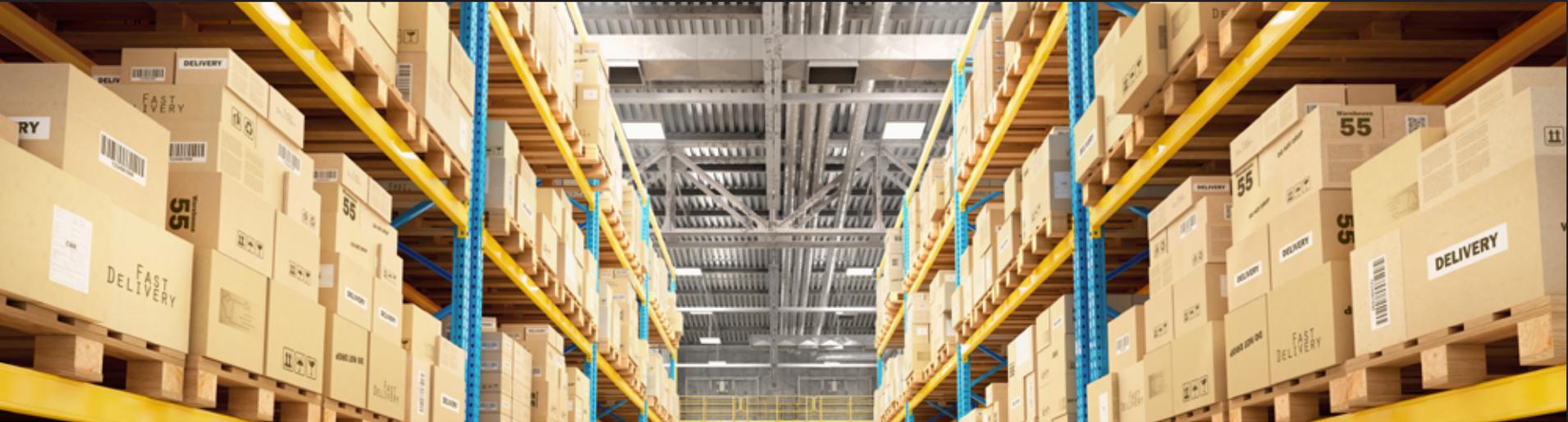


**WORKING SMARTER:**

**HOW SEMI-AUTONOMOUS SOLUTIONS AUGMENT YOUR WORKFORCE**



Custom content for Big Joe Forklifts by studioID



Automation has long been touted as the solution to numerous challenges in manufacturing and warehousing. It's easy to see why — it wasn't long ago that annual turnover in warehouses reached a whopping 49%. Now that pandemic-induced disruptions have subsided, operational efficiency has become a central focus for facilities across industries.

Autonomous vehicles and robotics technology have made huge strides, and they will continue to be critical to 21st-century industries. Yet, there are very few cases where humans can (or should) be entirely replaced. Whether it's the cost of a fully automated facility or simply the need for human expertise and decision-making, operators need to consider various factors when deciding where and how to bring automation into a factory or warehouse.

How can 3PLs, automotive manufacturers and other industrial facilities take advantage of automated solutions without losing valuable employee capabilities or causing problematic cost overruns? The answer is with semi-autonomous vehicles that support and augment an existing workforce, rather than replace it.

“Semi-autonomous solutions take on repetitive, time-consuming tasks like material handling, sorting and transportation in a warehouse or manufacturing facility,” says Nick Malewicki, general manager of the autonomous vehicle division of Big Lift, a division of Big Joe Forklifts. “They reduce bottlenecks, minimize errors and increase throughput, which leads to an overall improvement in operational efficiency.”

**Let's take an in-depth look at how semi-autonomous solutions can be a game-changer for your workforce and operations.**

# INCREASE THE PRODUCTIVITY OF YOUR CURRENT WORKFORCE

Whether it's unloading trucks, moving boxes and scrap, or bringing materials to the production line, there is no shortage of transportation tasks in a warehouse or manufacturing plant. Semi-autonomous solutions, such as user-directed autonomous mobile robots (AMRs), handle these rote tasks so employees no longer have to spend their time moving items from point A to point B.

For example, Big Joe's user-directed AMR pallet mover features AI-driven software with light detection and ranging (LiDAR) sensing and a built-in camera system. This allows the AMR to navigate a facility and execute routes specified by the operator. And it gets smarter over time. The AMR's cameras and LiDAR note obstructions and whether something is a temporary or permanent object. The AMR will optimize its route based on real-time conditions.

These solutions are more efficient for carrying loads from docks to staging for inventory, moving parts and components through a facility, and handling waste such as empty boxes and recycling. And they free up human employees for higher-level work. "Employees can do more complex tasks like inventory management and quality control," Malewicki says. "Ultimately, it leads to a better allocation of labor resources."





