



**MATERIALS  
HANDLING  
STRATEGIES**

# A FORK- FREE FUTURE?

**BY RACHEL GECKER**

**While forklift trucks may be the tried and true solution for many materials handling operations, forklift-free applications are attempting to shake up manufacturing with the emergence of carts and dollies. Thinking of going forklift-free? Make sure you have all the facts before jumping in.**

**I**f the idea of giving up lift trucks in favor of a forklift-free materials handling solution sounds strange to you, you are not alone. When Steve Orr, material planning and logistics superintendent at Ford Motor Company, informed his workers the plant was going forklift free, not everybody was onboard.

“No one thought it would work,” says Orr. “They were sure that by eliminating lift trucks we were going to increase the time it took to get parts to the production line.”

Orr is happy to say now, with the implementation of his Cleveland Engine Plant One completed, employees are singing a different tune. “With the forklifts, we had to drive slowly,” notes Orr. “But with the carts, it’s a fast exchange. It’s a lot faster than I thought it was going to be.”

The system Orr implemented at the Ford Cleveland plant uses tuggers from Taylor-Dunn and materials handling carts from Kinetic Technologies. Due to the design of their wheels and bearings, the carts can carry 2,000 pounds and still meet ergonomic requirements for pushing loads onto the line.

Before Ford changed over to the forklift-free system, operators were using lift trucks to put loads on a tilt table. Now, the operators tug the loads in without forklifts, and use only two drivers to unload all the carts.



Evaluate your plant's workflow to ensure a forklift-free solution makes sense.

**Forklift-free means using warehouse space effectively, while keeping costs in line.**

### THE PUSH TOWARD LEAN

For those companies pursuing lean production, forklift-free materials handling may be worth exploring. With global competition and falling profit margins pushing producers to cut costs, lean manufacturing programs are on the rise. Companies such as Willoughby, Ohio-based Kinetic Technologies (K-Tec) are designing material transport vehicles and line-side accessories that replace forklift trucks and help companies implement lean programs. And judging from the growth of the company's sales—more than seven figures in 2004—it appears the concept is catching on. The K-Tec carts are well-suited for lean manufacturing environments such as the Ford plant. The idea behind forklift-free is replenishing material as it is used, rather than keeping excess material on the production floor. The cart operators bring parts up to the floor only when they

are needed, meaning no excess inventory is stacked in aisles.

Improving the movement of products to cut costs and reduce inventories is the goal when using carts or steel dollies. The dollies can be pushed or pulled to the assembly line by hand, or moved with the help of an electric motor.

"Carts and dollies can be a visual trigger for replenishment and primarily lean manufacturing," says Robert Liptrot, president of Boston Industrial Consulting, Danvers, Mass. "With lean manufacturing, you're not bringing a lot of material out to the production floor, so as a rule, the trucks are not going to be as effective. Lift trucks work better with full cases or pallets, which go against the lean mentality."

And with more customers demanding smaller product quantities, "split case picking is at a level we have not seen in the past," says Liptrot. "The use of

carts and dollies is great for applications such as split case picking and direct-to-consumer picking," he says.

But Liptrot is quick to note that forklift-free production is not ideal for all operations. "The push to go higher in distribution centers negates the advantages of using carts and dollies unless you're on a mezzanine-type application," he says. "The company ultimately has to decide if ceiling height will win out—allowing workers to pick off a truck—or if the customer will win out, causing the company to utilize split case picking. That's where the use of carts and dollies makes the most sense."

### OVERCOMING SAFETY ISSUES

While the cost, efficiency, and versatility of lift trucks and forklift-free applications varies depending on a company's needs, it is the issue of worker safety that

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drives manufacturers such as Ford to go forklift free. Nearly 100 workers are killed and another 20,000 are seriously injured each year in the United States in forklift-related incidents, according to the National Institute for Occupational Safety and Health (NIOSH). About 25 percent of these deaths are due to forklift overturns. Statistics such as these have spurred some companies to make the move to forklift-free production floors.

"Safety is the big issue behind the launch of the forklift-free operation," says Orr. "We've had some pedestrian safety issues in the past. In the line side, someone would step out and get hit with a forklift, or a high-low driver would bump into someone working on the line. Forklifts can do some serious damage to people." Orr believes safety is improved with the new forklift-free system.

In a forklift-free operation, the tugs are small, allowing operators to sit in unobstructed positions without visibility restrictions from roll cages or masts. The operators tug carts behind them and only move forward, as opposed to lift trucks, where it is often necessary to back up, limiting visibility.

Forklift manufacturers are well aware of these safety concerns, however, and are constantly working to improve worker safety conditions.

Operator comfort features and improved visibility in the trucks help workers more easily operate the vehicles. Many trucks are also equipped with programmable features such as speed control and varying resistance in braking.

These features give the operator more control over the sensitivity of the truck and allow for safer handling. Safety devices such as strobes and audible alarms alert workers to potentially dangerous situations, and improved seat belt restraints help to better protect the operator.

"There will always be an element of risk associated with material handling regardless of the method you use to move materials," says Chad Pilbeam, marketing program manager for Mitsubishi Forklift Trucks. "You still run the risk of endangering workers in a forklift-free plant because you have manual labor involved—pushing and pulling the dollies, and lifting material."

## CONSIDERATIONS FOR SUCCESS

Interested in implementing a forklift-free solution? Make sure you know what changes to expect before making the commitment. Use these questions to guide you in your evaluation.

