An Integrated Approach to Forklift Safety

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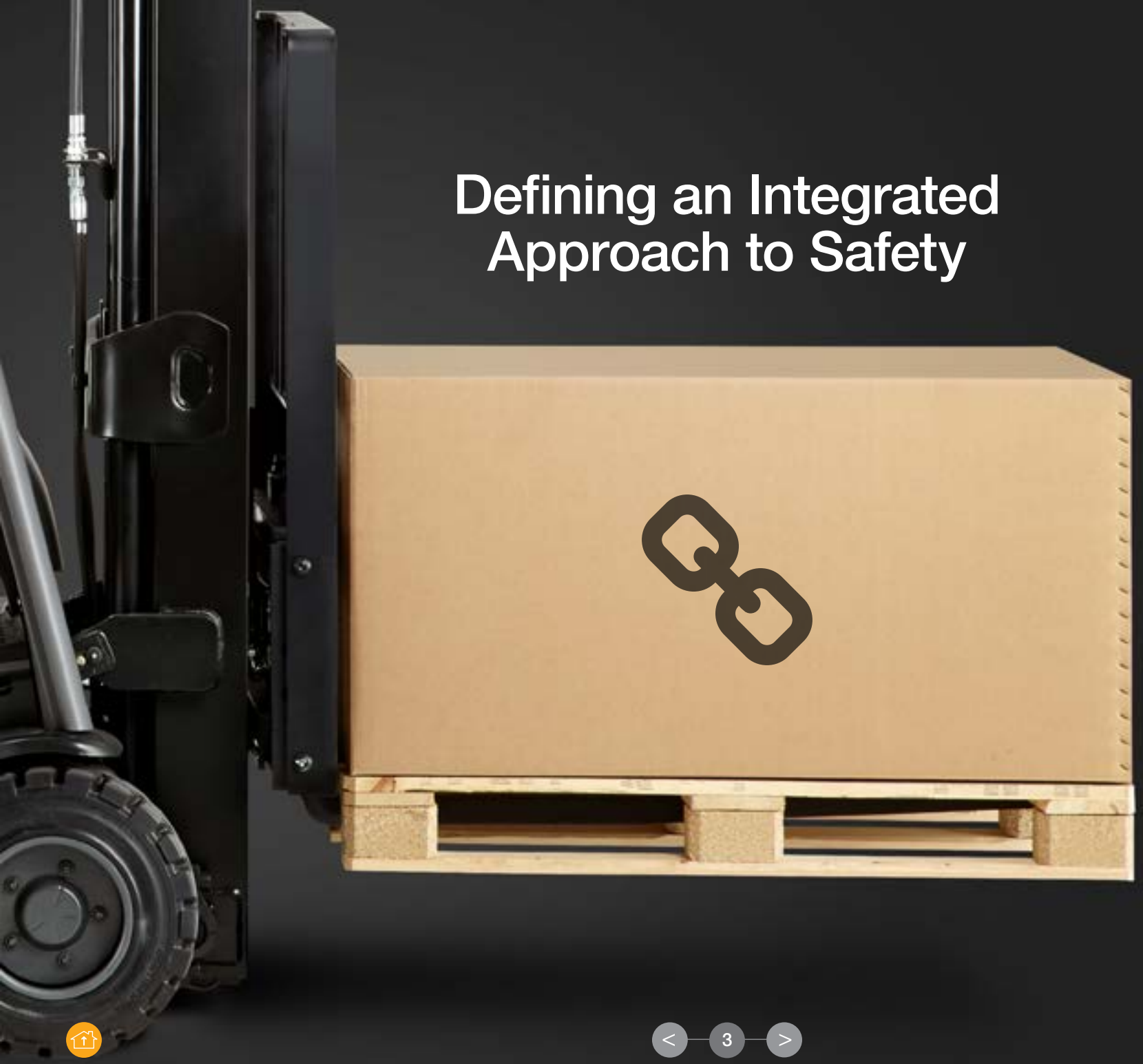

Defining an Integrated Approach to Safety

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Understanding the Scope and Value of Integrated Safety Management

Ask any warehouse manager about their priorities and safety will likely be at or near the top of the list. But executing on that priority is not a simple task.

In the day-to-day push to keep materials flowing and customers satisfied, it can be challenging to maintain the required focus on safety. Insufficient knowledge, focus and compliance regarding safety can often be contributing factors to forklift accidents. In addition, some organizations may take a narrow view of safety management, focusing on only one or two elements, for example, while neglecting other components that contribute to a more effective safety program.

The result can be increased risk to employees, disruptions in operations, and damaged equipment.

Crown Equipment is prepared to help its customers create and maintain cultures where safety is top of mind. The key to accomplishing this has proven to be the implementation of an integrated, and synergistic approach to forklift safety.

Managing Holistically

A fragmented or inconsistent approach to safety is inadequate when applied to today's dynamic, fast-moving warehouses. Just as safety-related incidents can have multiple causes, a successful safety program should include multiple contributors to forklift safety.

This integrated approach to safety can be best achieved by working closely with a forklift provider. A forklift equipment supplier can share best practices culled from broad industry experience and help bring a consistent focus to safety management, with suggestions that enable the customer to better integrate the components of a holistic program, including:

Equipment Design: When it includes features that provide benefit to the operator, equipment design can play a significant role in a strong safety culture. Forklift manufacturers that take an operator-centric approach to design can address issues such as visibility and ergonomics in the design phase to eliminate blind spots, reduce fatigue and integrate other features that enable and promote safer operation of the vehicle.

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Training: Employee turnover is a fact of life in today's warehouse and increases the challenge of maintaining institutional knowledge and building a safety-focused culture. Training, the core of most safety programs, is a fundamental element of the safety equation. Effective safety management requires extending training beyond forklift operators to include managers, supervisors and pedestrians, and making it readily accessible and convenient.

Connectivity: Many warehouse and safety managers are realizing that greater connectivity in the warehouse can help create and maintain a safe working environment. The data captured can bring increased awareness to operations, provides alerts and insights into impacts, and offers a new tool for identifying opportunities for supervision, reinforcement of training and positive behavioral changes.

Optimization: Data from forklift fleet and operator management systems is valuable in identifying and responding to specific incidents. It can also be analyzed in aggregate to identify operators exhibiting correct and incorrect behaviors, areas of the warehouse where accidents are most likely to occur and other operational inefficiencies. With such information in hand, warehouse and fleet managers can take specific, data-informed steps to achieve sustainable improvements.

A fragmented or inconsistent approach to safety is inadequate when applied to today's dynamic, fast-moving warehouses. Just as safety-related incidents can have multiple causes, a successful safety program should include multiple contributors to forklift safety.

Compliance Management: Connecting forklifts to a fleet and operator management system can also provide the ability to control access to equipment and automate processes that help promote safety.

Subsequent chapters of this e-book will dive into each of these areas in greater detail, providing best practices and tools for each while also highlighting how various components work together to create a safer and more efficient environment.

