

Embracing The Next Level Of Warehouse Operations

Transform Your Business With Advanced Electric Warehouse Products

 **JUNGHEINRICH**[®]



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Managing a warehouse, distribution center (DC) or manufacturing plant today is difficult – speed, accuracy, budgets and safety can leave even the most organized operations managers scrambling under the pressure that never seems to subside.

More than ever before, material handling equipment today plays a large role in running an efficient warehouse operation. Factors such as fleet size, operation demands, labor costs and available space all impact the material handling process and requirements.

The Road To Electrification

While some operations are just beginning to use electric lift trucks, others more experienced with their integration are seeking an even greater competitive edge in managing their material handling flow and accuracy while reducing operating costs as well as overhead.

Depending on their respective stage of transition and application requirements, businesses have additional factors to consider in their material handling processes. How do you ensure your business is getting the most from its warehouse products, and are you optimizing your fleet for the future?

Introducing A Better Way: Advanced Warehouse Products

In this guide, we will review the lift truck electrification journey focusing on two key stages – **beginner to advanced**.

You'll also learn how to seamlessly transition your operation to take full advantage of advances in warehouse products and handling solutions to gain greater efficiencies and dramatically lower your overall costs.

Pantograph Reach Truck

- Runs 2 Shifts on 1 Battery Charge - Guaranteed
- Fast acceleration, travel and lifting speeds
- Superior capacity retention with base legs integrated into chassis
- Industry-leading 1,000 hour service interval

Turret Trucks

- Increase productivity by up to 25% with optional Warehouse Navigation system
- Guides operator to shortest distance
- Seamless Warehouse Management System (WMS) integration

Sit-Down Riders

- 3-wheel and 4-wheel
- Industry-leading run times
- Run two full shifts with one battery charge
- curveCONTROL helps manage speeds while turning



Stand-Up Counterbalance

- From shuttling goods to loading trailers, this lift truck has the flexibility to move large loads in confined spaces
- Tight turning radius utilizing full traction control and dual drive motors for improved maneuverability
- Adjustable suspended anti-fatigue floorboard

Order Pickers

- Low-Level and High-Level
- Automatic pallet grip – automatically centering the pallet for a secure grip
- Side gates – nested out of the way when in the up position, giving the operator maximum access when picking product
- Provides peak performance in narrow aisle applications

Stage 1: The Shift To Electric Lift Trucks

Making the shift to an electric lift truck fleet is not a new trend. According to the International Truck Association (ITA), more than 60 percent of lift trucks and warehouse products in use today are electric. This trend is expected to continue increasing with new advancements and technologies on the rise.

There are four key reasons why most warehouses, distribution centers, manufacturing and retail applications are making the shift to electric.

Electric forklifts are quiet, non-emitting, smooth-running and easy to maintain – making them the ideal choice for indoor operations.

Electric Basics

Real Cost Savings

Electric warehouse forklifts require zero fuel and less maintenance to operate. When the daily savings are calculated annually over an entire fleet, the cost savings are real and can have a significant impact on the operating budget.

