



iWAREHOUSE®:
USING DATA TO OPTIMIZE
OPERATIONS, IMPROVE
SAFETY AND PREVENT SUPPLY
CHAIN DISRUPTIONS

WRITTEN BY: CAROLINA HANDLING
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RAYMOND
CAROLINA HANDLING

iWAREHOUSE®: USING DATA TO OPTIMIZE OPERATIONS, IMPROVE SAFETY AND PREVENT SUPPLY CHAIN DISRUPTIONS

It's said that what gets measured, gets managed.

As the dust continues to settle on a severe supply chain disruption caused by Covid-19, companies are turning to automation and embracing data technologies to help prevent future interruptions.

In a recent study, supply chain professionals ranked what they believe is needed to overcome their biggest challenges, including:

- + Using automation to get products to consumers faster
- + Using inventory and network optimization to remove stocking gaps
- + Using data and technology to provide transparency up and down the supply chain

In an instant gratification world where next-day delivery is king, supply chain professionals are searching for comprehensive telematics to monitor assets, labor and productivity. Tools like iWAREHOUSE from The Raymond Corporation give manufacturing, warehousing and distribution operations the ability to measure the individual performances of people and units and gather insights for data-driven decision-making.

This white paper explores how iWAREHOUSE provides timely operator and equipment data that can be used to optimize operations and improve safety. With comprehensive telematics, you're able to:

- + Monitor equipment usage in a timely manner
- + Track operator access and utilization
- + Improve safety through impact reporting and checklists
- + Turn data into results that reduce costs

EQUIPMENT MONITORING FOR RIGHTSIZING & OPERATIONAL EFFICIENCY

It's no secret that shortages of raw materials and parts components have affected lead times for material handling equipment, pushing lift truck deliveries many weeks beyond the 16-week average of 2020.

Finding ways for companies to continue usage of existing equipment while awaiting new units or the installation of automated technology is a primary responsibility of today's forklift fleet management specialists.

For example, usage reports from iWAREHOUSE can be used to make recommendations on how to rotate equipment to balance unit usage hours and reduce cost per hour. Data collected on individual trucks can be used to rightsize a fleet or to optimize vehicle utilization to prevent premature aging.

Total Delta Hours: Login: 21468.9, Deadman: 16405.57, Travel: 11530.45, Lift: 2396.78

Start Date: 08/07/2023, End Date: 09/06/2023

Show 10 entries, Show Columns, Show Column Groups

Date Reported	Unit #	Serial #	Facility	Actual Hours			Delta Hours			Estimated Activity	
				Deadman	Travel	Lift	Login	Deadman	Travel		Lift
09/06/2023	5645-OPR-01	540-14-A19053	5645	2784.27	973.47	373.11	155.06	94.31	54.33	13.39	66.54
09/06/2023	5645-OPR-02	540-14-A19050	5645	2476.97	946.76	349.03	205.56	107.92	53.21	12.74	65.11
09/06/2023	5645-OPR-03	540-14-A19065	5645	2230.41	690.74	240.84	297.89	158.69	90.28	14.58	103.21
09/06/2023	6097-OPR-01	540-14-A19060	6097	395.88	53.45	13.64	22.69	8.67	4.17	0.75	4.9
09/06/2023	5645-SWR-01	960-14-02910	5645	4773.04	2740.59	1579.62	297.41	259.66	154.62	79.22	247.79
09/06/2023	5645-SWR-02	960-14-02911	5645	4482.55	2877.48	1544.88	314.43	268.25	165.49	82.02	258.89
09/06/2023	5645-SWR-03	960-14-02912	5645	4511.01	2717.91	1469.26	330.49	287.77	167.88	80.04	281.7
09/06/2023	6097-SWR-01	960-14-02913	6097	4011.68	2322.2	1327.93	308.59	258.51	163.7	100.44	253.03
09/06/2023	6097-SWR-02	960-14-02914	6097	4467.23	2568.3	1457.18	275.52	232.47	136.04	70.78	223.16
09/06/2023	6097-SWR-03	960-14-02915	6097	4399.14	2495.33	1593.71	320.21	273.67	167.49	113.97	267.79

Figure 1: This image from the iWAREHOUSE Gateway shows vehicle usage over a one-month period (DELTA) 8/7/2023-9/6/2023, as well as usage over the life of the unit (Actual).