Defining an Integrated Approach to Safety

Vertical Integration

While each component of a synergistic program is important in its own right, the true value of the program comes when all work together. Material handling solution suppliers that take a cohesive approach to design, production, training and service are better positioned to help you integrate the various components of a safety program into a holistic program.

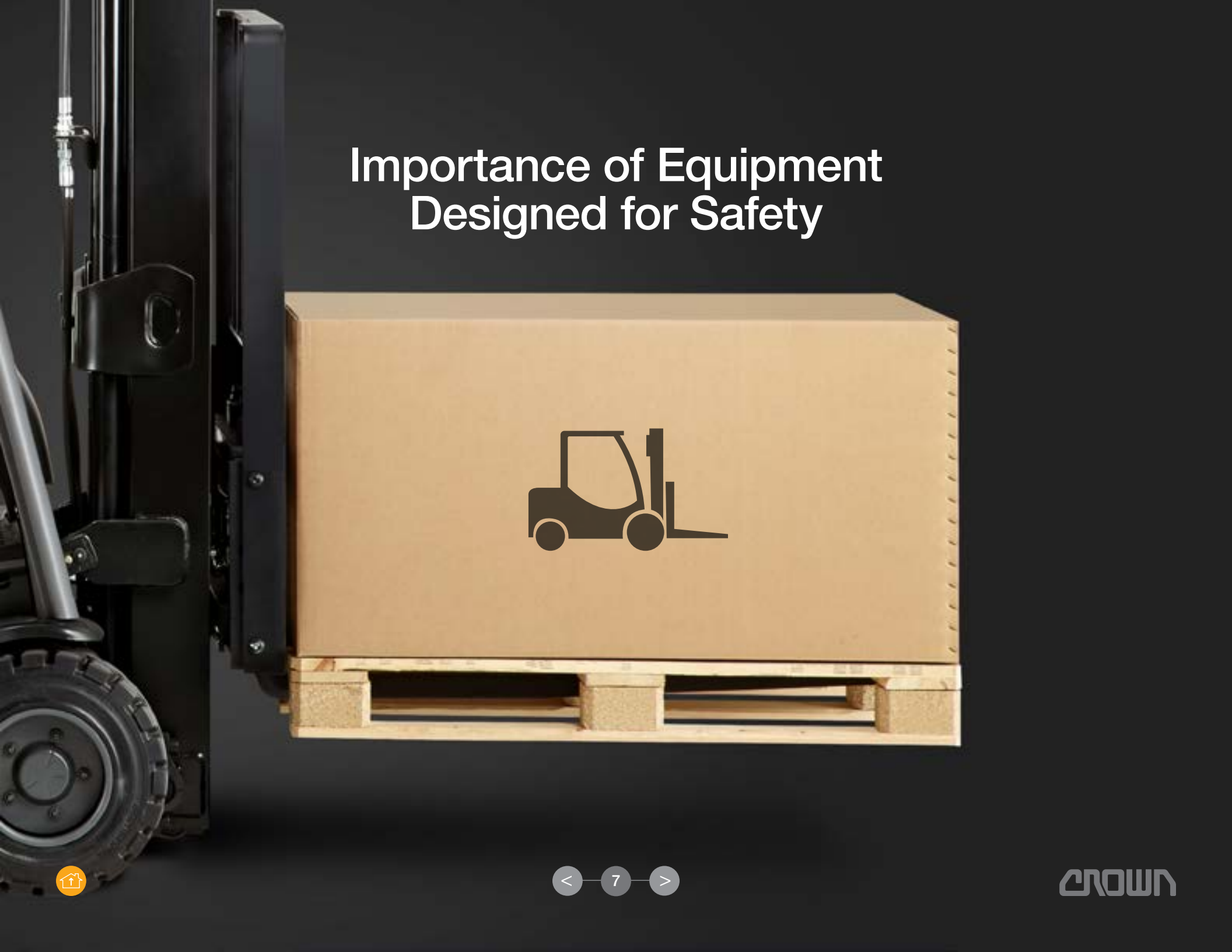
Vertical integration creates synergies that enable the forklift manufacturer to more easily integrate safety awareness throughout the entire equipment lifecycle, from product design and technology implementation through to user training, service and support.

Benefits of an Integrated Approach to Safety

The goal of every forklift safety program is to reduce accidents and protect warehouse employees. By bringing together safer, more ergonomic forklifts, operator and fleet management software, comprehensive training, and safety-focused service programs, an integrated safety management program can close the gaps in existing safety programs and can drive measurable improvements in key safety metrics.

When properly executed, it can often result in fewer injuries, reduced damage and streamlined compliance, generating a positive ROI and helping create and strengthen a safety-focused culture.

Importance of Equipment Designed for Safety



Importance of Equipment Designed for Safety

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In the first chapter of this e-book, we outlined components of a holistic approach to forklift safety. In this chapter, we'll dig deeper into one of those components: product design.

The Foundation of a Safe Workplace

Product design is sometimes overlooked as a component of safety management. "My goal is to make the environment as safe as possible within that constraint," a warehouse or safety manager might think, considering equipment design to be outside the scope of the safety program.

But when one considers that the strongest structures are typically built on the most solid foundations, it becomes more obvious that equipment design can influence safety management.

This is not to say that every holistic safety program should begin with a complete overhaul of the fleet. That just isn't practical. But it can be useful to gain an understanding of how forklift design has evolved in terms of safety. Audit your existing fleet to identify trucks that lack key safety features and develop a plan for phasing in trucks that enable safer operation.

National and International safety standards provide a threshold for forklift safety; however, some manufacturers have gone much further than simple compliance. They have studied the issues related to safety from an operator's perspective and continually enhanced product designs to reduce operator fatigue and enhance visibility. They have leveraged technology to help operators maintain focus and reduce the likelihood of human errors.

Designing for Safety

The most effective approach to forklift design is to integrate human factors and engineering (HF&E) logic directly into the product development process. In this approach, HF&E practitioners work as part of the design team to help ensure the operator is top of mind throughout the process.

This enables the forklift design team to evaluate a range of design decisions based on a deep knowledge of a variety of factors that influence how humans interact with machines. HF&E specialists bring a blend of psychology, engineering, biomechanics, industrial design, physiology and anthropometry to the design process. Their input has been vital to the continuing evolution of products and features that help encourage forklift safety.

Importance of Equipment Designed for Safety

The following sections describe important safety-related features to consider when making equipment purchasing decisions. The key, in most cases, is selecting the right lift truck type for a particular application including vehicle features designed to promote safety in that application.

Forklift ergonomics require designing the vehicle around the way operators work rather than forcing operators to adapt their work habits to the vehicle's design.

Curbing Operator Fatigue

For some, ergonomics has mistakenly come to be synonymous with "comfort." In fact, ergonomics is the study of people's efficiency in their work environment.