*By changing how employees go about their day-to-day activities, these vehicles contribute to lower turnover and allow people to spend their time and energy on tasks that drive revenue for the business.*

**KURT SPYKE**

Director, National Accounts & Strategic Projects  
Big Joe Forklifts



These benefits are important not only for operations but also for employees themselves. “Having the automated solutions doing the ‘boring’ tasks means more creative work, more job satisfaction and employees feeling like they’re making a difference at their company,” says Kurt Spyke, director of national accounts and strategic projects with Big Joe Forklifts.

Semi-autonomous solutions provide these benefits with a lighter footprint and easier set-up than many fully autonomous vehicles. Big Joe’s user-directed AMR, for example, can be programmed and functional in just a few hours. The mapping portion of the AMR’s software allows users to tailor its movements to their specific workflows, and it can be quickly updated if the facility’s layout changes — no site visits from technicians needed.

Big Joe’s AMR also has a user-friendly tablet interface, so training and operation are simple for all employees. “We delivered two AMRs to a customer first thing in the morning and they were fully operational by lunchtime,” Malewicki says. “These vehicles amplify the productivity of a workforce without the need for additional headcount.”

Semi-autonomous solutions can improve workloads on day one, making the benefits for employees immediate.

## PROTECT WORKER HEALTH AND SAFETY WITH AMRS

Semi-autonomous vehicles create a healthier and safer work environment for employees. Their benefits include:



**Reducing physical burdens:** When an AMR handles transportation tasks, employees have less lifting, bending and walking to do. These vehicles often feature riding platforms, so they not only transport goods but also save employees steps when operating the vehicle.



**Improving internal environments:** Solutions like Big Joe's user-directed AMR pallet mover are powered by lithium-ion batteries, which means it's not adding exhaust or loud motors inside a facility. "Lithium-ion is a game-changer," says Kurt Spyke, director of national accounts and strategic products, with Big Joe Forklifts. "They reduce noise, release no fumes, and they're closed systems that don't need maintenance like lead-acid batteries."



**Adapting to employees' movements:** With AI-driven software, AMRs feature collision-avoidance capabilities and emergency-stopping functions. This allows them to maneuver around people and objects safely while reducing the risk of human error.





## MAXIMIZE FACILITY SPACE FOR GREATER EFFICIENCY

Semi-autonomous vehicles are not only good for employees, but they're also good for facilities because they optimize the physical space. Operators program drop zones for the AMRs, so stocking deliveries, waste management and other item movements happen in specified locations. When zones are full, AMRs like Big Joe's can be programmed to move items to a different area or return without dropping the load.

They can do all this in confined spaces so every square foot of a facility is utilized, even areas that may be difficult or dangerous for humans to access. "The precision of our AMRs means they can place goods in narrow aisles, down to just six feet wide," Malewicki says. "This increases usable storage capacity without the need for physical expansion."

AMRs powered by lithium-ion batteries also free up space that would otherwise be used for charging areas or safety and washdown stations. Lithium-ion batteries require little to no maintenance and can charge at normal voltage outlets. They also avoid the risk of the batteries leaking acid. As a result, facilities can regain square footage for inventory and other uses.



Crucially, semi-autonomous vehicles can do all this without costly infrastructure upgrades. Unlike many fully autonomous solutions, semi-autonomous vehicles like Big Joe's user-directed AMR pallet mover can function without reflectors, QR codes posted throughout the facility, or wires added to the floor. It uses natural feature guidance and landmark mapping technology, so no additional infrastructure is needed, which lowers costs and makes implementation easier.

"LED lights in a facility can cause reflections on the floor, and vehicles sometimes interpret these reflections as obstacles," Malewicky says. "Big Joe's user-directed AMR is driven by AI-powered software that recognizes these are just reflections from lighting. Instead of misinterpreting it and stopping, these vehicles keep transporting goods in the shortest amount of time possible."

Another benefit of semi-autonomous solutions is their ability to operate without a constant internet connection. In large warehouses and facilities where WiFi may be spotty, these vehicles will keep operating independently because of their sensors and cameras. "The user-directed AMR requires WiFi for enhanced features such as remote diagnostics, but it doesn't need WiFi to operate on the facility floor," Malewicky explains.

This flexibility and ease of operation make AMRs a low-risk option for adding automated solutions to any warehouse or manufacturing facility.



## USER-DIRECTED AMR = FASTER ROI

Fully automated robots may seem like the right solution to personnel and operational challenges, but facilities often can't commit to high up-front costs and infrastructure upgrades. The semi-autonomous user-directed AMR from Big Joe provides many of the same benefits but with a much faster return on investment:



Same-day set-up and operation for immediate productivity.



Lithium-ion batteries last longer, charge quickly and are no- to low-maintenance.



