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28 MARCH 2017

Hovercraft Technology: A Growing Industrial Alternative

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Moving heavy machines through a production process by traditional methods such as cranes, conveyors and forklifts is time-consuming and often costly. Contact pressure from wheels, rollers, forklifts, or the load base can damage flooring due to excessive point loading. Costs to repair or replace can be considerable. Epoxy coated flooring, commonly used in industry, costs from \$5 to \$10 per square foot—a significant expense for a 50,000-square-foot shop floor.

While cost-efficiency is an ongoing issue with cranes, conveyors and draglines, another drawback is that all three are subject to limited flexibility due to their fixed position on the factory floor. If throughput requirements are increased or the production flow needs to be changed, these solutions are limited by their fixed location and speed. Compounding the problem is the tight design of factory floors. With minimal investment and zero downtime, air casters provide a workable alternative, which can be expanded to accommodate changes to production flow and throughput.

Company supervisors and owners have increasingly turned to air caster hovercraft technology to provide a low cost and flexible conveyance for heavy machines through a production process with less manpower, often in the form of a single operator.

Explaining Hovercraft Technology

Air caster hovercraft technology literally floats the equipment or load on a film of air. This technology has been around for many years, the most notable examples being their hockey table and, of course, hovercrafts. In industrial applications, use of air casters provides ultra-low friction, allowing movement of loads weighing thousands of pounds to be controlled by hand.

Basically, an air caster is a torus shape bag that captures air to lift and move objects. The air pressure requirement for them is less than 60 psi, which the overwhelming majority of factories already have in their compressed air systems. Air caster technology provides omnidirectional load movement adjustments, meaning the casters can move in any direction without increasing force as is the case with wheeled casters. Omnidirectional movement allows more maneuverability and precise placement of equipment and loads that is not feasible with fixed transport systems or rollers.

Air casters work best on smooth, flat surfaces found in most manufacturing plants as well as epoxy coated flooring, tile, metal and vinyl. Although surfaces including asphalt, gravel and dirt are considered unacceptable, use of a temporary overlay will enable the technology to do its job and successfully complete the move.

The Experience of an Engine Rebuilding Facility

Among the many facilities relying on air caster technology for flexible moves is a diesel engine rebuilding facility in the U.S. Southwest. Air caster systems transport a variety of components weighing several thousand pounds each throughout the plant. The company describes the operation as “effortless load movement for technicians,” and relies on air caster technology to provide efficient production processes.

The company still uses cranes for large sections and subassemblies, but has had issues with battery-powered wheeled vehicles, which it says lack the mobility and flexibility inherent with air casters.

Among the benefits senior management attributes to the technology are precise load control, reduced damage to the shop floor and an increase in productivity. The firm said its employees required only minimum training to become proficient.

Cost Comparison

While air casters require an initial investment, short and long-term financial calculations will offer a clear picture of return on investment. They cost more than traditional wheels and rollers, but certainly far less than cranes. Users cite several compelling benefits of this technology. Among them:

- Considerably less injury exposure than with wheels.
- A reduced need for costly repairs and replacement of floors.
- For industries considering expansion at their location, air casters can easily relocate an assembly line—a capability fixed moving systems are incapable of duplicating.
- Improved manpower efficiency as many air caster systems need a single operator for tasks formerly requiring multiple personnel.

Adopting the Technology

It's little wonder that hovercraft technology is finding a home in heavy industry. A technology often associated with recreation at its inception more than 50 years ago has been significantly advanced and upgraded. From eliminating floor damage to more effective use of time and manpower, air casters are gaining greater acceptance as efficient, agile, safe and cost-effective tools for moving heavy equipment.

About the Author:

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