With forklifts that means designing the vehicle around the way operators work rather than forcing operators to adapt to the vehicle's design. The more operators have to compensate for poor design, the more they are likely to experience unnecessary fatigue.

According to the Occupational Safety and Health Administration (OSHA) in the United States,, "Fatigue can cause … irritability, reduced alertness, impaired decision making, and lack of motivation, concentration and memory."[1] It isn't hard to see how any of those conditions could lead to an increased risk of accidents.

Ergonomics in forklift design is most evident in the operator compartment. Applicable design principles vary depending on whether the operator is standing or sitting during operation.

Ergonomic Design in Stand-up Forklifts

A breakthrough in the ergonomics of stand-up lift trucks was achieved with the development of the side-stance approach. By studying how operators work, Crown design engineers pivoted the operator 90 degrees, allowing a clear view of the direction of travel and reducing the stress on an operator's back and neck when driving in reverse. This operator-centric design has been adopted by most forklift manufacturers and is accepted as a best practice in the category.

A low step height can also contribute to reduced fatigue, particularly in applications where the operator is frequently getting on and off the truck.

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Another consideration for stand-up forklifts is a floorboard suspension system capable of reducing the impact of vibration and shock on operators' ankles, knees and hips as the vehicle travels across dock plates, in and out of trailers and across uneven floors. In the most advanced systems, the suspension can be adjusted to the operator's specific bodyweight and preferences.

Ergonomic Design in Sit-Down Lift Trucks

For sit-down lift trucks, the operator compartment should be designed to avoid excessive reach or lean and with pedal placement that allows the operator to easily pivot between foot controls. All contact areas, including armrests, floor mats and seats, should provide the support required to counter stresses confronted throughout a shift. Ease of ingress and egress is also a consideration, with low step heights, wide steps and accessible grab handles helping to improve entry and exit.

Enhancing Visibility

For some forklift manufacturers, visibility has been a major area of emphasis for decades. New forklift designs have enhanced sightlines in a variety of applications. This can help reduce the risk of accidents caused by blind spots or obstructed views.

For example, the Crown RC Series of stand-up forklifts employ a contoured, low-profile power unit on the side where the operator is positioned to provide increased visibility during travel and a clear view of the forks when handling loads. Similarly, newer stockpickers feature expanded views through the platform window and on each side to facilitate order picking at height.

Another area of attention is mast design. On reach and turret trucks, mono masts have become a preferred visibility option. On reach trucks, the mono mast is offset from the center of the truck. This enhances visibility, especially at height, without compromising mast strength and stability. As an added bonus, this additional visibility enables the operator to avoid frequent bending and leaning outside the running lines of the reach truck, helping to improve safety and reduce fatigue.

In very narrow aisle turret trucks, an operator seat with swivel and height adjustability enables the operator to comfortably change their position to enhance visibility for each operation and direction of travel.

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Maintaining Focus

Moving to interactive, customizable on-board screen displays has allowed forklift manufacturers to create a more informative and personalized experience for operators, who have become accustomed to similar technology interactions in their personal lives.

As with other advances, the effectiveness of these displays depends on a deep understanding of how operators work and how they relate to the vehicle. Intuitive and easy-to-read menus and configurable widgets enable operators to customize their digital user experience and receive contextual alerts to increase engagement. These systems also provide safety reminders to reinforce training that are delivered in an instructive way that enhances other methods, such as on-product safety labels.

Some manufacturers are taking this approach even further and using the new displays as a platform for continuous coaching that delivers feedback based on real-time data from the lift truck. Through this approach, operators can develop a more personal relationship with the vehicle and in doing so create the potential to work more collaboratively with the vehicle to enhance safety and performance.

Enhancing Forklift Operation

Even experienced operators can sometimes embrace improper operating practices when they are feeling rushed or distracted. A variety of intelligent sensors and systems are being integrated into forklifts to help reinforce correct operating practices. Specific control capabilities vary by manufacturer and their ability to use real-time operating data. Here are three of the ways Crown is using control technologies to improve forklift safety:

Stability Control: Forklift tip-overs can result from turning improperly, driving with an elevated load or traveling at an excessive speed. These practices may be mitigated with an intelligent stability control system, such as the Crown Intrinsic Stability System. This system continuously monitors operating conditions and automatically makes adjustments to help avoid unsafe operating practices. Travel speed can be reduced during turns to minimize instability and braking can be modified based on fork height and other operating conditions. The system can also maintain the truck at a constant speed on ramps and prevent forks from rising above free lift when they are tilted more than two degrees forward.

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Traction Control: The Crown OnTrac Anti-Slip Traction Control plays a similar role in monitoring and adjusting lift truck operations in slippery or wet conditions. It monitors tire spin and automatically take corrective action to reduce slippage and improve traction. This functionality is especially important in cold-storage and refrigerated facilities where condensation may develop on the floor just outside the conditioned space.

Operator Position: Operating a stand-up lift truck while staying fully within the operator compartment is critically important, but operators sometimes inadvertently allow one foot to rest in or near the compartment's entry. Crown uses dual independent floorboard pedal sensors to promote safe operation by discouraging the operator from using only one foot to operate the lift truck. When the operator's left foot is removed from the brake pedal for any reason, the lift truck's brake is automatically applied.