Using iWAREHOUSE, companies gain an understanding of how trucks are being used within a facility and how they might be redeployed to prolong their useful life and perhaps eliminate an immediate need for new equipment. Additionally, timely diagnostics track the overall condition of trucks with codes that are automatically transmitted to technicians for more timely, efficient and accurate service.

TRACK OPERATOR ACCESS & UTILIZATION

Visibility into the individual performance of trucks and operators can not only help companies rightsize fleets, but also get employees in the right seats. By tracking operator login, travel, lift, deadman and utilization rates, iWAREHOUSE gives warehouse managers the ability to make data-driven decisions that improve operator efficiency and increase productivity.

For example, the iWAREHOUSE Gateway allows users to filter data by truck type or facility to measure the efficiency of certain types of operations or pinpoint problem areas within the warehouse. Users can see actual utilization by hour, including deadman and estimated activity hours logged each hour by operator or vehicle, to quickly identify opportunities for improvement.

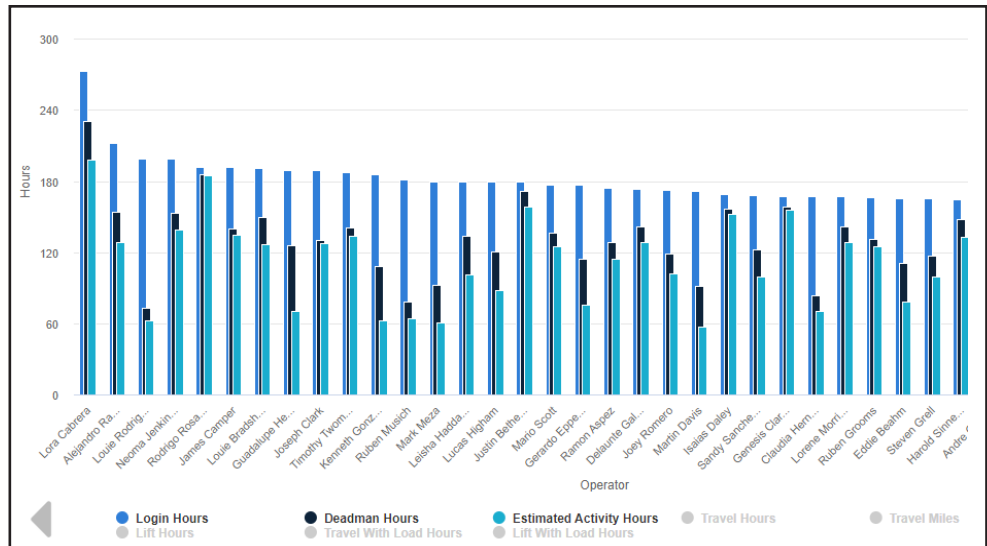


Figure 2: This image from the iWAREHOUSE Gateway shows login hours, deadman hours and estimated activity hours by operator.

iWAREHOUSE also verifies that drivers have access to the correct trucks. The Gateway gives visibility into which operators are scanned into which trucks. For example, a driver scanned into two trucks for a significant period is an indication that an operator has allowed a fellow operator to use his or her credentials.

