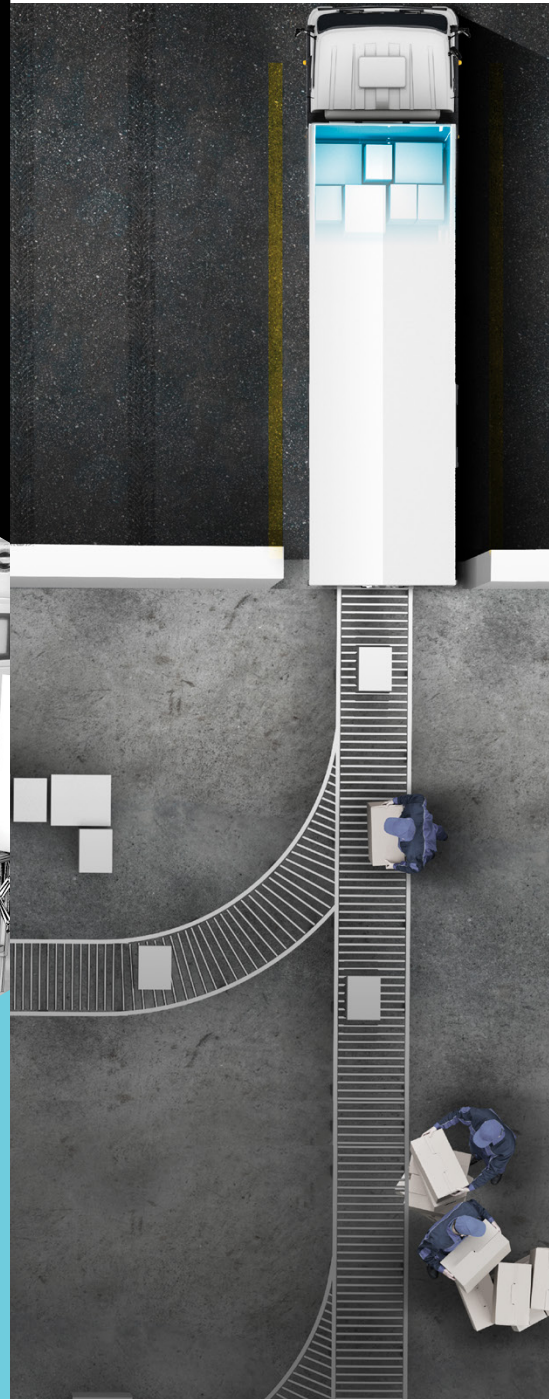




Solution Guide:

Making Your Loading Operations Smarter And More Connected

Using real-time visibility to optimize trailer loading,
Enhance worker productivity and reduce operational costs



Better Visibility Leads To Peak Performance In Loading Operations

The logistics industry is experiencing dramatic operational changes due to increased volumes, labor shortages and margin pressures. To manage rising complexity and customer expectations, companies are investing in advanced technology solutions at the loading dock to help them make more informed business decisions and realize stronger operational results.



Key Load Metrics

To drive productivity and profitability, real-time visibility into key load metrics is essential, including:



Load quality (trailer fullness and load density)



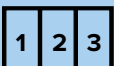
Profile load view, wall-by-wall



Number of packages scanned and loaded per hour



Package dimensions



Dock door turn-times for predictable scheduling



Worker efficiency



Cause of theft and damage



On-the-job safety and performance

Millions of packages, headed for homes and business around the globe, move in and out of logistics facilities every day. In fact, the global package delivery market grew 11% in 2016, reaching almost \$300 billion – up from \$270 billion in 2015.¹ The U.S. freight transportation system moved 49.5 million tons of goods valued at more than \$52.7 billion each day in 2015 – about 56 tons of freight per year for every man, woman, and child in the United States.²

This meteoric growth, driven in large measure by e-commerce, has compelled many firms to rethink their operational business strategies. One area gaining considerable attention is in the often-overlooked area of dock operations. In this critical environment, dock and line-haul managers must manage a myriad of complex processes while also conforming to tight schedules and even tighter budgets. Daily logistical hiccups can cause their operations to become more and more inefficient, leading to costly errors.