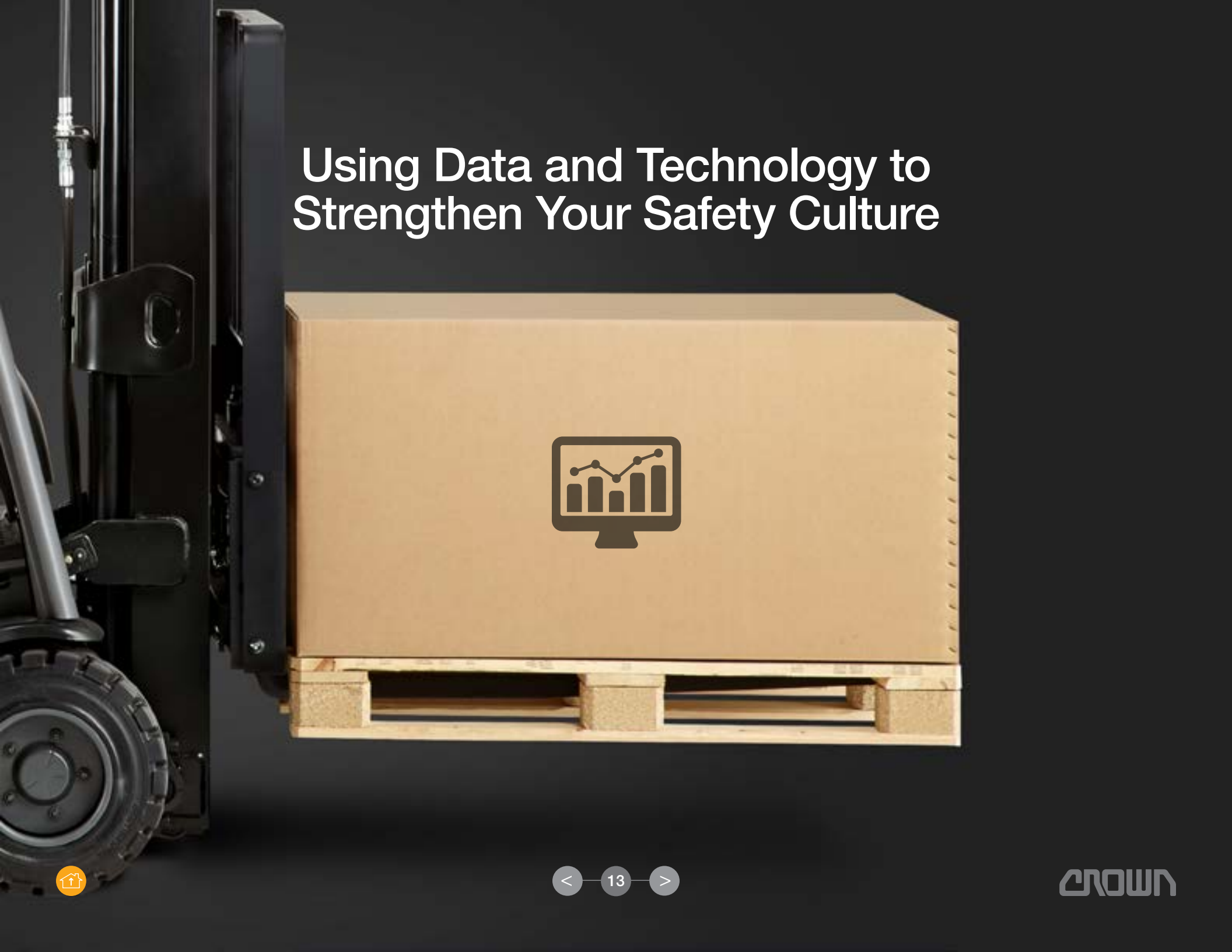
Crown also offers an Entry Bar safety switch to prevent operation of the truck with the operator's foot on the entry ledge. The switch is integrated into the threshold of the suspended platform of the operator compartment. If the operator's foot depresses the switch, then the control mechanism will slow the truck and sound an alert to remind the operator to stay within the safe confines of the operator compartment.

Operator-Centric Design

Safer forklifts can certainly provide a solid foundation for safer operations. From reducing fatigue to improving visibility to enhancing stability and performance, today's forklifts can include features that help address many forklift-related safety concerns. While safety is the top priority, forklifts designed to reduce fatigue and enhance visibility also deliver benefits in the areas of productivity and operator satisfaction. Lift trucks developed with an operator-centric design approach may even play a role in attracting and retaining talent.

[1] *"Long Work Hours, Extended or Irregular Shifts, and Worker Fatigue." Occupational Safety and Health Administration, https://www.osha.gov/SLTC/workerfatigue/hazards.html. Accessed May, 2020.*

Using Data and Technology to Strengthen Your Safety Culture



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In the previous chapter of this e-book, we explored the role product design can play in a holistic approach to safety. The safety features discussed in that chapter included systems that use information generated by the forklift to enhance stability and traction control.

These features represent only one of the ways forklift data is being used in safety management. Connecting forklifts to enable collection and analysis of data across the fleet is another important component of a holistic approach to safety management.

Forklift Connectivity and Safety

Forklift connectivity solutions, such as Crown's InfoLink fleet and operator management system, leverage data accessed from the truck's control system and sensors. This data is provided to the operator via on-truck displays and also communicated to a management system that consolidates data from connected vehicles and presents it in a way that is both accessible and actionable.

The newest display modules, which feature larger screens can even guide operators through the pre-shift truck inspection process and provide real-time feedback during operation that supports efforts to consistently encourage and enforce proper forklift operation. If you don't yet have the modules with this capability, supervisors and managers can still use the data captured and communicated by the system to provide coaching to operators.

The management system typically includes a dashboard view that enables monitoring of key performance metrics, as well as detailed reports on equipment utilization, operator performance, impact events and other operating parameters. By enabling accessibility through mobile devices, data and insights are available where they are needed—including the warehouse floor. As part of an integrated approach to safety, data and insight from these systems should also be shared across the organization to help increase safety mindfulness and reinforce the case for change.

Together, the enhanced displays and management system provide visibility, feedback and insight to increase awareness and reinforce the organizational commitment to safety.

Implementing a Connectivity Solution

Forklift connectivity adoption has increased significantly in recent years, but remains an underutilized tool in many warehouses. That may be due to perceived implementation obstacles, most notably resistance to the technology from local management and workers.

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This resistance is often not so much to the technology itself as to the process with which it is implemented. A high percentage of warehouse workers today use smartphones and other devices in their daily lives and increasingly expect this same type of technology in their work environments.

But traditional implementation processes are often focused too much on the technology and not enough on the people using and impacted by the technology.

Crown has identified specific keys to implementing new technologies that increase employee buy-in and set the stage for long-term results (see page 21). By increasing communication and engagement with local staff, this approach has proven more effective at converting initial resistance into enthusiasm that helps encourage a successful implementation.

Beyond communication, another of the keys to this implementation approach is focusing initial efforts on just one or two achievable business objectives—long-term success starts with achieving targeted, initial wins. Focusing on a specific safety objective is a logical place to start.

Prioritizing Safety

In addition to facilitating local engagement, the proper implementation of technology can address a common challenge some early adopters of connectivity solutions face: lack of focus.

Effectively utilizing big data starts with targeted wins, focusing on one or two achievable business objectives.

As mentioned previously, forklift fleet and operator management systems collect a broad range of data that can be used to improve warehouse operations in a variety of ways. However, attempting to leverage all of these capabilities in the period right after start-up can be overwhelming. Instead of realizing expected benefits, the management team can get frustrated and ignore the insights the system makes available.

Effectively utilizing big data starts with building on achieving targeted, initial wins. That's why most successful approaches include a defined monitoring stage in which one or two operational objectives become the focus during the initial period following implementation. Once results are achieved with these objectives, it becomes much easier to expand use of the system to address additional objectives.

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Safety can be an effective place to start with connectivity by helping to streamline compliance and reduce damage from impacts. This can produce immediate and measurable improvements while users gain familiarity with, and confidence in, the system.

Enhancing Safety Through Connectivity

Forklift fleet and operator management systems give warehouse and safety managers a number of ways to use data to improve safety and compliance.

Connectivity and Compliance

The forklift inspection process is one area where organizations can see an immediate benefit from their connectivity solution.

OSHA in the United States requires that forklifts be inspected at least daily or before each shift when used around the clock. Managing this process using paper-based checklists can be inefficient and ineffective. There's a tendency for some operators to rush through or shortcut this process, sometimes even checking boxes without actually visually inspecting the forklift. That means they could be missing issues that either require immediate attention or could lead to unsafe operating conditions if not addressed.