AMRs can be shifted to manual operation with the pull of a handle, so there is never any downtime.



Leasing programs mean no long-term financial commitment.

“Up to 80% of a vehicle’s total cost is maintenance,” Spyke says. “With lithium-ion-powered AMRs, we condense that cost down into a low-risk investment that drives efficiency right away.”

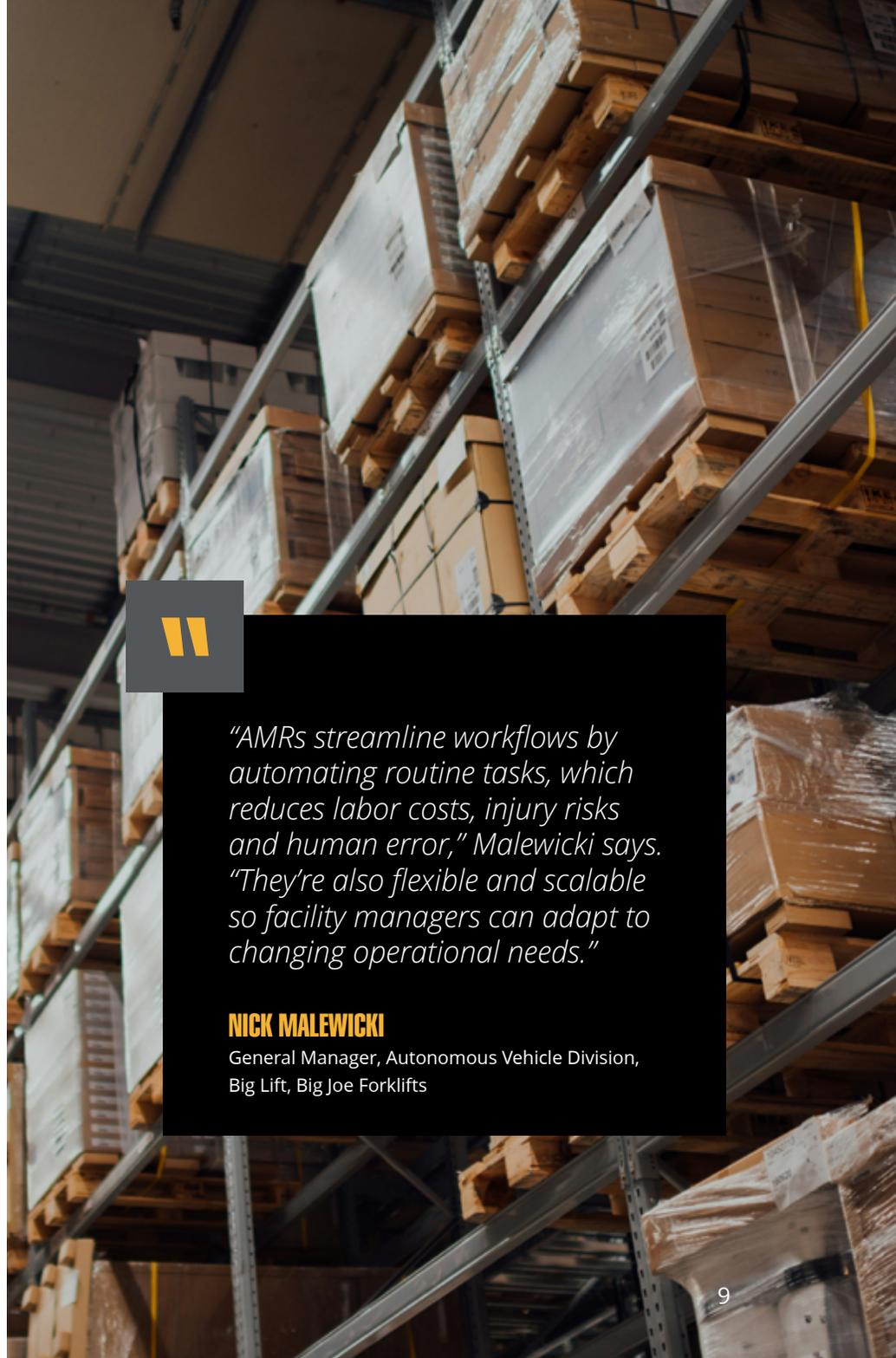
# AUTONOMOUS SOLUTIONS ARE FRIEND, NOT FOE

AMRs and semi-autonomous vehicles improve operations for warehouses and manufacturers — without eliminating jobs or replacing entire workforces. They're force multipliers that make employees safer and more productive while doing higher-value work.

Rather than requiring expensive facility upgrades and connectivity, semi-autonomous solutions like Big Joe's user-directed AMR can be implemented immediately and then scaled over time as a facility or workforce changes.