First Login							
Facility	Unit #	Serial #	Vehicle Type	Login	Logoff	System Logoff	
5645	5645-RCH-02	750-14-BC43165	REACH FORK TRUCK	September, 02 2023 01:26:42	September, 02 2023 02:39:06	Yes	
5645	5645-RCH-01	750-14-BC43185	REACH FORK TRUCK	September, 01 2023 22:50:55	September, 02 2023 00:30:18	Yes	
5645	5645-RCH-01	750-14-BC43185	REACH FORK TRUCK	September, 01 2023 00:55:11	September, 01 2023 02:58:42	No	
5645	5645-RCH-04	750-14-BC43184	REACH FORK TRUCK	August, 31 2023 20:40:02	August, 31 2023 21:11:43	Yes	
5645	5645-RCH-01	750-14-BC43185	REACH FORK TRUCK	August, 31 2023 20:35:44	August, 31 2023 22:26:49	No	
5645	5645-RCH-01	750-14-BC43185	REACH FORK TRUCK	August, 31 2023 18:20:41	August, 31 2023 19:57:38	No	
5645	5645-RCH-05	750-14-BC43168	REACH FORK TRUCK	August, 31 2023 18:20:06	August, 31 2023 20:05:18	Yes	

Simultaneous Logins							
Unit #	Serial #	Vehicle Type	Login	Logoff	System Logoff	Simultaneous Hours	
5645-RCH-01	750-14-BC43185	REACH FORK TRUCK	August, 31 2023 18:20:41	August, 31 2023 19:57:38	No	1.62	
5645-PLT-01	841-14-18175	Pallet Truck	August, 31 2023 19:13:14	August, 31 2023 19:43:23	Yes	0.5	

Figure 3: This image from the iWAREHOUSE Gateway shows an operator's simultaneous login of a reach fork truck and a pallet truck, an indication that the operator allowed a fellow operator to use his or her credentials.

IMPROVE SAFETY THROUGH IMPACT REPORTING & CHECKLISTS

Safety checklists and impact reporting are important features of iWAREHOUSE, allowing companies to maintain regulatory compliance and a safer work environment.

Electronic checklists completed by lift truck operators prior to each shift help ensure equipment is safe and operates properly. Checklists include basic operations such as lifting and lowering of forks, sounding horns and observing tire conditions. Checklists can be customized with questions that apply to specific or unique operational conditions within a facility. From the iWAREHOUSE Gateway, managers can see total inspections, pass/fails, recorded warnings and average time to perform checklists.

The iWAREHOUSE Gateway also can track required OSHA certifications per operator and issue automated reports and alerts for certifications nearing expiration.

Operator	Facility	Avg. Checklist Time	Total Inspected	Total Passed	Total Failed	Total Warnings	Total Timed out	% Passed
Abby Figueroa	5645	00:00:34	1	1	0	0	0	100
Abel Lando	5150	00:01:30	11	2	6	3	0	18.18
Adrian Daniell	5645	00:01:18	1	1	0	0	0	100
Adrian Hancock	5150	00:02:00	31	28	1	1	1	90.32
Agnes Pierce	5645	00:01:10	9	9	0	0	0	100
Ainsley Rodrigues	6097	00:01:14	1	1	0	0	0	100
Alan Kehr	5150	00:01:59	21	20	0	0	1	95.24
Albertine Ramirez	5645	00:01:03	9	9	0	0	0	100
Alberto Lozano	5645	00:01:25	15	13	0	1	1	86.67
Alberto Pearce	5645	00:01:03	42	42	0	0	0	100

Figure 4: This image from the iWAREHOUSE Gateway shows the checklist results for multiple operators.

KEEPING AN EYE ON IMPACTS

Gaining insight into impacts is another advantage for companies using iWAREHOUSE professional services, according to Carolina Handling’s Andrew Gorman.