Visibility into key load metrics can give carriers a competitive advantage and enable them to get packages out faster and more accurately, eliminate costly errors in the shipping process, reduce the number of trucks on the road, save on fuel and maintenance costs and improve worker productivity and safety. A smarter, more connected loading environment leads to smarter decisions.

¹ Apex Insight; ² United States Department of Transportation

A Typical Day on the Dock

Outbound logistics operations are fast paced and move on tight schedules. A large distribution facility may process 100,000 packages or more per hour, loading hundreds of trailers and containers to transport goods to the next location.

Typically, packages are sent to the docks on large ramps and conveyors that sort and capture weight and dimensions. After the freight arrives at a dock, workers are tasked with scanning barcodes on the packages and quickly loading them into trailers, trucks or containers in the most efficient manner possible.

Packages vary significantly in dimension and weight, making each loading job different. Exasperating this further, many of the dock workers are seasonal or temporary with little or no experience. Turnover is often high and finding experienced loaders is difficult. This results in loading mistakes that can quickly lead to costly shipping damage or wasted trailer space.

The Daily Task to Optimize Operations

Dock managers oversee loading operations that span across dozens of dock doors in a load area. Most spend their shifts moving back and forth between dock doors, supervising loading operations with little time and even less information about what is happening inside each trailer.

When a trailer is almost loaded, the dock manager examines the trailer and makes a subjective judgment on whether the load is full enough to release. It's not until days later that the dock manager might discover, based on a post-shipping analysis, that only 60% of the trailer volume was utilized and 5 packages were damaged due to loading mistakes. By then, it's too late to fix the problem.

The job of the line-haul manager is not much easier, as they work to meet tight shipping schedules and combat slow and inefficient loading practices which lead to costly delays and unexpected yard bottlenecks. Line-haul managers lose precious hours daily traveling down to the dock to get the basic information they need to do their jobs, such as finding out which trailers are almost filled and ready to leave the dock.

Inefficiencies in today's loading dock operations are costing companies millions each year. Fortunately, an innovative new way for companies to manage loading operations is now available.

58%

of companies with shipping operations say they expected to invest in performance load optimization and monitoring in the next few years

Source:
Zebra Building the Smarter Warehouse: Warehousing 2020



The Challenge: Maximizing Trailer Loading Efficiency

The loading dock is a pressure filled, fast-paced environment where speed and accuracy are essential. Without visibility into real-time operations, logistics companies often encounter a myriad of challenges that can adversely impact their bottom line.

79%
of third-party
logistics providers
report they are
unprepared for
the labor shortage
impact on their
supply chain

Source: 20th Annual
Third-Party Logistics Study



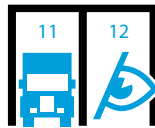
WASTED SPACE

Shipping air is expensive and costs carriers millions in wasted fuel, maintenance and personnel expenses each year. It also translates into more trucks on the road, which can negatively impact the environment.



IMPROPER LOADING

Empty trailer space is not the only problem that occurs due to poor loading techniques. Packages stacked in chimneys rather than solid walls – or heavy packages placed on top of light packages – can lead to damaged goods and expensive damage claims.



LACK OF VISIBILITY INTO LOADING

Today, dock managers cannot view all the dock doors they are responsible for managing without physically visiting each door. Any errors that occur in those loading operations are simply missed or result in costly delays if they must be fixed before the trailer leaves the dock. A lack of visibility into loading operations also makes it difficult to uncover cargo theft problems, which cost the global shipping industry an estimated \$50 billion annually.³



INEFFICIENT LINE HAUL AND YARD OPERATIONS

When a truck is not loaded fast enough to meet its scheduled exit time, or is delayed leaving the dock, it can lead to back-ups that result in shipping delays and unhappy customers. Likewise, if an incoming truck does not have sufficient warning to get into position, that can also lead to delays.