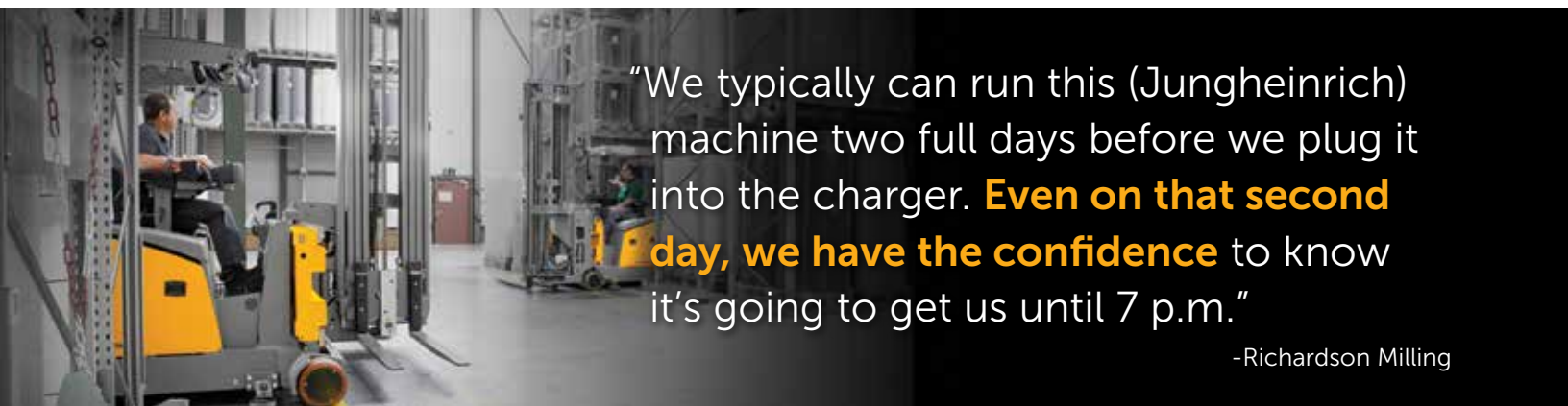
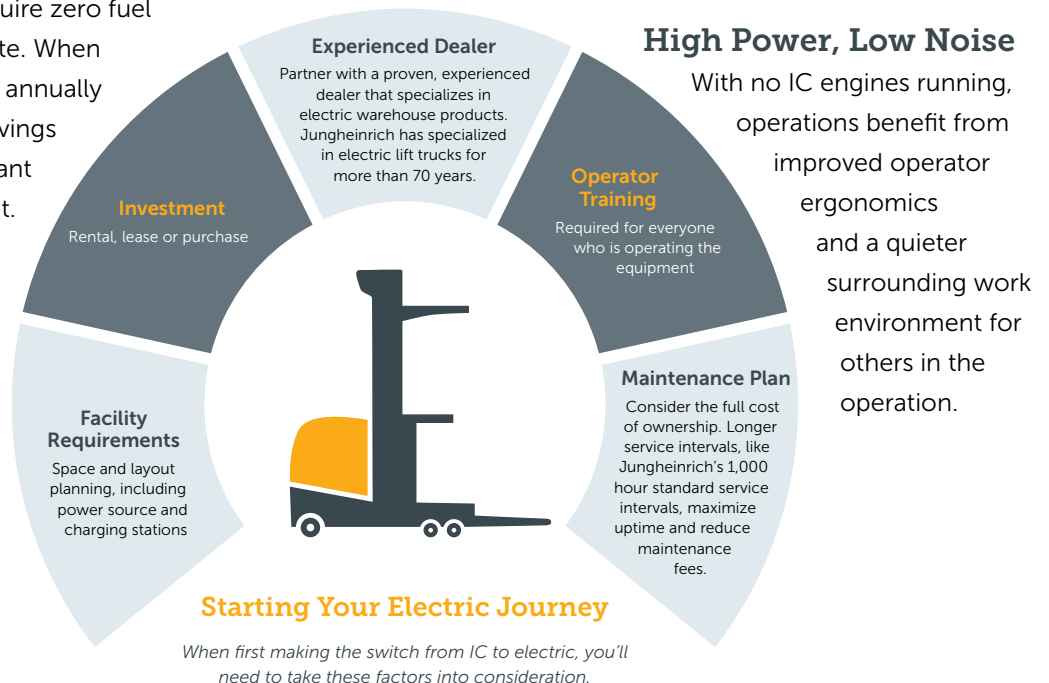
Environmentally-Friendly

Electric lift trucks do not produce carbon emissions nor contribute to air pollution. This provides a friendlier, no-emissions, safer warehouse space for everyone involved.

Efficiency & Run Times

When evaluating shifting from Internal Combustion (IC) to electric – look for products that are designed for longer run times and throughput for increased productivity. Electric lift trucks also feature compact design elements for a tighter turning radius, increasing efficiency especially when working in narrow aisles. In addition, less moving parts on electric forklifts offer a longer equipment life span.

