# The Tales Lift Trucks Tell

An enterprise fleet management solution is giving lift truck owners tangible benefits in time savings, lower maintenance and operating costs, fewer vehicle impacts and more pallets moved per hour.

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It's easy to understand why lift truck fleets can be difficult to optimize. A large operation may have dozens of trucks serving multiple parts of a warehouse or distribution center, all of which may be driven by different operators on different shifts and possibly serviced by different technicians.

Traditionally, fleet owners had to rely on manual reports from operators and service personnel for data on fleet performance and costs. Even when collected consistently and accurately — not easy in itself — that data was cumbersome to analyze for trends or clues to fleet improvement.

Today, managers can look to the lift trucks themselves for data on a variety of critical operating parameters. From their desktops, managers can use an electronic enterprise fleet management solution to assist in supervising their lift truck fleet and operators. Lift trucks automatically and wirelessly send operating data to a central server, where the fleet manager can easily review and analyze. Furthermore, the fleet manager can send instructions to the trucks, such as changes to travel speed and lift acceleration to suit the abilities of specific operators.

Through the *iWarehouse*® fleet optimization system from The Raymond Corporation, formally launched in the market in 2009, lift trucks are telling tales that help owners achieve real and measurable benefits in time savings, lower maintenance and operating costs, incident prevention, and fleet rightsizing. Benefits documented by fleet owners in a variety of distribution industry sectors include:

> Time savings of up to 15 minutes per truck, per shift, by electrically completing and storing preshift vehicle checklists.

> Up to 88 percent reduction in vehicle impacts (such as with racking, walls or other trucks).

> Annual maintenance cost savings exceeding 10 percent.

> Savings of $90,000 in one year through reduction in peak-season truck rentals.

**Straight to the source**

As warehouse management systems (WMS) began to tie warehousing operations together, lift trucks initially stood apart as a missing link. Even though their performance ultimately drove material throughput, they worked essentially as islands.

Of course, lift truck operators could carry electronic clipboards that feed orderpicking data to the WMS, but essential information about the trucks themselves — such as mechanical condition, hours of service, maintenance status and battery state of charge — remained locked away on-board.

The *iWarehouse* enterprise fleet optimization solution brought lift trucks into the electronic loop for the first time, creating new and powerful ways of using information to improve warehouse performance. In the hands of skilled managers, the data from *iWarehouse* has helped fleet owners:

> Get more productivity from lift truck operators and service technicians.

> Diagnose potential service issues remotely, preventing costly failures and unplanned downtime.

> Maintain a centralized view of all operations to ensure faster compliance with regulations; automating and digitally archiving OSHA-required operator checklists.

> Benchmark and compare multiple sites' performance and develop best practices.

> Optimize lift truck capital.

> Integrate the system easily with trucks from any manufacturer through an open architecture.

**Simple evolution**

The seeds of the *iWarehouse* technology were planted with the advent of the on-board vehicle manager, an electronic "brain" that controls the various lift truck functions. This system constantly monitors multiple functions and issues alert codes that simplify diagnostics and repair. From there, it was a natural step to access the vehicle manager data remotely, so warehouse personnel would not have to physically collect it by going from truck to truck.

In the past, vehicle management systems extracted data from the truck by using a variety of wires and sensors, and the process was time-consuming and costly. Raymond addressed this challenge through its *iPort*® connection that enabled a communications device to be plugged directly into the vehicle manager to export the data wirelessly to a central databank. This elegant method of connectivity saves on average three hours of installation and provides a more rich set of data. The data travels on a third-party, open-standard, commercial communication network, which means there is no separate wireless infrastructure for the user to install, support or service.

Information is reliably accurate because it comes directly from the truck operating system. Data is transmitted at one-second intervals, essentially enabling real-time monitoring. The information is available not just to warehouse management, but also to anyone in the organization to whom it might have value. For example, maintenance technicians, service technicians and operators all can review the information when making fleet decisions. A service center dispatcher can use alert codes and lift truck data to help ensure that service is completed on the first call.

A regional warehouse manager can use fleet information to compare one facility with another for benchmarking, while a national organization can generate a fleet overview across multiple regions. The ability to monitor fleets regionally or nationally aids in decisions on truck replacement, fleet rightsizing, employee staffing and budgeting.

**Suite of tools**

The *iWarehouse* system consists of a suite of software modules, each with a specific set of functions:

> *iAlert*® monitors fleet health and alerts technicians to equipment issues.

> *iMetrics*® provides data for monitoring truck performance and optimizing the fleet.

> *iControl*® adjusts truck performance to fit operators' skill levels.

> *iVerify*® ensures proper operator access and the completion of OSHA-required preshift inspections.

> *iImpact*® immediately detects and reports lift truck incidents.

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> *iTrack*® helps simplify service and track maintenance cost trends.

> *iBattery*™ monitors indicators of battery condition and helps extend battery life.

## Proof in performance

A key benefit of the *iWarehouse* system is that it enables fleet managers to quantify improvements in performance. Here are just a few examples that show how the system delivers tangible benefits — immediate and long-term — to distribution center operators.