With a forklift fleet and operator management system, the operator is guided through the inspection process by the on-board display and prevented from proceeding if too little time is taken for the inspection. Because the process is performed electronically, the need to distribute and file paper forms is eliminated. The system can also be set to automatically send notifications when service is needed and even prevent operation of the forklift depending on the seriousness of the issue.

The system can also control access to the forklift based on operator certification so the forklift can only be used by authorized operators. The system tracks operator certification and training to simplify the management of these programs.

Reducing Impacts

Another early win for connectivity is reducing forklift impact events. Using data from impact sensors on the forklifts, the management system generates an alert when an impact occurs, enabling rapid investigation. Once impact monitoring is in place and events are routinely investigated, operators generally become more aware of actions that could cause impacts. Truck and rack damage from impacts typically decreases significantly in the months following connectivity system implementation.

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Ongoing monitoring of impact data makes it easier to identify operators that require additional training or locations that are accounting for a high percentage of impacts so that corrective actions can be taken.

Enhancing Operator Performance

Safer forklift operation often comes down to safer forklift operators. The forklift fleet and operator management system provides a platform for improving operator skill and focus using methods welcomed by operators.

In the communications preceding the implementation of a connectivity solution, it should be emphasized that the management system isn't a tool to control operators, but to empower them and help them become better operators. Here are some of the benefits operators can expect:

Personalized coaching: The approach to personalized coaching can be dependent on the type of communication system module installed on your lift trucks. Systems using Crown's InfoLink 3" Display Module equip supervisors and managers with real-time data from the lift truck to provide one-on-one coaching. Systems equipped with the latest technology, such as Crown's InfoLink 7" Touch Display Module, can supplement one-on-one feedback by utilizing the larger display to provide visual, real-time coaching directly to the operator. Regardless of which module used, the proven coaching strategy of using positive feedback, based on accurate data, to reinforce positive behaviors, is often more effective at creating long-term changes than simply using alerts or warnings.

Increased engagement: Beyond coaching, gamification can be an excellent strategy for motivating operators to continually improve. Gamification enabled by connectivity encourages friendly competition among operators as everyone seeks to "level up" and continually improve safety and productivity.

Accountability: While increased accountability may seem like something operators might oppose, good operators welcome it. When some are following correct operating practices and others are not, an organization's commitment to safety and quality can be questioned. Using the system to hold operators accountable for incorrect practices helps reinforce safety as a priority and ensure all operators are following the same practices. It can also identify operators who require additional safety training.

Increased recognition: Productivity is an important metric of operator performance but if it comes at the expense of safety it can be misleading and create resentment from operators who are following safe operating practices. Data from the connectivity solution provides a more complete view of an operator's compliance with safety standards and overall performance objectives. Operator recognition programs become more meaningful because they accurately reflect operator skills.

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Seven Steps to Successful Technology Implementation

Consider: The implementation process should start with a careful evaluation of the impact of the technology on the workforce, especially when technology decisions are made by someone other than the local facility managers. In that situation, new technology can represent unwanted change and added work— potential roots of resistance if they aren't addressed early.

Communicate: Before developing specific implementation plans, take the time to communicate with those affected. Let them know what to expect, answer questions and highlight the benefits the new technology will deliver to them. By communicating early and clearly, uncertainty and resistance can be minimized or avoided.

Plan: Now you're ready to tailor implementation plans to minimize frustration and respect current processes. This phase should include collaboration between those implementing the technology and those who will be using it.

Train: Structured, hands-on training is essential to successful technology introduction and achieving the full potential of the system. Your technology vendor should have well-developed programs for operator, supervisor and management training.

Engage: Training and communications shouldn't be a one-way street and shouldn't end at start-up. Following start-up, give employees multiple opportunities to ask questions and share their experience with the new system.

Monitor: Now it's time to start realizing value from the new system. Establish ongoing practices for monitoring the data generated by the system and begin to build a culture of accountability and positive feedback. To avoid being overwhelmed, focus monitoring on one or two business objectives during the early stages.

Expand: Once initial successes are achieved, build on the momentum and expand to other objectives.

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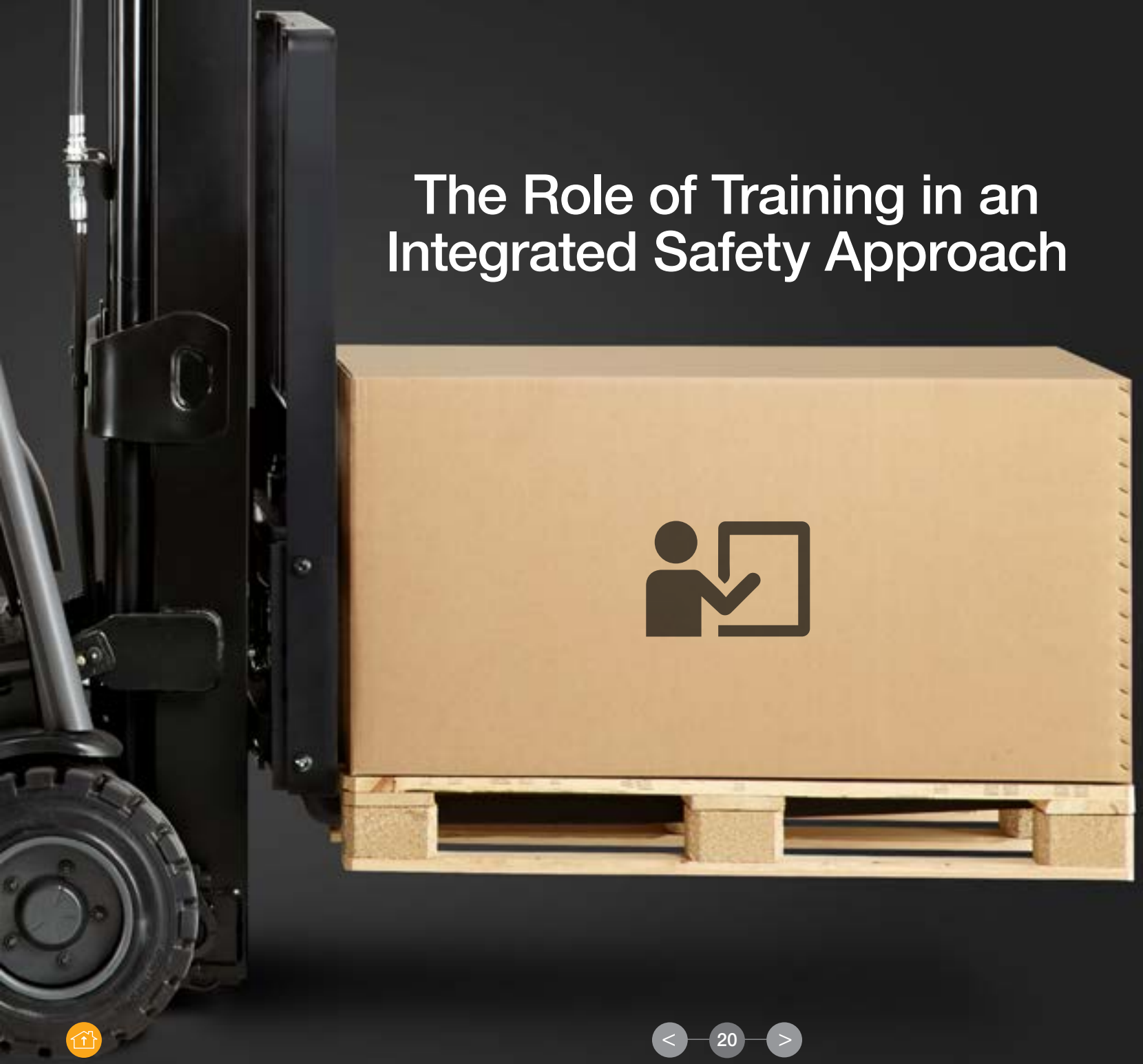
Enhancing Service through Connectivity

