

# FMJ



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International Facility Management Association

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## inside

Vigilant FM

Power to the People

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MANAGING  
21ST CENTURY  
SPACES

# LIGHT AS AIR

AIR CASTER TECHNOLOGY LIGHTENS THE BURDEN OF MOVING MOUNTAINS OF EQUIPMENT

For facility managers, the task of moving heavy products or equipment in a manufacturing facility is a daily challenge. It can be accomplished using cumbersome, old methods, or it can be done with greater ease through technology enhancements.

While the challenges of moving heavy equipment may vary somewhat from industry to industry, their solutions are similar. Surprisingly, FMs can apply the same technology for moving a diesel engine or airplane fuselage section to moving massive seating sections at a sports or theater venue. Day in and day out, FMs seek to help their organizations find ways to save time and money, improve safety and add value to ensure the efficiency of their organizations. In the process of relocating or reconfiguring, many have discovered the solution is to use air caster technology in any of these disparate venues.



Argonne National Laboratory used an air bearing system with power drives to move long and heavy equipment into the facility.

## What is air caster technology?

Very simply, air caster equipment uses a variety of air bearings to float very heavy (5- to 200-ton) loads on a thin film (.003 to .005 inches or .08 to .13 millimeters) of compressed air.

## Where can air caster technology be applied?

Air casters have been successfully used in construction, manufacturing, aerospace, entertainment, shipbuilding and a variety of other industries.

## How do they work?

In any manufacturing plant, huge, heavy components can be assembled on top of air caster-supported platforms. As components, machined parts or complete assemblies are added to the manufactured or constructed part, the enhanced product is glided along the floor on the air casters like "hovercrafts" making heavy products very easy to maneuver. Omnidirectional movement of partial or completed pieces — buses, engines, tractors, and other large equipment — can be safely handled with a few workers (the number depends on the size and weight of the piece) and without the use of space-taking permanent fixtures such as cranes, conveyors, rails or other equipment.



## ADDED VALUE

How does a production facility optimize floor space, minimize costs and maximize productivity against the opposite forces of a fixed plant configuration, a non-expandable manufacturing footprint and pre-existing crane or rail structures? They look for proven, effective methods and innovative options.

For example, today's heat exchangers are heavier, taller and wider than they

were in the past. These larger versions often don't fit in some existing buildings. They tend to be too tall for yesterday's ceilings and they're too heavy for the older cranes typically used to move and place them. Blasting out walls, raising ceilings and installing bigger, higher-capacity cranes are all expensive and unnecessary solutions. Sometimes the answer is not only simple, but also safer and less expensive as well.



Airplane manufacturing was the first industry to capitalize on air bearings as a flexible and safe load movement method.

## AIR CASTER TECHNOLOGY

Air caster technology offers easy-to-use equipment and has proven itself in venues ranging from heavy manufacturing (e.g. aerospace) to modular building (apartments and modular hotels) to entertainment venues (sports arenas and theaters).

Without stopping a production assembly line, the part can be gently pushed and maneuvered off the line without interrupting flow. Cross-bay movements are simplified. Manpower is optimized. Floor space productivity is maximized. Safety is assured.

For entertainment venues, air caster technology is used in moving entire seating towers and bleacher sets. Add-

ing or subtracting hundreds of seats and changing the feel of an event can be accomplished safely using special, durable air casters for both inside and outside auditoriums and arenas.

## TECHNOLOGY BENEFITS

Air caster transfer methods provide expanded capabilities for facility managers.

Not only can FMs respond to increased demand with complete movement flexibility, but air casters allow omnidirectional movement of any weight without halting flow and often with just a few employees. Because of these benefits, increased demand can be more easily assimilated into the workflow.

# FM CHALLENGES COME FROM MANY DIRECTIONS

## Increased demand

Demand for goods and services grows with swelling world populations.

## Higher labor costs

Technology often complicates hiring; plus, operational and safety training adds to payroll burdens.

## Just In Time (JIT) pressures

As global needs for JIT inventory and JIT market delivery rise, efficiencies in all areas are welcomed.

## Cost-saving requirements

Expanding the manufacturing footprint to reduce costs while increasing production strains budgets and ingenuity. Re-building or expanding is expensive and often prohibitive.

## Heightened quality control

Mistakes and re-dos are costly. Emphasizing quality is part of the FM's responsibility.

## Safer manufacturing facilities

Safety is good for humans and good for the business.

NOT ONLY CAN FMS RESPOND TO INCREASED DEMAND WITH COMPLETE MOVEMENT FLEXIBILITY, BUT AIR CASTERS ALLOW OMNIDIRECTIONAL MOVEMENT OF ANY WEIGHT WITHOUT HALTING FLOW AND OFTEN WITH JUST A FEW EMPLOYEES.



*Factory machinery is positioned using air bearings permanently mounted under the structure.*

## TECHNOLOGY BENEFITS

### Lower labor costs

— Air caster technology may require fewer workers on the manufacturing floor. Learning to use air caster equipment is easy. There are no licensing costs as for forklifts, cranes, etc.

### Just in time delivery is enhanced by air caster flexibility

— Moving manufactured pieces around the line makes the production more fluid and capable of mid-stream changes. Manufacturing of even the largest of items becomes more efficient and responsive to market swings and production demands.

### Fewer expensive load-moving machines required

— Cranes, conveyors and rails take space and are expensive to operate. Air caster technology requires no permanent structures and uses existing compressed air. Installing permanent equipment, such as cranes, rails, etc., to achieve expansion or growth goals becomes unnecessary. Air caster-enhanced carts, jacks, lifts, vehicles, etc. can be moved from one part of the production floor to another, from one building to another, or from one part of the country to another.

### Consistency and quality control

— Using air casters improves consistency and quality in many industries, allowing units to be easily pulled off line for additional inspection, repair or alteration.

### Increased safety, reduced damage

— Air casters are low profile, close to the ground, thereby avoiding drops. Movement is deliberate and controlled, averting dangerous swings and worker injuries or damage to units and to floors, walls and ceilings. Overhead crane accidents are eliminated. Training is minimal. The operator's view is unimpaired.



## FROM "A TO Z"

Competition in any industry is fierce. Opening one's mind to opportunities outside of the traditional solutions requires attention and experimentation. Yet, there's no need to try the untried. Sometimes, as Steve Jobs said, it's just a question of "think different." Air caster technology lets the FM professional think differently. Proven safe, flexible and cost-efficient, application of air caster knowledge and technology can make a difference and handle growth and expansion through the decades to come. **FMJ**

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An overhead crane places the Orion module on a work stand, which uses compressed air to "float" the spacecraft through a NASA facility.



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