When choosing an electric warehouse product for an operation - energy efficiency should be a top consideration. Longer run times help maximize uptime and productivity - and also translate to the need for less equipment for your operation. Jungheinrich® has pioneered advanced AC technology and continues to lead the industry in resulting efficiencies and productivity.



“We typically can run this (Jungheinrich) machine two full days before we plug it into the charger. **Even on that second day, we have the confidence** to know it’s going to get us until 7 p.m.”

-Richardson Milling

Advanced 3-phase AC Technology

- Energy efficient, no brushes, no maintenance
- Low energy consumption
- Longer run times
- Leading lift and travel speeds
- High level of efficiency with excellent energy management

Jungheinrich's Advanced Warehouse Products Lead The Charge With Fifth-Generation AC Technology

While other manufacturers have struggled to offer electric options that matched the capabilities of internal combustion engines, Jungheinrich pioneered the innovation of the first 3-phase AC technology in an electric forklift. This development changed the standard for the entire material handling industry.

Jungheinrich has continued to lead the charge – continually improving electric AC technology. Now fifth generation, innovative industry-leading advancements include guaranteed 16 hours of continuous run time on one battery charge, without the need for interim charging, battery changing or additional batteries.

Currently Jungheinrich offers the most energy-efficient warehouse products with advanced technology on the market – and continues to heavily invest in its design and technologies for the future.





Stage 2: Scaling Up Your Electric Lift Truck Fleet

Advanced Warehouse Products

While Stage 1 of the Electrification Journey is focused on implementing an initial electric fleet, Stage 2 in the Journey focuses on adoption of more advanced warehouse product technology and solutions – helping businesses take their operations to an even higher level of performance.

Not all electric lift trucks are the same, and selecting the right electric lift truck fleet is critical. An advanced product offering can run longer, provide smart technology solutions to simplify workflow and improve productivity.

This combination translates into real savings – from simplifying labor requirements to a reduction in fleet size and improved accuracy.

Energy Efficiency Gains: Run 2 Shifts On 1 Battery Charge

Energy efficient lift trucks provide longer run times and lower operating costs. The advantages stack up.

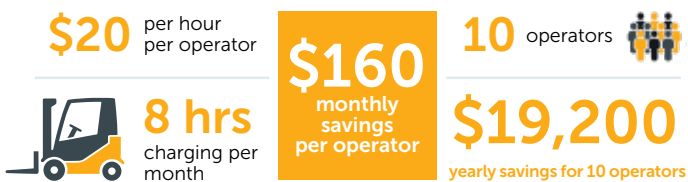
Efficiency Benefits

- + **Do More With Less** – Use of more energy-efficient warehouse products can translate into sizeable savings – less fleet, less labor and less batteries or charging stations.
- + **Rethink Your Shift** – AC technology that runs 2 Shifts on 1 Charge from Jungheinrich regenerates stored energy, minimizing energy loss and therefore delivering longer run times. There’s no need to stop a shift to recharge a battery, saving valuable time.
- + **Reimagine Your Space** – Free up your valuable floor space to store goods and products. Less battery charging stations are required when lift trucks are running for longer shifts on one battery charge.
- + **More Flexibility** – Lift trucks can be charged based on their schedule and the energy required for the shift and operation.

Improved Accuracy & Performance

Not every application has the need for a custom engineered automated system. Applying modern technologies to Jungheinrich’s advanced electric warehouse products offers a semi-automated approach to material handling operations. Accuracy is increased by 100%, and productivity is increased by up to 25%. Warehouse Navigation uses Radio Frequency Identification (RFID) transponders embedded in the floor, allowing the order picker or turret truck to take the most efficient path. The easyPILOT semi-automation allows the truck to follow its operator for faster order picking and maximum efficiency.

2 Shifts 1 Charge Annual Savings Example



Excludes the expense of additional battery purchases at an average of \$5,000 per unit

Stage 3: Innovative Technology Solutions

Technology-enabled lift trucks are changing warehouse operations. From technology features to empowered systems, technology provides a competitive advantage to warehouse and distribution centers.