Warehouses and manufacturing facilities can achieve greater throughput, better workplace conditions and fast ROI with semi-autonomous vehicles because they combine the best of technological advancements with human expertise. As Malewicky puts it, "Higher productivity, lower costs and improved efficiency — there is everything to gain with these solutions."

[Contact us](#) to find out how Big Joe's semi-autonomous solutions can improve your operations.



*"AMRs streamline workflows by automating routine tasks, which reduces labor costs, injury risks and human error," Malewicky says. "They're also flexible and scalable so facility managers can adapt to changing operational needs."*

**NICK MALEWICKI**

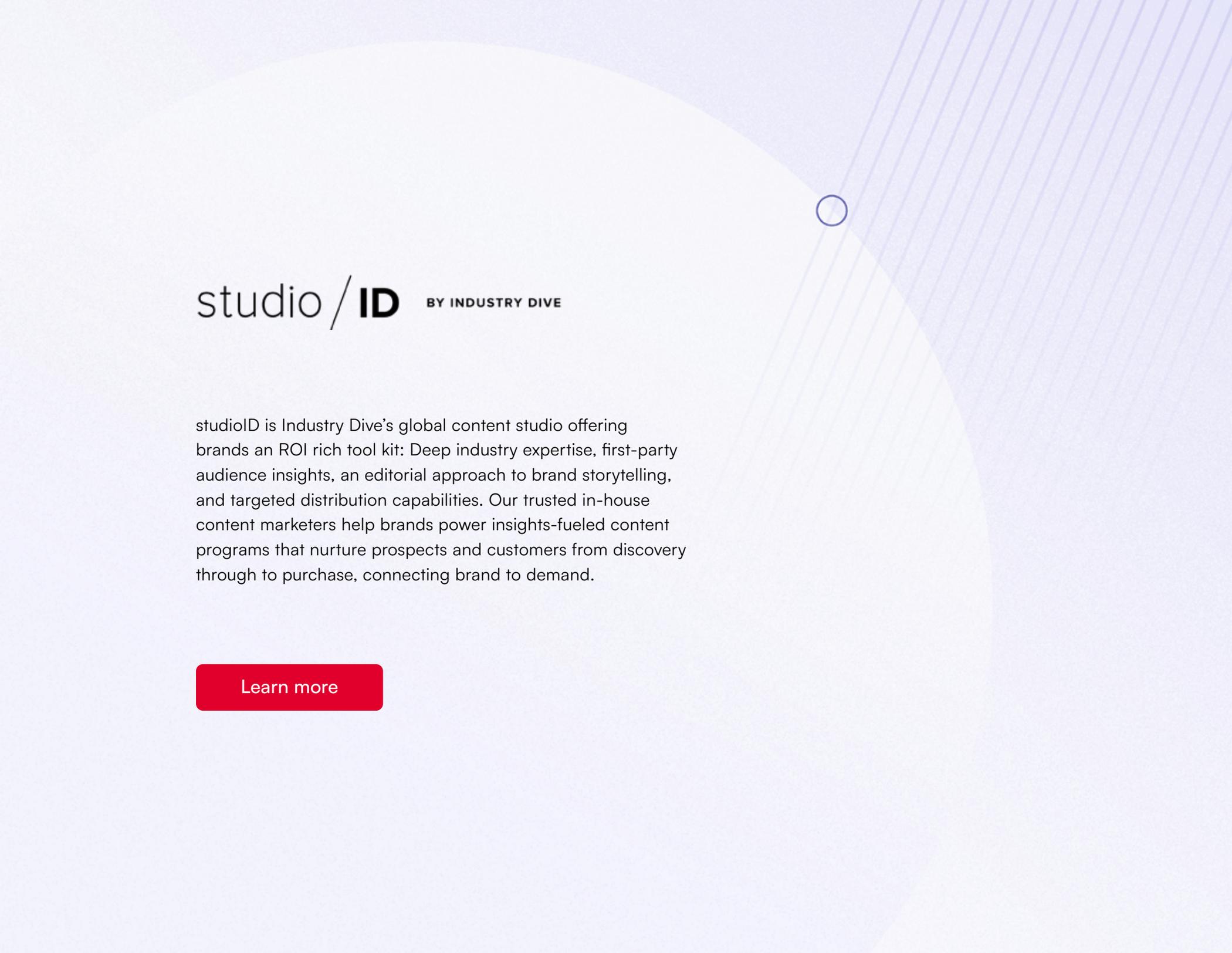
General Manager, Autonomous Vehicle Division,  
Big Lift, Big Joe Forklifts



Big Joe is a customer-driven North American material handling equipment company, that distributes innovative products and in-between-handling applications, purpose-built counterbalanced lithium forklifts and market-leading autonomous solutions. Based in Madison, Wisconsin, Big Joe provides engineering expertise, customer service, aftermarket parts, and warranty support.

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