### OBJECTIVES:

- What are the goals of the forklift-free program? Can they be clearly defined, measured, and shared with all personnel?
- Do proposed plans and actions support the goals or stray from the target?

### PERSONNEL:

- How many materials handling support personnel are needed for forklift-free replenishment? Is this better or worse than present forklift manpower?
- How closely will ergonomic guidelines be followed?
- Will materials handling operators be loading/unloading any carts to conveyors?
- What maximum weights will materials handling operators need to push, pull? What frequency/distance?
- Will assembly operators be expected to move containers or carts?
- Will materials handling operators be required to get in and out of units repeatedly?
- What are the union regulations and issues related to forklift-free changes?

### PARTS PRESENTATION:

- Are mixed product lines with complex parts change outs being used?
- Will they be handled with sequencing or kitting configurations?
- What criteria will determine where containers will be "pushed" to/from conveyors or containers on carts will be "exchanged" in work cells?
- Will suppliers support different container configurations and more frequent deliveries? What are the costs?

### LOGISTICS:

- Where in the plant will forklifts continue to be used?
- Will there be one market area and/or multiple smaller staging areas?
- How much inventory can be removed from the floor?
- How much can be removed from the market?
- Will forklifts be used to load forklift-free supply carts in the market areas?
- What kind of tugs will be acceptable to the drivers, and be suitable for the loads handled?

SOURCE: KINETIC TECHNOLOGIES, LLC

## MAKING THE MOVE TO FORKLIFT FREE

The choice to go forklift-free is by no means an easy one. If making the switch from lift trucks, a plant's workflow should be evaluated to ensure a forklift-free solution makes effective use of the warehouse space, and does not cause an increase in costs.

While K-Tec's president Larry Tyler hopes the company's carts and dollies will help spur a shakeup in manufacturing, he agrees that the decision to go forklift-free involves a thorough evaluation of a company's operation before forging ahead.

Implementation of a forklift-free plant can be extremely challenging and at times frustrating, says Tyler. "And trying to reconfigure an old facility, or Brownfield, is much more difficult and time-consuming than setting up a new plant, or Greenfield," he adds.

That's not to say it can't be done. "In order to implement a forklift-free operation in a Brownfield," says Tyler, "you have to start small. For instance, you might consider just towing smaller trains and only have the tugs go on specific routes. You just have to be willing to make more compromises when reconfiguring a Brownfield."

The automotive industry is particularly well-suited to forklift-free operations because it constantly brings new products online, and implements the system in its Greenfields, which have more flexibility to accommodate the carts, notes Tyler.

But industrial interest in K-Tec's products has not been limited to automotive suppliers. The company also helps manufacturers in the plastics, furniture, aerospace, and heavy equipment market segments move to forklift-free plant floors.



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The use of rotating upper frames and under frame lifts helps to prevent worker injuries when working from carts.

The move to a forklift-free plant provides an opportunity for companies to reduce injury potential, cut costs, and improve customer response, says Tyler. But realizing this potential means considering everything that forklift-free production impacts. Tyler suggests assembling a team to outline how each department and its suppliers will be impacted, as well as what physical changes to expect from the implementation.

A significant amount of time must be spent clarifying plan targets and goals, as well as identifying waste, ergonomic, and safety threats, says Tyler. Appointing industrial engineers or material logistics personnel to act as forklift-free project leaders during the process is another of Tyler's suggestions.

Decisions should involve input from safety and ergonomic teams, production managers, line operators, proposed tug drivers, market supply teams, and suppliers, he says.

#### KNOWING THE LIMITATIONS

**B**efore making a decision, companies should also evaluate the limitations involved in forklift-free operations, notes Pilbeam. "With

carts and dollies you run into limitations on the dimensions and size of the material you are able to move," he says. "If you are lifting materials of various sizes and shapes, a fork truck will get it to the line faster."

Determining how to get the material onto the cart initially is another major consideration in using carts, says Pilbeam. "You either have to move the material onto the cart manually, or use a forklift. With manual labor, you run into issues with the physical capabilities of employees. If you use a forklift to load material onto the cart, you are double-handling the load, which actually slows down the process."

Another issue to consider is the size of the plant. In a large warehouse where walking distances are considerable, lift trucks may be the more productive choice, while dollies may make more sense in confined areas.

But companies do not necessarily have to give up fork trucks in favor of carts, notes Liptrot. In an operation that uses both full and split case picking, it may be feasible to apply a combination of lift trucks and carts. "Using the truck for full case picking and a cart or dolly to

handle the split cases can be very effective as well," he says.

If manufacturers decide to go forklift free, notes Orr, there will likely be initial challenges to overcome. Ensuring that the lift table and the cart marry up together is one of the biggest challenges, he says.

"Most lift tables are 12 inches to 15 inches off the floor. In a forklift-free situation, you want a lift table that is lower to the ground," he explains. "Because only a few companies have these, it is important to get a lift table of the correct height so the ergonomics are not lower from the start."

Timing is another issue the Cleveland Ford plant had to work through. "In order for the dolly exchange to stay lean, it has to be timed so that the driver gets to the line at the right time and is not waiting for workers to use those last parts," Orr says. "We can't afford to have an operator sitting at the line waiting, or loading parts from one container to another. We are now able to operate so that within a minute, the drivers are ready to make the exchange."

While it may take a little time for drivers to become accustomed to the new application, Orr believes going forklift-free has improved workflow in his plant. "I am not finding any issues with this system," he says. "I don't deliver any parts with high-lows now, and that is a good thing. We do not have high-lows interfacing with workers on the line, and this has proven to be a lot safer." ■



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