## Streamlines checklist process

The *iVerify* module speeds up the process of completing daily OSHA vehicle checklists. It also prevents unauthorized parties from operating trucks and acts as a "lockout/tagout" against using the truck if the inspection finds a critical deficiency.

One major big-box retailer did a time study with the module at a southeastern U.S. distribution center and found that the electronic checklist saved 15 minutes per truck. It took 17 minutes for operators to complete a paper-based checklist, carry it to the office and return to work, while the *iVerify* checklist took an average of two minutes, and the completed checklist was instantly and electronically filed.

Saving 15 minutes per truck has substantial value. Assuming that a truck moves 16 pallet loads per hour, an extra 15 minutes of production means four more loads moved per shift, or 12 more loads moved per day in a three-shift operation. If an eight-hour shift typically includes six deadman hours (time when the operator is actually on the truck), then an extra 15 minutes amounts to 4.2 percent more productive time per shift.

## Helps supervisors reduce vehicle impacts

On lift truck incidents specifically, a household goods retail chain in the northeastern United States reported that lift truck impacts cost $6,000 per episode, even apart from any injury or damage to the truck, racking or product. This includes the costs of company-required post-incident drug and alcohol testing, transporting the employee to and from the testing site, and paying the employee while on leave pending test results.

The experience of Masters Gallery Foods, a supplier of cheese products in Plymouth, Wis., shows how the *iImpact* module can help minimize such impacts and associated damage. In 2009, the company increased its lift truck fleet from 12 to 19 lift trucks and enlarged its main warehouse from 40,000 to 110,000 square feet. That required 50 lift truck operators, many newly hired, at work during three daily shifts. As a top priority, warehouse managers wanted to limit damage to the racking, products and lift trucks. They asked operators to report impacts immediately so repairs could be made and causes investigated. However, operators did not always do so.

"Eventually, lift trucks would require premature maintenance to hoses or wheels as a result of impacts," says Dan Murphy, warehouse manager. "We needed to find out when impacts were occurring, so we could assess the cause and determine if additional operator training was required, or if something in the facility was contributing to incidents." The *iImpact* module provided a solution. It indicates impacts with a horn, light or buzzer as a tool to help operators modify their behavior. It also immediately sends an email alert to a supervisor when an impact occurs.

The company programmed the system to provide notice of all impacts, including those judged to be low-level. The system reports the g-force of the impact so supervisors can quickly determine severity. That helps the company promote safe operating practices. "In our first full month of using *iWarehouse*, we experienced a total of 45 alerts," Murphy says. "We provided additional training for the operators involved. Five months later, we reduced the number of alerts to five.

## Data helps in rightsizing fleets

The *iMetrics* module continuously records deadman hours, travel hours and lift hours. These seemingly simple data points can tell a great deal about fleet performance. For example, they help in assessing trucks' fitness for the applications they are performing. A properly applied, stand-up counterbalanced lift truck should record roughly one hour of lift for each seven deadman hours (14 percent lift time). Shorter lift time indicates the truck is being used for horizontal transport rather than for lifting and putting away packages in racking. Here, a less costly truck such as a pallet jack could be substituted.

The tool also helps assess operator productivity. For instance, deadman hours less the sum of travel and lift reveals idle time. This figure can help identify less productive operators, who may need more skills training or who could be redeployed to other work.

Most important, the module can help determine how many trucks the operation truly needs. The data easily reveals how many trucks are used simultaneously during a day or a shift. It may show, for example, that while a warehouse runs 50 trucks, only 40 are consistently in use, while the others record only a few hours or minutes per shift. This would point to an opportunity to downsize.

One third-party logistics (3PL) provider in the Southwest saved $90,000 in the first year using *iMetrics* when the data showed the company did not need the extra trucks it had been renting for the peak season. In fact, it showed that the site needed just nine trucks instead of the 12 it owned. When opening a new branch, the company moved those three surplus trucks to the new site, saving some $100,000 on new truck purchases — on top of operating cost savings at the original site.

Finally, by recording key hours, the program can calculate how many hours the truck is left on while the operator is not on-board (key hours less deadman hours). Excess key hours waste relatively small but still meaningful amounts of energy.

## Alerts enable fast, reliable fixes

Through the *iAlert* module, the truck automatically emails a service provider when the on-board diagnostic system detects a fault. The alert includes essential information — such as truck model, serial number, fault code, battery state of charge and time of the fault — so the service technician responds with the tools and spare parts needed to make an efficient, first-time repair. This frees warehouse personnel from looking up truck data and phoning for service, and more important, it detects issues before a truck fails, which typically cause unplanned downtime, lost production and greater repair cost.

Romark Logistics, a 3PL provider offering warehousing, packaging and transportation services from seven U.S. locations, has used *iMetrics* since 2009 to help manage its fleet of 53 lift trucks in its Pennsylvania warehouse. The company received ongoing service and maintenance for its fleet from Pengate Handling Systems, the local Raymond Sales and Service Center.

