

WHITE PAPER

Moving Delicate, Expensive Equipment in the Fast-growing Semiconductor Industry



April 2019

Innovative Load Moving Solutions

Executive Summary

According to a February 5, 2018, report by the Semiconductor Industry Association (SIA), the global semiconductor industry posted an annual year-over-year sales increase of 21.6%, topping \$400 billion for the first time. Embedded in everything from cars to coffee makers and artificial intelligence (AI) to virtual reality (VR), the semiconductor industry is growing with no end in sight. In a market that lives—and dies—by a simple creed: smaller, faster, and cheaper, it is vital to focus on every detail of efficiency, adaptability, and cost savings to remain competitive in this fast paced market.

One simple, and often overlooked, way to maximize productivity is through intelligent floor space management. Managing every square foot of manufacturing space available pays off immediately with timelier workflows and reduced downtime, and continues to benefit by allowing production adaptability and growth without an increase in building square footage. One of the most cost effective ways to turn your plant into a modular manufacturing facility is through the use of air caster technology.

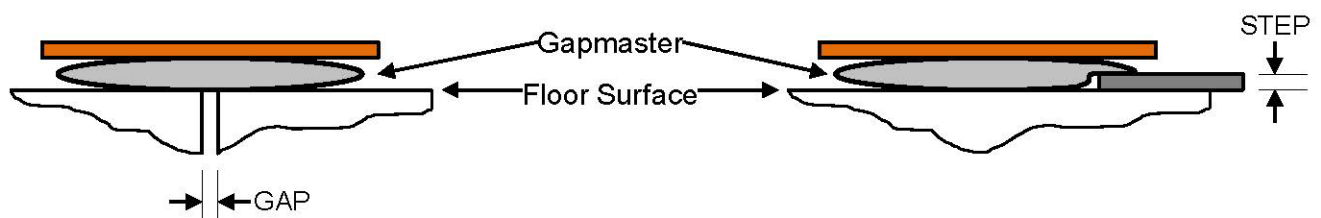
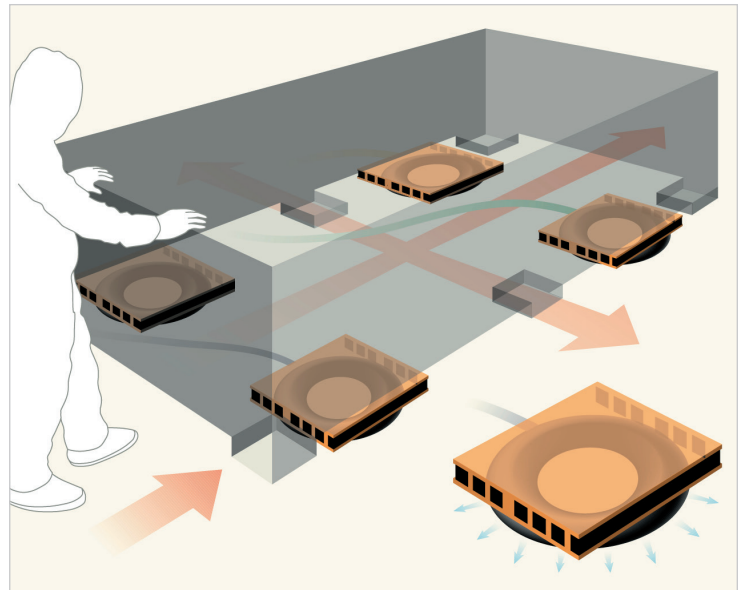


Manufacturers utilize all available floor space using air caster technology.

Why Air Casters are the Preferred Movement Method in Modern Cleanrooms

The basic premise of air casters (sometimes called air bearings or air skates), is that they float heavy loads on a thin and nearly frictionless film of air. By distributing pressurized air over a large lift area, surface pressures typically never exceed 40psi. The result is the ability to precisely position heavy equipment with minimal effort and maximum control.

While air casters have been successfully installed in plants throughout the world, they are especially well suited for the high tech cleanroom environment. AeroGo Inc. in Seattle, Washington manufactures their purpose-built Gapmaster™ Aero-Caster systems to optimize performance over the typical raised panel cleanroom floor. Gapmasters™ remain compliant and controllable while crossing gaps and negotiating small steps on these floor overlays, eliminating the vibration or jarring that can be caused by conventional wheels.



How Air Caster Systems Can Solve Moving Challenges

The unique features of air casters provide the following benefits over rollers and wheels in a clean room environment:

- 1. Low friction:** Allows safe, smooth, and omnidirectional movement for easy positioning. This saves time and reduces the possibility of injury to personnel or damage to equipment.
- 2. Low profile:** Air casters are only about 2.5 inches (64mm) tall, resulting in a lower center of gravity and better control. Being much shorter than rollers or wheels, air casters can also help with overhead clearance.
- 3. Soft, compliant air surface:** Isolates the load from vibration, impact, and floor imperfections. This also eliminates damage to raised cleanroom floors since the Gapmaster glides safely over gaps and small steps
- 4. Low floor load:** Air casters distribute pressure across a broad area, making them one of the best ways to move heavy loads across elevated floors. This reduces the risk of catastrophic floor tile failure by distributing load weight more evenly and more effectively than wheels.
- 5. Cleanroom compatible construction:** Air casters are non-marking, require no lubrication, and create no particulates under normal conditions.
- 6. Easily adjustable:** Eliminates imbalanced load concerns as casters can be quickly adjusted to handle a wide variety of equipment weights and sizes with no part change-over.