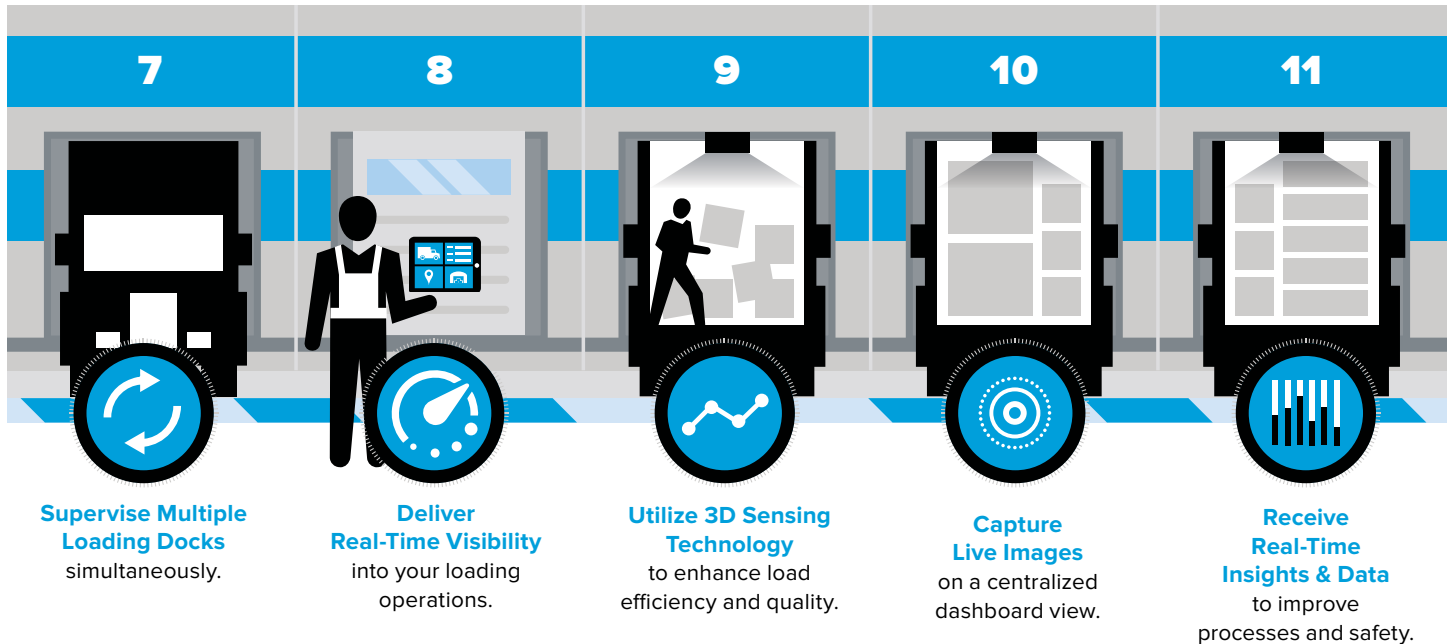


INEXPERIENCED WORKERS

It takes an estimated 53.6 hours of training for new staff to reach full productivity.⁴ This is a big problem at the dock given the high number of seasonal and temporary workers, high turnover rates and the global labor shortage facing the industry. Demand for global supply chain and logistics employees is estimated to exceed supply within the next few years:

- U.S.: demand for employees is estimated to exceed supply by a ratio of 6 to 1⁵
- United Kingdom: 1.2 million logistics workers will be needed by 2022⁶
- India: 17 million additional transportation and logistics workers needed by 2022⁷

³HNM Global Logistics; ⁴Zebra Building the Smarter Warehouse: Warehousing 2020; ⁵Randstad Sourceright; ⁶UK Commission for Employment and Skills; ⁷Price Waterhouse Coopers



A Smarter Way to Load Trucks

Fortunately, there is a smarter way to load packages. Zebra SmartPack™ Trailer enables companies to improve workflows by enhancing visibility into their loading operations.

98%

of logistics providers say
data-driven decision-making
is essential to the future
success of supply chain
activities and processes

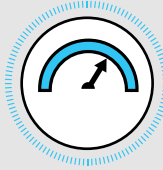
Source: 2017 Third-Party Logistics Study

SmartPack Trailer collects data using the Load Monitoring Unit's (LMU) 3D sensor and RGB camera. As soon as a trailer pulls into the dock, the LMU takes a depth measurement of the available space in the trailer. As packages are scanned and the trailer is loaded, depth measurements, and a wall-by-wall build profile are continuously calculated and time-lapse images are captured of the entire loading process. The analytics engine then mathematically calculates metrics such as load density, trailer fullness and load status in real time. Additionally, data from the customer's package sortation system can be integrated to capture more metrics such as package weight.