Ryan Ziegler, director of facilities management for Romark, says the *iAlert* module helps streamline service by notifying the on-site Pengate technician when scheduled maintenance is due and when a truck may have an impending issue. If necessary, the technician can send a notification back to the *iWarehouse* monitor on the truck if the operator needs to take the truck to the shop for service.

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## Trucks adjust to fit the operator

Many electric lift trucks allow owners to set operational parameters manually for each unit, such as by restricting travel and lift speeds to assist new operators as they train and gain experience. The *iControl* module lets owners change settings remotely, so when the operator logs on, the truck automatically adjusts to fit his or her skills.

Masters Gallery Foods warehouse manager Dan Murphy uses the module to set employee parameters. "In our facilities, the operators' timecards also are used to log in to the lift trucks," he says. "Through the *iWarehouse* portal, I set profiles for our operators that include setting their maximum travel and lift speeds. New employees are set at lower speeds, which are easily increased as their capabilities increase. When an operator changes trucks and logs in using the timecard, the parameters automatically change according to that individual's profile."

Murphy notes that changing operator profiles online saves time, because he does not have to visit individual trucks to change settings between shifts or as operators change trucks to perform different tasks.

## Maintenance trend data gives cost reduction clues

The *iTrack* module does not use electronic communication from the trucks; instead it relies on data entered by service technicians to generate reports on maintenance trends and costs. Technicians can analyze their reports, identify issues and recommend operating and maintenance changes that can save money and increase uptime.

Bunzl North America, a St. Louis, Mo.-based supplier of packaging, disposable supplies, and cleaning and safety products, has used the module since 2006 to reduce maintenance costs by more than 10 percent in some of its locations.

"Managers at each distribution center, unless they had their own homegrown spreadsheet for tracking every month, wouldn't really know how much a unit costs to operate," says Jeff Earnhart, executive vice president of operations. "They couldn't answer questions like: 'How many hours am I using it? What's my cost per hour? How many times has this been repaired? Or when was the last time this repair was done?' It was all a manual process. Now that information is really at our fingertips, and it helps the managers make smart decisions when they plan to replace equipment."

The data also helps fine-tune operating practices. For example, the system might reveal that a given lift truck needs brake pad replacement more often than normal. It could be that its operator is not using the brakes correctly, and that provides a teaching opportunity for the supervisor.

"If an individual who operates a counterbalanced lift truck suddenly switches to an orderpicker, there may be something different about the orderpicker that causes the operator to use it incorrectly," Earnhart says. "The operator may not realize it until the repairs start to build up and a supervisor checks the data."

The system also can help guide component replacement strategies, Earnhart says. For example, data may show that lift trucks at one site require wheel and tire replacements more often than at other sites. That might prompt a review of the condition of its floors.

In this regard, a major discount retailer used the data to justify a change in tire hardness that extended average time between tire changes from 1,500 to 2,100 deadman hours. That translated to 40 percent savings on tires costing $170 each for a fleet of more than 300 trucks — in addition to savings on labor.

## Information helps optimize battery life

Lift truck batteries are high-cost assets that need to be managed properly. The *iBattery* module, new to the market, monitors 11 battery parameters, including ampere hours out, ampere hours in, water level, operating temperature and battery state of charge, and it also provides information that helps owners extend battery life.

For example, the data shows whether a battery has been deep discharged or underdischarged — either condition can cause permanent damage. It also shows whether a battery has been equalized periodically as recommended by the manufacturer. The system provides an accurate "fuel gauge" reading for operators, helping to ensure timely battery changes. It also issues alerts for low water, low temperature, low weight or overdischarge to help safeguard battery warranties.

A battery typically lasts about five years or roughly 1,500 charge/discharge cycles, but if not maintained properly, it may wear out in three years or less. At $6,000 for a high-end battery, that amounts to a $2,400 loss per battery. The *iBattery* module lets facility managers keep a close watch to ensure batteries are being used correctly and their service life extended.

## More benefits to come

Users of the Raymond *iWarehouse* system have documented substantial savings and operational improvements, and more will become evident as the system becomes more widespread and is further adopted. In addition, the basic system opens opportunities for new modules in the future. Data gathered directly from lift trucks is proving to be a valuable item in the warehouse manager's toolbox.

## About The Raymond Corporation

The Raymond Corporation is a global provider of unmatched material handling technology, expertise and support to increase productivity and cost-efficiency. High-performance, reliable *Raymond*® lift trucks range from a full line of manual and electric pallet trucks and walkie stackers to counterbalanced trucks, *Reach-Fork*® trucks, orderpickers and *Swing-Reach*® trucks. Through its *CustomCare*™ approach, Raymond and its Sales and Service Centers deliver a comprehensive package of personalized enterprise solutions — like the *iWarehouse* fleet optimization system, in-depth industry knowledge and consulting, flexible financing, OSHA-compliant training, and industry-leading asset protection — to optimize warehouse operations.

For additional information about The Raymond Corporation or to locate a Raymond Sales and Service Center, visit the company website at www.raymondcorp.com or call 800-235-7200.

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