1. Warehouse Navigation System

Improves order picking accuracy, with productivity gains up to 25%

Jungheinrich's Warehouse Navigation system is a semi-automated approach for use with Man-Up Turret Trucks or High-Level Order Pickers. With the system installed, operators are taken on the shortest route to their destination – increasing pick times and order accuracy and saving valuable time.

How It Works:

Transponders embedded in the floor precisely identify aisle locations and distances. Armed with this information, your lift truck takes the most efficient and productive path possible.

Benefits:

- Increased productivity by up to 25%
- Improved flexibility with logistics performance
- Reduced fleet and labor
- Optimized order picking and stacking accuracy

2. easyPILOT Follow

Faster order picking and maximum efficiency

The Jungheinrich easyPILOT Follow semi-automatic control unit allows the order picker to follow its operator, enabling error-free picking processes and maximum efficiency in the warehouse.

How It Works:

The easyPILOT Follow unit connects via wireless technology to the order picker through a controller that the operator wears. With its reliable connection, the lift truck follows as the operator moves forward and stops with extreme accuracy.

Modern laser scanners continuously check the area in front of the truck. This helps provide safe and reliable navigation and positioning in rack aisles. If the scanners detect an obstacle in the path of the order picker, the truck stops. This feature eliminates failure of the truck to respond due to visual obstacles or other sources of interference.

Benefits:

- Maximum picking performance
- Reliable navigation and positioning in rack aisle
- Improved operator ergonomics



3. curveCONTROL

Automatically reduces travel speeds around corners

Depending on the steering angle and the load weight, Jungheinrich's curveCONTROL system automatically adjusts the speed of the lift truck as it turns corners.

How It Works:

The continuously working sensor, powered by the high-performance drive controller and 3-phase AC drive motor, monitors the steering angle and load weight to determine if the system needs to actively intervene to reduce speed.

Benefits:

- Reduces travel speed while turning corners
- Sensors automatically engage adjusting the speed
- Handling capacity productivity not reduced



4. Lift Truck Solutions (LTS®)

Effortlessly streamlines forklift fleet management linking the data you need

Jungheinrich's Lift Truck Solutions (LTS®) is a cloud-based software tool that elevates fleet management to a whole new level. The data gathered and analyzed helps companies optimize fleet performance to make informed operating management decisions.

How It Works:

By automatically connecting the factory, dealer and operators, the platform tracks fleet expenses, forklift utilization, lifecycle costs, planned maintenance, invoicing and generates analytics and reports for optimal management.

Benefits:

- Enhanced telematics for operational improvements
- Fleet data from any device to reduce costs and enhance productivity
- Centralized, simplified invoicing
- Efficient service management scheduling, monitoring and estimating repair costs
- Enhances efficiency and reduces costs for optimized forklift fleet management

A Competitive Edge

Digital fleet solutions, like Telematics, provides businesses with data rich analytics by monitoring lift truck utilization, safety compliance and fleet performance. Fast-charging, maintenance-free lithium-ion battery technology offers reliable dual shift 16-hour efficiency.

Take Aways and Trends

With greater efficiency, improved maneuverability and environmental benefits, advanced electric warehouse products have become the proven material handling equipment choice for operations embracing the next level of warehouse productivity.

Operations managers have come to expect more from warehouse products. Especially with exclusive industry-leading breakthroughs such as Jungheinrich's guaranteed 16-hour run times, 5th generation AC technology and advanced performance that have the ability to reduce costs, reduce fleet size and save on overall operational costs.

The material handling industry will continue to evolve as technology progresses. The bar will continue to be raised due to the demand for advanced energy efficient, productivity enhancing, exceptionally engineered warehouse products that solve ever-changing warehousing and distribution challenges.

Operations that embrace the next level of warehouse technology will be able to transform their businesses into powerful, optimized, profitable operations.



"From efficiency and performance to ergonomics, **these improvements make advanced warehouse electric products the most efficient choice** for material handling operations. "



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