

Transformers, boilers and pressure vessels: megatons moved on air



➤ An air caster vehicle featuring a synchronous guide wheel mechanism to rotate a 40' cylinder used to build larger heat exchangers, boilers and chillers.

Moving huge transformers, boilers, and pressure vessels, through production lines without causing slowdowns, or even shutdowns, can pose significant challenges. However, many companies do not realize that this type of equipment is easy to manoeuvre around using air caster technology. In this article the technology is explained, and examples of how it works and eases the movement of heavy, complicated shapes are given and endorsed. In effect a 100-ton bulky product can be moved around as if on air saving time and costs.

By John Massenburg, MSME, President and Chief Executive Officer of AeroGo, Inc., USA

Manufacturing transformers, boilers and pressure vessels presents significant challenges. The heft and unwieldiness of these behemoths can easily frustrate manufacturers trying to move them smoothly through production lines without causing slowdowns or outright shutdowns. Moving such loads is usually a production in its own right. What most manufacturers don't realize: it's possible to maneuver even 100-ton boilers through a manufacturing process safely, quickly, and with just two operators.

Technology offers an alternative

Air caster technology, around since the 1960s, has advanced to the point that air casters have been successfully used to move loads as gargantuan as a 2,700-ton ship. To control the load and adjust for size and weight, operators simply add more casters. When accompanied by powered drive systems with controls managed by one operator, users can easily maneuver a load in any and every direction, rendering the straight-line movement of the overhead crane or conveyor obsolete.

"The casters have made it a continuous flow through our manufacturing facility instead of having stop/starts,"

says Jens Lamba, senior product engineer at the Carrier Chiller plant in Charlotte, N.C., which produces chillers and commercial air condition units. "They have helped to significantly lower our production costs."

What are air casters?

Air casters are bags that capture air and create lift, floating loads on a film of compressed air. They work much like a hockey puck or hovercraft; once floating and nearly frictionless, air casters require relatively little force to move even very heavy loads. Even better, by dispersing the load over a large surface area, they dramatically reduce the risk of floor damage.

Lamba says that prior to purchasing an air caster system, the Carrier plant had relied mostly on overhead cranes. "They were less flexible and made us look more like a job shop than a continuous production facility," he says. "They tended to slow the process."

Because air casters fit within the footprint of the load, it's possible to move loads in any direction at a push, thus offering the flexibility Lamba's team wanted. On the side of the facility where the air casters are used, Carrier manufactures heat exchangers, melt compressors and water-cooled chillers. Loads are mounted on a table supported by the casters; the table can move from one workstation to another as needed, no disassembly re-



➤ 100 ton boiler floats on air casters. Two operators use power drives to control the move through the plant.

quired. Load weight is not an obstacle: "It's anywhere from 25,000 pounds to 125,000 pounds," Lamba says.

Planning and execution

Lamba's comments about continuous production likely ring true for every facility concerned about cost-efficient load movement without jeopardizing the safety of employees or the facility itself. Risk managers looking at alternatives with a track record of safety, flexibility, and positive impact on the production process should consider air casters.

Even genuinely super-sized objects that would ordinarily obstruct or shut down a production process can be accommodated. Cleaver-Brooks, a commercial and industrial boiler manufacturer, found that using quick-attach power drives with air casters under their 100-ton boilers made it possible for just two operators to maneuver the huge pressure vessels along twisty paths and through doorways without hindering other operations. Spotters help the two operators navigate while keeping the production line moving.

Floating on air

Air casters, although nowhere near the expense of cranes, still represent an investment and require due diligence prior to purchase. Their value proposition can be calculated in terms of facilitating safety and ease of movement, avoiding potential for damage, reducing manpower hours for load movement and, of course, saving money for the production facility. The goal, as always, is to safely increase production to improve productivity and profits. When manufacturing boilers, heat exchangers, and the like, air casters are a viable and proven solution for manufacturers.

ABOUT AEROGO INC.

AeroGo, Inc. manufactures heavy load equipment utilizing hovercraft and wheel technologies for moving heavy, awkward or delicate loads in factories. For more information, visit www.aerogo.com

(573) 732-3318
engineering@hpro.com



www.hpro.com



HydroPro Mandrel Inserted into Tubesheet

HydroPro works closely with top material manufacturers, fabricators and end-users to develop best practices for tube-to-tubesheet expansion and preventative maintenance solutions for extending heat exchanger life.

Visit HydroPro's blog at www.hpro.com/blog and look for future articles in Heat Exchanger World Magazine to learn how we team up with these companies to find the best solutions.

Whether in the nuclear, power gen, chemical or petrochem, HydroPro continues to lead the heat exchanger industry with the most advanced, reliable, and repeatable method of tube-to-tubesheet expansion and repair solutions available anywhere.

- Pre-Setting Tubes
- Hydraulic Tube Expansion
- Sleeve/Ferrule Installation
- Full Length Liner Expansion
- Individual Tube/Joint Hydro-testing
- Engineered Tube Plugs
- Custom Applications



Intentional Leak Path
Created Between Internal
& Outer Tube

www.hpro.com