The benefits of connectivity extend to equipment service as well. Poor service management increases the likelihood that failures will occur during operation and could create safety hazards. Through connectivity, vital forklift information can be gathered, shared and analyzed to enhance service management and enable the transition from reactive to predictive service.

Data-driven Safety Management

There's little doubt that the warehouse of the future is a connected warehouse. Many organizations are already moving toward that future by implementing forklift connectivity solutions. These solutions can deliver immediate safety benefits through enhanced compliance, reduced impacts and improved operator performance, all factors in a holistic approach that enables safety to become embedded in the culture. Plus, these benefits provide the credibility and momentum to expand the use of forklift operating data to improve other aspects of warehouse operations.

The Role of Training in an Integrated Safety Approach



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Closing Training Gaps with a Supplier-Based Approach

In previous chapters of this e-book, we covered several potentially overlooked components of a holistic approach to safety management, including product design and connectivity. In this chapter, we'll focus on a component that is a requirement of every warehouse safety program: forklift training.

Training is often not as effective as it could be because it is not sufficiently inclusive both in how operators are trained and in who in an organization receives training.

Identifying Gaps in Safety Training

Some organizations assume they have adequate training. Yet, the effectiveness of training can vary significantly depending on how it is delivered and who within the organization is receiving it.

To identify gaps in training, evaluate your current program in light of the following questions:

How effective is the training we are delivering?

Relying too much on classroom training and not providing hands-on training can limit the ability of operators to immediately translate learning into practice. A forklift connectivity solution, such as Crown's wireless InfoLink forklift fleet and operator management system, can support training effectiveness, evaluations and help identify improvement opportunities.

What is the frequency of safety training?

Like any form of education, the positive effects of safety training can erode over time. In the United States, OSHA states that training is required every three years, at a minimum, but more frequent refreshers can have positive effects. Have you established a frequency for operator refresher courses and maintained discipline in ensuring guidelines are followed?

Are new operators receiving safety training in a timely manner?

Turnover is a fact of life in the highly competitive warehouse labor market. Do you have a process to ensure new employees receive the training they need early in their onboarding process?

Are supervisors trained to identify and correct unsafe operating practices?

Positive reinforcement by supervisors has been shown to be one of the most effective methods for sustaining safety improvements initiated by formal training programs.[1] But supervisors need to be trained to spot unsafe practices and deliver feedback in a way that creates long-term behavioral changes.

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Are non-operators trained to work safely around forklifts?
Forklift operators aren't the only ones at risk of being involved in forklift-related accidents. Distracted or inattentive pedestrians can also put themselves in harm's way.

How is training being used to support the introduction of new technology?
New technology can introduce new safety considerations. Are the effects of new technology implementations on safe operating practices being integrated into operator training?

Do we have the resources and expertise to effectively manage training in-house?
Effective training requires a high degree of expertise in equipment operating practices and how people learn—plus the time to plan, execute and manage training programs. Even the best designed training programs can get derailed if internal resources don't have the expertise and the time to make it a priority.

Gaps in any of these areas can compromise overall safety and erode attempts to establish a culture focused on safety. Applying the best practices described in the following sections of this chapter can help close those gaps.

Take a Top-Down Approach to Training

According to a study commissioned by the National Institute for Occupational Safety and Health (NIOSH) in the United States, while a forklift safety training program will reduce the errors that lead to safety issues, even better results can be achieved when supervisors engage with operators post-training in goal-setting and performance feedback. This activity is more likely to result in further error reduction and longer lasting results through the adoption of peer and supervisor supported safe behaviors.[2]

Supervisors clearly play a vital role in warehouse operations and that role should extend to helping operators apply their training on the job. Supervisor training programs can help prepare supervisors to:

- Spot common at-risk behaviors of forklift operators.
- Provide positive and constructive feedback that helps change behaviors.
- Inspect their environment for the most common opportunities to eliminate hazards.
- Understand the basics of OSHA's rules for powered industrial trucks.

For organizations that do their own training, starting at the top means ensuring trainers have the latest equipment knowledge and are employing effective training strategies. Through train-the-trainer programs, you can increase training effectiveness by ensuring trainers are prepared to:

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- Shift the focus of training from the classroom to the warehouse floor by transitioning each trainee at a pace that fits their experience and skill level.
- Train supervisors to spot both safe and unsafe operating practices and deliver constructive feedback.
- Perform operator evaluations in compliance with OSHA requirements.
- Conduct refresher workshops that keep correct operating practices top of mind and help strengthen a culture of safety.

Train Operators the Way They Want to Learn

Often, people learn best by doing. That's why facets of the training program, whether they be classroom-based or streamed online, should be interactive and engaging and tailored to the individual where possible. It's also why operator training that relies too heavily on classroom activities has proven less effective than approaches that utilize hands-on learning. The classroom provides the foundation, but new skills are best internalized when operators have a chance to get on a forklift and apply their new knowledge under the supervision of an experienced trainer.

Through this approach operators come away from the training not only with clear, understandable information on forklift safety, but with some practice in applying that knowledge when operating a lift truck. This approach may also be more engaging for operators.

This same hands-on approach should be extended to service technician training. Like operators, technicians are typically hands-on learners, and are more likely to retain information learned through first-hand experience than material presented in a lecture.

Providing ample opportunities to work on lift trucks with instructor supervision has the added benefit of allowing technicians to learn at a pace consistent with their experience, acquiring skills that best serve the needs of their organization.

New skills are best internalized when operators have a chance to get on a forklift and apply their new knowledge under the supervision of an experienced trainer.

Think Outside the Truck

A comprehensive approach to training should also include those team members who work around, but don't operate, forklifts. This training helps pedestrians understand the "do's and don'ts'" of moving around forklifts.

