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Automated Material Handling Plays a Major Role in Modern Industry

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Friday, February 5, 2021 by Electromechanical Team

Since its industry introduction in the 1960s, automation has made an accelerated climb to be a significant trend in material handling applications. Now, automated material handling systems handle a wide range of repetitive and precision tasks in manufacturing and supply chains, along with the eCommerce, logistics, and retail industries.

These systems offer a range of benefits, including increased productivity, cost control, worker safety, reduced product damage, and more. And as companies expand, they can invest in additional machinery to keep up with demand without worrying about labor shortages.

Download our white paper Off-Road Trends: Driving Cleaner, More Efficient and Connected Machinery, to learn more about trends in the Material Handling industry.

Key trends in automated material handling

Among the significant equipment trends in material handling are the following:

- **Automated storage and retrieval systems (AS/RS)**: This refers to a variety of technologies that can handle, store, and retrieve material with precision, accuracy, and speed. These systems are used in applications ranging from assembly and production (retrieving and delivering parts for assembly) to retail (bringing parts to the point of sale).

- **Automated guided vehicles (AGVs)**: These computer-controlled and wheel-based machines travel along the floor of a facility without a human driver. They handle a variety of applications, including material transport, pulling trailers or forklift work. These are typically battery powered and controlled through a combination of programmed software, vision systems, and sensor monitoring.

- **Material handling robots**: Robots are used in a wide range of applications and come in a variety of designs. Reach distance, payload capacity and the number of axes of travel is defining characteristics of different models. Robots use what's known as the end of arm tooling (EOAT) to hold and manipulate either a tool or a piece of material.

- **EOAT**: EOAT is itself a major area of a current technological focus, as end-users demand even greater productivity and flexibility from their robotic systems. According to an article in Control Engineering, three of the most consequential current trends include the development of safer grippers that prevent harm to human workers, EOAT connected to the Internet of Things (IoT), and the development of soft grippers that promise to expand the use of robotics in food handling applications.

- **Improved battery technology**: Whereas lead-acid batteries have traditionally been used in material handling automation solutions, newer technologies, such as lithium-ion, are making inroads. Compared to the older technology, lithium-ion offers faster charging times, less maintenance, stable voltage with higher travel and lifting speeds. The higher cost of lithium-ion is currently a barrier to adoption for many potential users. But it seems reasonable to expect those costs to come down as the technology is adopted widely for other uses, such as electric passenger vehicles.

New automation technologies promise additional capabilities

Fact is, automated and robotic systems are getting even more and more powerful, enhanced by additional technologies such as the IoT and machine learning. In this "Fourth Industrial Revolution," handling systems will handle not only the labor, but decision making, troubleshooting and process improvements, all without human involvement.

This is not to say that there will no longer be roles for humans in these industries. On the contrary, the worker of tomorrow will need new skill sets as he or she walks in (or logs in) to the factory or warehouse. Increasingly, these workplaces are looking for people such as technicians, software and mechanical engineers and skilled operators who can oversee this

new and rapidly evolving automated machinery.

Material handling automation solutions are transforming industry

Industrial material handling is being transformed by automated machinery. Tasks — sometimes dangerous or difficult tasks — once handled by humans, are now the province of mobile or stationary machinery running off programming. Increasingly, this machinery is using sensors and other technologies to work with even greater precision and autonomy.

To learn more about trends in the Material Handling industry, read our Off-Road Trends White Paper.

This article was contributed by Parker's Electromechanical and Drives Team.

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