Information from the analytics software is presented to supervisors on a user-friendly dashboard via ruggedized tablets, kiosks or monitors. SmartPack Trailer gives managers actionable information that enables them to oversee multiple trailer load operations simultaneously and make more informed business decisions in real-time. SmartPack Trailer can be customized to send user-defined, real-time alerts to managers when, for example, a trailer is registering as 65% full but has a load density less than 40%. Recognizing that there is a load quality issue, immediate action can be initiated to address the issue. Manager can also be alerted if a trailer is not being actively loaded and is sitting idle.



Optimize
space and
operating costs



Process
more packages
faster with greater
efficiency



Reduce
package damage
and loss



Speed Up
seasonal worker
training and
performance

SmartPack Trailer helps improve dock efficiencies and reduce costs by:

Maximizing trailer load fullness and density: Using SmartPack Trailer's dashboard, managers can now use data and alerts to track load quality progress in real time. An independent analysis of data revealed that, on average, trailers realized a 2% to 4% improvement in load volume efficiency. Depending on the size of the business, these improvements could yield significant cost savings across loading operations. Increasing load efficiency and reducing the number of trucks on the road helps carriers reduce fuel, maintenance and salary costs and significantly lowers a company's environmental impact.

Fixing loading errors in real-time: Dock managers can monitor dozens of dock operations simultaneously via SmartPack Trailer's dashboard. By simply clicking on each of the dock door views, supervisors can see time-lapse images of the entire loading process from start to finish. This enables managers to see if package walls are being built correctly and identify where there are issues with load density. Additionally, integration with a customer's ERP system enables tracking of total package weight to ensure regulatory standards are met.

Protecting against package theft: By enabling carriers to view stored images of trailers at the dock and during the loading process, SmartPack Trailer helps companies uncover and prove suspected cargo theft.

Boosting line haul and yard efficiency: Thanks to SmartPack Trailer, a line-haul manager can also receive alerts that help optimize yard operations. To illustrate, when load density reaches a specific threshold, alerts are sent notifying the manager that a trailer is about to be closed out. This allows better synchronization of the movement of trailers at the dock and yard. Additionally, idle time alerts sense whether a trailer is being actively loaded or is sitting idle, while auto close detection indicates when a load has been completed.

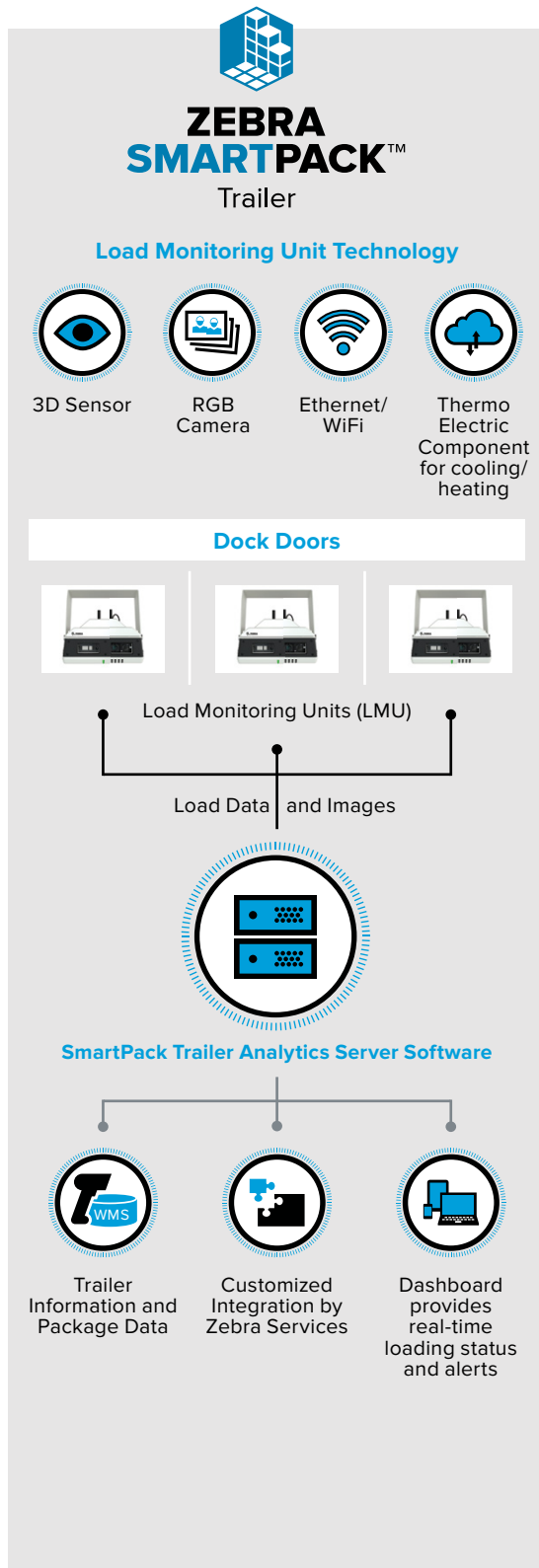
Enhancing worker efficiency: SmartPack Trailer also helps optimize the use of dock resources and increases worker productivity. By monitoring key performance indicators like trailer fullness, load rate and load density in real time, managers can correct loading errors or reallocate underutilized labor resources quickly. They can also use these metrics to increase engagement among workers by sponsoring friendly competitions or providing incentives to workers or teams that perform well.