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Pedestrian training can be delivered through video and supplemental training aids. Right-sized versions should also be used with warehouse visitors.

Amp Up Training to Support New Technology

As warehouses continue to introduce new technology, training plays a key role in both accelerating adoption and addressing safety considerations associated with the new technology. Communication, engagement and training before, during and after the implementation process are key to ensuring new technology doesn't have a negative impact on warehouse safety and productivity. Listening to and collaborating with front-line workers can help determine if any adjustments are required to training programs, policies and processes.

For example, if you introduce wearable technology and automation for low-level order picking, you need to consider the best way for operators to interact with the technology to maintain or increase productivity levels without diminishing ergonomic best practices. Training needs to be developed for operators who will use the technology, as well as other employees who will encounter or work alongside it. Processes will need to be revised to ensure pathways for the vehicles are free of clutter and employees have clear sight of the vehicles in operation to avoid accidents.

Treat Training as a Process Not a One-time Event

A core part of a strong safety culture is ongoing training at various levels of an organization. It is not just about the quality of the training, but also the accessibility of the training.

As much as possible, integrate regular training into your operations leveraging online learning systems that allow operators and supervisors to regularly refresh their knowledge at their own pace and with minimal disruption to operations. Hands-on training is vital to the development of new skills, but today’s technology creates the opportunity to develop an approach to training that continues to reinforce the importance of safe operating practices.

The Role of Training in an Integrated Safety Approach

Five Tips for Engaging Operators

To help maintain a vibrant safety culture managers and supervisors should regularly engage operators on issues related to safety. Here are five ways to integrate safety into daily operations:

Celebrate Safety: Regularly celebrate those operators who exhibit correct operating practices on a daily basis. Showcase them through ongoing recognition that helps reinforce expectations and communicates that safety is a high priority.

Set Data-Based Goals: The data from forklift fleet and operator management systems can be used to set personalized goals for operators. Through key metrics such as travel time, lift time, idle time and impacts, you can measure and benchmark individual operators and groups. Notable gains can be made when operators know that supervisors and managers are paying attention.

Encourage Peer-to-Peer Recognition: Foster a spirit of teamwork and create an environment where operators can offer positive encouragement and reinforcement to coworkers. Instill the idea that individual safety and well-being is a priority for the entire team. Everyone wants to go home to their families at the end of the day.

Modernize Training and Coaching: Newer learning systems take advantage of technology to make training more accessible, interactive and engaging. In addition, forklift displays now have the capability to use real-time data to provide immediate feedback and coach operators encouraging safe operating practices.

Make Time: Take the time to reinforce safety messaging on a regular basis. This could range from safety-related posters in the break room to individual coaching based on observation and information from a forklift fleet and operator management system.

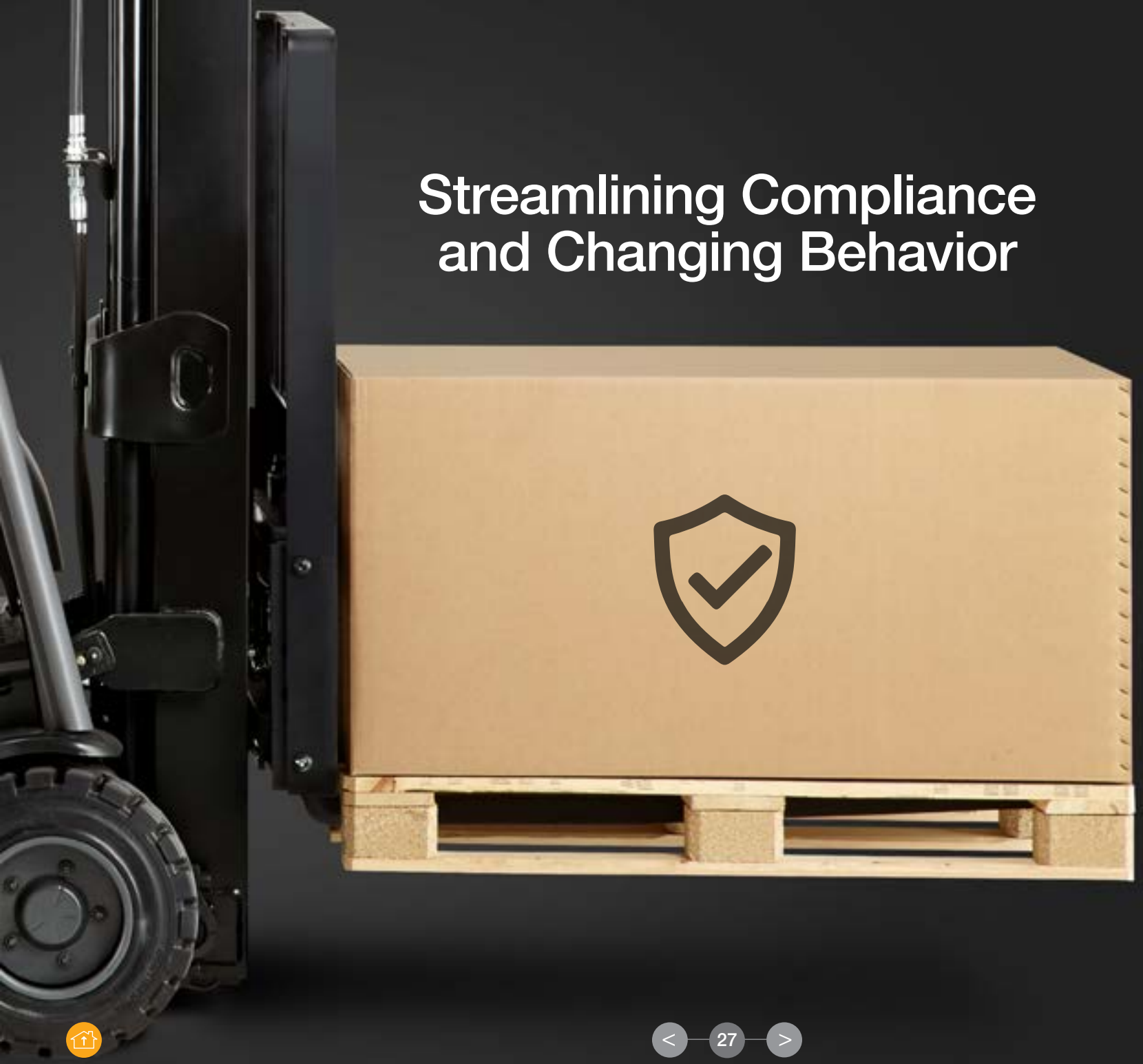
The Role of Training in an Integrated Safety Approach

Developing a comprehensive and continuous approach to safety is essential to building a strong safety culture but can be time and resource intensive if undertaken without support. A supplier-led approach to training ensures you always have access to the resources and commitment to deliver effective training that keeps safety top-of-mind for managers, supervisors, operators, service technicians and pedestrians.