“ANALYZING IMPACT DATA CAN HELP IDENTIFY OPERATORS, TRUCKS AND LOCATIONS OF CONCERN WITHIN A COMPANY’S OPERATIONS. BY MONITORING THE IMPACTS THAT ARE OCCURRING DURING NORMAL OPERATIONS, CUSTOMERS CAN FOCUS THEIR ATTENTION ON REPAIRING TRUCKS AND ASSIGNING ACCURATE SETTINGS, PROVIDING COACHING OR TRAINING TO PARTICULAR OPERATORS, OR PINPOINTING AREAS OF THE WAREHOUSE THAT REQUIRE REPAIR. ALL DECISIONS CAN BE DATA-DRIVEN BASED ON WHAT IS OBSERVED IN iWAREHOUSE AND CAN, OVER TIME, REDUCE IMPACT FREQUENCY AND SEVERITY, LEADING TO A SAFER WORK ENVIRONMENT AND LOWER IMPACT-RELATED COSTS.”

- ANDREW GORMAN, CAROLINA HANDLING PROFESSIONAL SERVICES SPECIALIST

Impact alerts range from a minor incident such as running over a piece of a wooden pallet, triggering a horn to sound, to a major impact causing damage to a truck or racking. In the more severe case, the truck is triggered to slow down and eventually shut down for examination and repair.

Real-time notifications of impacts identifying the operator, vehicle and time of impact are sent via text message or email, giving immediate visibility for a faster fix. Impact-related data provided by iWAREHOUSE helps companies reduce costs related to equipment, facility and product damage.

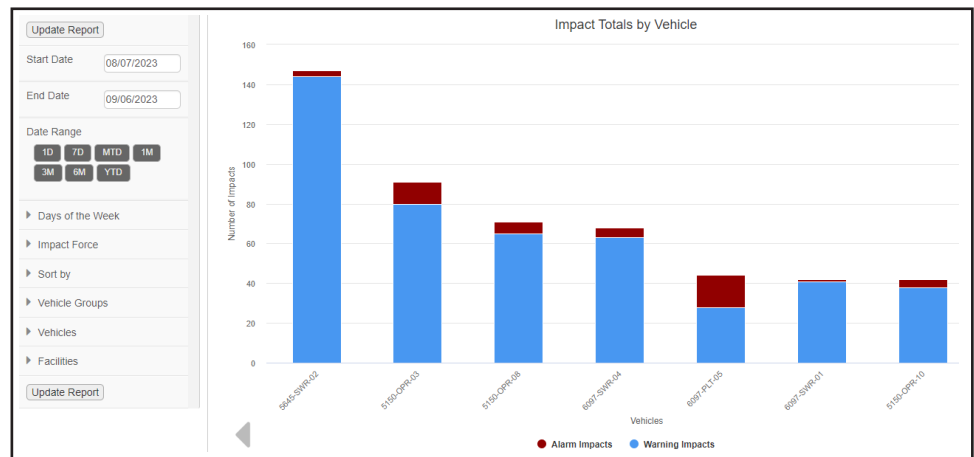


Figure 5: This image from the iWAREHOUSE Gateway shows total impacts by vehicle over a one-month period.

TURN DATA INTO RESULTS THAT REDUCE COSTS

Sales of material handling equipment totaled \$140 billion in 2022 and are estimated to reach \$320 billion by 2032. The automated material handling market is predicted to be \$69 billion by 2030, growing at about 9 percent each year.

A recent trade association report shows the types of equipment and technology to be adopted over the next five years. (See Figure 6.)