Improving worker safety and training: With the ability to view real-time images of multiple docks, supervisors can immediately see when a worker is not using proper lifting techniques and correct the problem, potentially reducing the number of worker compensation claims. Managers can also print out and/or email images of improper (or proper) loading techniques and use them for training purposes.

Evaluating efficiencies across operations: By analyzing historical trends within one distribution center or across distribution centers, organizations can establish standard performance thresholds their docks should be meeting – and uncover why those thresholds are not being met at certain locations.

Zebra SmartPack Trailer

Zebra's SmartPack products and services help logistics companies build a smarter, more connected environment. Our three-step process of sense, analyze and act makes it easy for organizations to translate increased operational visibility into better business decisions. SmartPack Trailer is the first product in an expanding portfolio of SmartPack solutions and consists of three key elements:



- **Load Monitoring Unit (LMU):** Zebra's LMU mounts at each loading bay door and is ruggedized with IP54 sealing and an onboard thermal management system to withstand harsh environments and weather conditions. It contains 3D sensing technology that gauges depth and an RGB camera that captures images during the loading process. It also supports wireless and Ethernet communications and includes LED indicators for at-a-glance alerts.
- **SmartPack Trailer Analytics Software:** The SmartPack Analytics Software analyzes a customer's business operations on the dock in real time. SmartPack Trailer can also integrate with a customer's Transportation Management System (TMS), or Warehouse Management System (WMS) and other software systems to capture additional data such as package weights. Managers use this real time analysis – available via dashboards on fixed computers or mobile devices – to change operations midstream and fix problems as, or even before, they occur. The software is customizable to measure and analyze user-defined loading operations metrics. Alerts and reports are generated based on these operational parameters.
- **Professional Services:** Zebra makes deployment easy by supporting LMU installation and software provisioning as well as customization and integration.

Customers also choose Zebra mobile devices and printers to complement their SmartPack Trailer solution, including: Zebra ET50/ET55 tablets, ZQ500 Series printers, WT6000 wearable computer and RS6000 Bluetooth Ring scanner.



Increasing Visibility. Enhancing Efficiency. Reducing Costs.



With Zebra SmartPack Trailer, logistics companies get unprecedented visibility into loading operations. But the value provided by Zebra's technology solutions goes way beyond just visibility. Zebra offers a unique mix of customizable software, services and wireless hardware that not only lets you collect the data you need to optimize your operations but also allows you to analyze and act on that data in real time and make proactive decisions that immediately improve your bottom line.

To learn how SmartPack can help you improve efficiencies and reduce costs in your dock operations, visit www.zebra.com/smartpack



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