AeroGo Cleanroom Capabilities

AeroGo offers a wide range of solutions tailored to cleanroom requirements. By keeping design and manufacturing under one roof, they are able to work within the most demanding customer specifications. In addition to custom manufactured products, AeroGo maintains a catalogue of standard products well suited to the semiconductor industry:

1. The Aero-Pallet™ (shown with Gapmaster™ Aero-Casters)

- Superior Positioning: Available power drive precisely positions and smoothly controls machinery with a single operator
- Unmatched Safety: An operator with a spotter can safely position a delicate, oversize load with fingertip control.



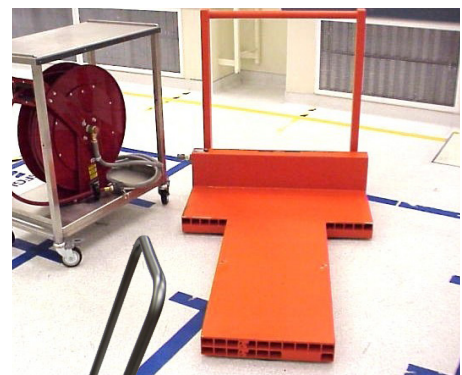
2. The Air Caster Rigging System (Shown with Gapmaster™ Aero-Casters)

- Configurable: Can be repositioned to fit a variety of load weights and shapes
- Adaptable: Individual pressure controls can even handle imbalanced loads.



3. Customized systems with special finishes, materials, hoses, and other specific needs

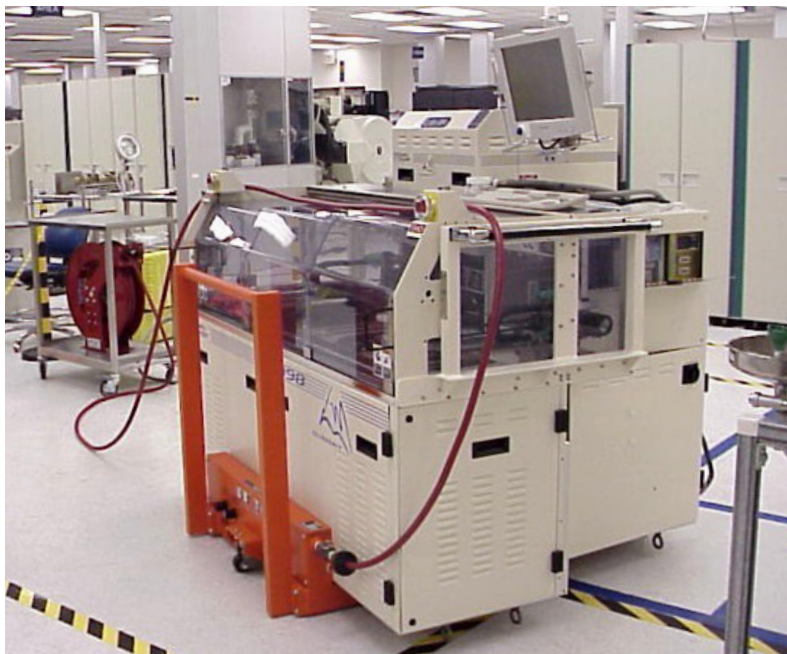
- Experience: Decades of engineering and design knowledge in this industry, backed by comprehensive customer service and after sales support
- Capabilities: System level design and build to spec options to ensure the customer gets the maximum value for each product we deliver.



Summary

Transferring heavy, yet incredibly delicate and expensive equipment in semiconductor, aerospace, and biotech cleanroom environments presents challenges in maneuverability, safety, efficiency, and expense. Maximizing production facility floor space while addressing global competition, volatility, and short product life cycles makes a strong case for using state-of-the-art transfer solutions that are safe, efficient, flexible, portable, and durable.

AeroGo's range of products gives modern manufacturers an easy way to make sure they are always able to reconfigure and organize to be as competitive as possible. As manufacturers seek to increase their overall equipment effectiveness, every cost element will come under ever more scrutiny, and the analytics will undoubtedly include something as small, but vital as the time to move equipment in, out, and around the cleanroom. Aero-Casters by AeroGo, Inc. will stand up to the scrutiny.



About AeroGo

Since 1967, AeroGo, Inc. has been manufacturing innovative load-moving equipment, using wheels and hovercraft technology to move heavy, awkward, or delicate loads. Companies large and small benefit from AeroGo's worldwide dealer network, experienced product specialists, and skilled engineers. From Standard Product offerings to highly customized Engineered Systems, AeroGo has an innovative solution for every load moving need.



Innovative Load Moving Solutions

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