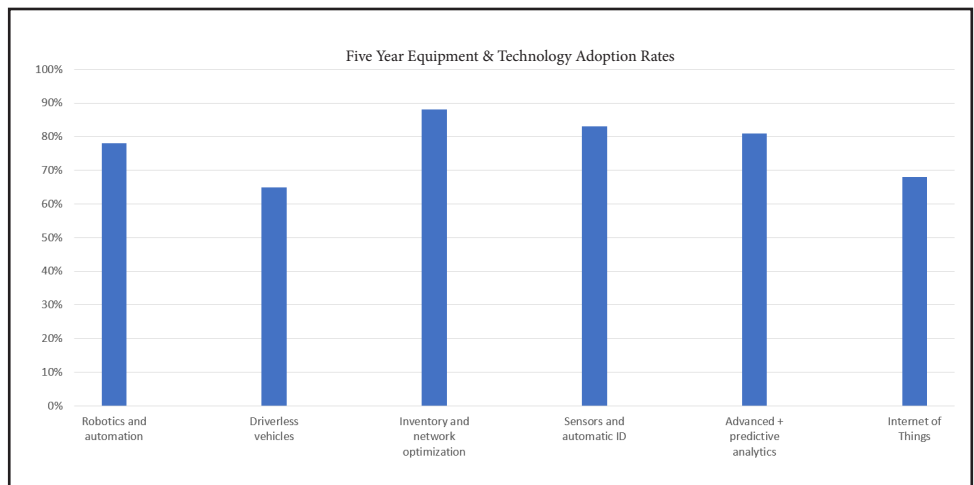


Figure 6: A recent survey revealed the type of material handling equipment and technology to be adopted over the next five years.

Advanced, predictive analytics is key for companies struggling to improve throughput and efficiency in the face of continuing labor shortages and increasing consumer demand.

iWAREHOUSE is a complete telematics solution that is compatible with hundreds of makes and models of industrial vehicles. Through a single gateway that is accessible from any web-based device, the subscription-based service puts timely fleet data at your fingertips.

Data can be customized to appear in varying forms from lists to graphs to heat maps, with reports sent via email or

text on a preferred cadence. Reports can be tailored to correspond with key performance indicators (KPIs) to help companies get the most from their data. By performing periodic reviews of data and trends, Carolina Handling's iWAREHOUSE professional service specialists will help you develop actionable plans to profit from opportunities uncovered by the analyses.

CONCLUSION

The Covid-19 pandemic revealed cracks in the supply chain that have yet to be fully repaired. To prevent future disruptions, or at least to see them coming, supply chain professionals point to collecting data and implementing actions based on its analysis as a primary way to achieve better operational performance while maintaining a safe workplace.

A scalable, flexible and customizable telematics solution, iWAREHOUSE offers a comprehensive range of capabilities that can be activated for individual needs. They include:

iMETRICS. A summary that shows a vehicle and fleet's total usage by hour over a selected period. Data can be viewed in total, by region, by facility or by vehicle type.

iTRACK. Allows online access to track parts and labor time for each truck. Generates custom reports that reveal opportunities to save time, maintenance and costs.

iIMPACT. Monitors truck impacts with automatic notifications that classify impacts according to severity. Records and reports data such as speed, acceleration and G-force of impact. System can be programmed to limit travel speeds based on the level of the impact.

iVERIFY. Requires operators to review the OSHA-mandated operator daily checklist before the lift truck will start and notifies the service manager if an item needs service. If critical items fail inspection, the lift truck will not start until service is performed.

iBATTERY. Provides timely data on forklift battery temperature, water levels, charge intervals and state of charge to avoid unscheduled downtime, maximize utilization and extend the life of forklift batteries.

iALERT. Automatically sends alert code notifications via e-mail to a service technician to identify required maintenance or to provide an early indicator of an approaching maintenance issue.

Installed and implemented by Carolina Handling's Professional Services team, iWAREHOUSE is a proprietary, subscription-based product developed by The Raymond Corporation. Compatible with hundreds of industrial lift truck makes and models, iWAREHOUSE makes timely data about your fleet accessible from any web-based device, with units remaining under warranty for the life of the subscription.

A person is using a handheld iWAREHOUSE device in a warehouse setting. The device has a screen displaying a menu with options like 'DEL 12', 'Reset Setup Menu', 'To Login...', and 'Manual'. The person is holding a blue strap attached to the device. The background shows warehouse shelving and a bright, slightly overexposed environment.

For more information on iWAREHOUSE Professional Services from Carolina Handling, contact:

Andrew Gorman, Professional Services Specialist
Carolina Handling, LLC
4835 Sirona Drive, Charlotte NC 28273
(704) 578-8860 | agorman@carolinahandling.com