflow efficiency.

EXAMPLE

A leading wholesale grocer reduced its annual battery change costs by \$194,728 and lowered its fleet size from \$2.5 million to \$1.9 million, resulting in a \$600,000 capital savings. By extending battery life, the company achieved an additional \$42,600 in annual savings on battery purchases.⁷

7. [Philadelphia Scientific](#)



5. DRIVING DOWN TOTAL COST OF OWNERSHIP (TCO)

One of the significant barriers to adopting electric forklifts is the perception of high costs. Proper battery management helps address this concern by maximizing the utility of battery assets, thereby reducing the frequency of replacements and lowering energy expenses. These improvements directly impact the total cost of ownership (TCO).

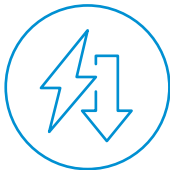
This is particularly relevant for industries like e-commerce, where operational precision and cost efficiency are paramount.

KEY BENEFITS



Extend Battery Lifespan

Prolonged use of batteries decreases replacement costs.



Optimize Energy Efficiency

Reduced energy use lowers operational expenditures.



Improve ROI

Lower TCO increases the financial viability of electric fleets.

REAL-WORLD SAVINGS

Given your forklift battery can also be as much as 30% of your forklift's total cost, taking care of it is crucial not just for its longevity and efficiency, but in creating a safe, productive, and cost-effective facility.⁸

8. [Supply Chain Xchange, Eight Mistakes That Will Shorten Your Forklift Battery's Life](#)

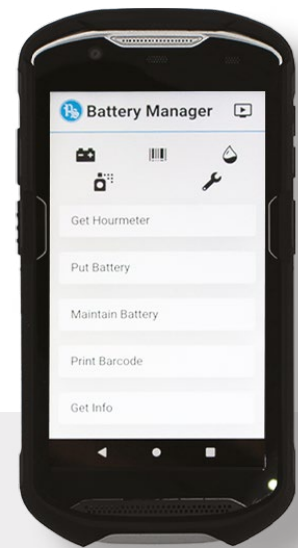


CONCLUSION

Navigating the complexities of modern warehouse operations demands tools that are not only functional but transformative. Selecting the right battery asset tool is critical to maintaining competitiveness and meeting evolving demands. Philadelphia Scientific's Battery Manager goes beyond being a mere monitoring solution—it is a strategic enabler that empowers businesses to adapt and thrive.

Battery Manager addresses key challenges such as sustainability, efficiency, and cost optimization. It integrates seamlessly into broader operational frameworks, enabling data-driven decisions that amplify warehouse productivity and profitability. Unlike traditional tools, Battery Manager is designed to align with the trends shaping the future of logistics, providing a clear path toward achieving long-term operational excellence.

Whether your focus is on maximizing ROI, driving innovation, or meeting stringent customer demands, Battery Manager positions itself as an indispensable asset. Its ability to deliver actionable insights and streamline workflows makes it a cornerstone for businesses looking to evolve and lead in a competitive landscape.



TAKE THE NEXT STEP

Explore how Philadelphia Scientific's Battery Manager can revolutionize your approach to warehouse management. Discover the future of battery optimization and take control of your operations today.



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