[1] *H Harvey Cohen and Roger C. Jensen, "Measuring the effectiveness of an industrial lift truck safety training program," Journal of Safety Research, Volume 15, Issue 3 (1984): 125-135.*

[2] *Cohen and Jensen, "Measuring," 125-135.*

Streamlining Compliance and Changing Behavior



Streamlining Compliance and Changing Behavior

5

Using an Integrated Approach to Safety to Manage Organizational Change

In previous chapters of *"An Integrated Approach to Forklift Safety,"* we've discussed the value of taking a comprehensive approach to safety management and reviewed the key building blocks of that approach, including:

- Deploying forklifts that are designed to facilitate safe and ergonomic operation based on research of operator behavior.
- Leveraging connectivity and data to gain real-time insights into operator performance and establish a culture of positive reinforcement and accountability.
- Taking a comprehensive, hands-on approach to safety training that encompasses operators, supervisors, technicians and pedestrians.

Each of these components can play a vital role in providing your people with the knowledge, skills and tools to enhance workplace safety. However, establishing and maintaining a strong safety culture is a challenge that shouldn't be overlooked. Thoughtfully designed training programs and highly capable connectivity solutions can still become less effective over time if they aren't actively developed and supported.

Maximizing your investments in safety requires supporting each of the components of a safety program with strategies for managing behavior and organizational change. While that sounds complicated, it boils down to a commitment to communicating and reinforcing the "why" and "how" of improving safety at every level.

Establishing and Communicating the Right Goals

Many organizations track safety-related metrics such as damage to product and infrastructure. But some find it difficult to achieve improvements in these areas because they lack real-time visibility into safety-related incidents. It's easy to say we want to achieve a 15% reduction in product damage, but if you don't know how or when damage is occurring, there's little chance you'll see much progress toward that goal.

On both an organizational and individual operator level, forklift connectivity solutions support the ability to set and achieve measurable safety goals. By providing real-time visibility into operations they enable more accurate benchmarking of current performance as well as the ability to identify the causes of accidents and damage. With this knowledge, managers can address the root causes of the product damage and set realizable goals of reducing it.

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Goal-setting becomes the subject of consistent communication across all levels of the organization. The most effective strategy is to support broader safety messaging with role-specific communications that tailor messaging to the relevant concerns and benefits of different groups, such as operations, maintenance and safety. When the benefits of safer operation are presented in this way, then individuals can gain a better understanding of their role in achieving identified goals and embrace the idea that safety is everyone's job.

How Connectivity Enables Behavior Change

With no way to measure safe operating practices, performance evaluations may lean too heavily on productivity metrics without considering the full costs of that productivity. Connectivity solutions allow goal setting to be applied to individual operators to help encourage behavioral changes.

A metrics-driven focus only on productivity may encourage some operators to prioritize speed and throughput over safe operating practices. Operators who are routinely operating safely may be resentful that their performance is not being appreciated. Through the insights provided by connectivity, safety metrics can become part of the evaluation and individual goals can be set based on current and desired performance.

When impacts are investigated immediately after they occur and feedback is provided to the responsible operator in a timely manner, operators understand they are accountable and are more likely to take the feedback seriously. Connectivity solutions can also help identify operators that appear to be willfully ignoring safe operating practices. Non-responsive operators will require additional intervention and even discipline.

Operator displays are also evolving from simply presenting vehicle information to using forklift operating data to provide coaching through a combination of alerts to encourage safer operation.

The Value of One-to-One Communications

But technology can only go so far in enabling long-term behavior changes. In chapter four of this e-book, which focused on training, we shared the results of a NIOSH study that found that when operator training is complemented by post-training monitoring and feedback from supervisors, the measured effectiveness of the training increases significantly.

Training programs that prepare supervisors to spot common at-risk behaviors and provide positive and constructive feedback are an important element of ongoing and effective operator training and supervision. Without reinforcement and coaching, operators can revert to bad habits or forget the lessons of their training. The more the lessons from training are reinforced on the job, the more likely they are to result in permanent behavior changes.

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Peer-to-peer communications can be equally effective as supervisor-employee interactions. Programs that formalize these communications can empower employees, build teamwork and encourage each team member to take responsibility for their own safety as well as that of others. At Crown, we've implemented a program throughout our factories and warehouses. The program recruits conscientious employees within each functional area, teaching them how to recognize unsafe practices and speak to other employees in a positive and constructive manner when safety-related behaviors are observed.

Employee participation rates in behavior-based programs have demonstrated a positive impact on injury rates and damage. Such programs help to create work environments where safety is top-of-mind and employees are personally invested in achieving safety goals.

Building on Progress and Managing Organizational Change

The development of a strong safety culture is a journey. In the early stages, employees may see safety as the responsibility of managers. The focus is on compliance and injury investigations and not all employees will respond positively to the increased accountability being introduced, particularly if they have no say in the process.

This resistance can be effectively overcome by taking an approach to change management that focuses on communication and engagement. Communication needs to be managed from the bottom up as well as the top down. Take the time to answer questions and address employee concerns directly in a constructive way that emphasizes the individual and organizational benefits of the changes expected. Crown and its customers have experienced success in implementing and managing change using the seven keys you can download from within this chapter.

When accountability, positive feedback and regular reporting become the norm, the concept that safety is each person's responsibility becomes firmly established.

As your approach to safety evolves, progress toward your goals should be monitored and communicated across the organization. Based on data from the connectivity solution and feedback from frontline personnel, modifications to goals and to the safety program can be implemented. At the same time, service and maintenance should be monitored and

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adjusted accordingly during this process. For example, reductions in vehicle damage and frequency of repair, as well as increases in vehicle longevity over the long term, may be quantifiable outcomes of a safety program in addition to the improved safety experienced by front line workers.

When accountability, positive feedback and regular reporting become the norm, the concept that safety is each person's responsibility becomes firmly established. At this stage, initial goals can be re-evaluated, and early success can be used to support new goals and continued expansion of the program. For example, where early efforts may focus on forklift accidents and compliance among operators, the program should ultimately be expanded to additional functions such as service. Setting specific goals for these additional groups reinforces how their performance impacts organizational goals and helps strengthen and expand the safety culture.

The Value of an Engaged Safety Partner

There is no simple solution for creating the organization and behavioral changes required to achieve meaningful and sustainable improvements in safety. But there are tools and methods that when applied consistently have proven effective. A partner who understands the interconnection among the many components of a comprehensive safety program can provide the products and services that will enable you to better prepare the workforce for the journey toward a safety-first culture. With a clear roadmap, the right tools and empowered employees heading the same direction, your journey is bound not only to reach its destination but result in a smoother ride along the way.

[1] *H Harvey Cohen and Roger C. Jensen, "Measuring the effectiveness of an industrial lift truck safety training program," Journal of Safety Research, Volume 15, Issue 3 (1984): 125-135 Crown*