

EFFICIENT PLANT

OPTIMIZING MANUFACTURING SYSTEMS

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A modular-home manufacturer turns mods into hovercraft for easy assembly.

Air Casters

Advance Home Building



Air casters act as hovercraft to move large modular structures down an assembly line.

CONSTRUCTION OF MODULAR structures is fueling major cost and time efficiencies in home building. According to analysts at McKinsey & Co., modular construction can deliver projects as much as 50% faster and 20% cheaper than traditional methods, but making modular construction work efficiently is no easy task.

A Colorado-based manufacturer of modular single-family homes wanted to build a more productive facility and had to find a better approach for the assembly line. The goal was to produce more than 700 modular homes, apartments, and townhomes annually. Each unit, or “box,” needed to move between two dozen workstations. To maximize productive capacity, the company needed an innovative workflow: a high-efficiency, U-shaped assembly line surrounding a mezzanine complete with tooling, parts, and offices. Almost no material-handling system they evaluated could meet all their needs. Cranes and forklifts didn’t have the capacity to accommodate the large mod structures and rails can’t curve or the pathway be moved once installed.

AN AIR SOLUTION

Born out of the same technology used by hovercraft and air-hockey tables, air casters from AeroGo Inc., Seattle, WA (aerogo.com), allow massive structures to float on a thin, nearly frictionless film of air. A low-profile material-handling system that could slide under modular boxes in these manufacturing facilities, air casters use compressed air (100 psi) to inflate about ten donut-shaped bags under each multi-ton box. They effectively transform each box into a giant floating hovercraft.

As a result, even a small team of six workers—four movers and two spotters—can easily and precisely move, position, and even rotate an entire box just by pushing.

Thanks to the air casters, the company gained flexibility in how to design and build its manufacturing facility for production efficiency. Instead of having a building stretching longer than a football field, they built a square facility that could power high-speed production and meet production goals.

Because air casters can move so quickly, they could increase throughput versus other material-handling systems. They built their desired high-efficiency U-shaped production line, which shortened all logistics, reduced waste, and placed input and output on the same side of the building. The facility maneuvers each box down a certain number of stations in one direction, move laterally, and return across the same number of stations, effectively doubling the number of boxes under construction at any time. All tooling is within easy reach in the center of the U. Offices were built above the tooling area and offer visibility over the production. The casters also provide a means to ensure production continuity, even in the face of changes or problems. Types of structures can be alternated at will. One order might be for 56-ft. boxes and the next for 76-ft. structures. With air casters in place, changes can be accommodated on the fly. Workers can also pull an unfinished mod out of the line and store it sideways out of the way. That flexibility ensures maximum throughput. **EP**

For more information, visit aerogo.com/industries/modular-structures.