

APPLICATION: PLASTICS PROCESSING / CNC HOLD-DOWN FOR VMAX VACUUM PUMP SYSTEMS



POLYWOOD's Star Power Spotlights DEKKER Vacuum's Supporting Role



Liquid ring technology can handle the severest challenges year in and year out, and DEKKER is the industry's leading provider. Some Vmax systems are still steadily performing after nearly 20 years of operation!

In the outdoor furniture industry, POLYWOOD® is a genuine star. DEKKER Vacuum Technologies® earns praise for best supporting performance.

POLYWOOD manufactures comfortable and stylish outdoor furniture that's great for the Earth and built to last. Its beautiful collections of Adirondack chairs, rocking chairs, chaise lounges, gliders, benches, swings, tables and outdoor dining sets are manufactured from recycled high-density polyethylene (HDPE) plastic and backed by a 20-year warranty.

POLYWOOD recycles an astounding 400,000 milk jugs per day, transforming what could have been plastic waste into valuable pellets, which are melted and extruded into "POLYWOOD lumber." The lumber is then CNC machined into the pieces that are assembled into furniture. The CNC routers use vacuum pumps to create the hold-down force that keeps the lumber in place while it is machined.

With its combination of design excellence and environmental benefit, POLYWOOD furniture

was a big hit. The company expanded, and so did its CNC requirements. But production began to outpace vacuum power, revealing a weak link in the system – the pump supplier. The 5 HP and 10 HP vacuum pumps proved to be undersized, temperamental and costly – they needed frequent maintenance, and the parts were expensive. Rather than providing adequate hold-down force, the CNC pumps were instead holding back the company. POLYWOOD needed a breakthrough vacuum solution to make the definitive leap to outdoor furniture prominence.

DEKKER Earns Rave Reviews

Then an exciting new performer caught their attention. The company was purchasing additional CNCs, and the pumps supplied with them were DEKKER Vmax® 40 HP air-cooled oil-sealed liquid ring vacuum pump systems. With rugged manufacturing, very low maintenance and minimal downtime among the model's features, they did what the other pumps couldn't – enabled the CNCs to run at maximum efficiency.



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Liquid ring vacuum pumps are widely employed in demanding industries like plastics processing for CNC hold-down because of their high tolerance of liquid and solid carryover without compromising the pumps' mechanical integrity or efficiency. Unlike other types of vacuum pumps, liquid ring machines don't need to be rebuilt or replaced on a regular basis. The pump has only one moving part, and there is no metal-to-metal contact between the components and the casing, making the pump wear-free.

The performance of the DEKKER pumps was an inspiration to Wade Burkholder, POLYWOOD Senior Building & Project Manager/Maintenance Manager. It convinced him to press forward with his plan to run production using a centralized vacuum system. Even with 508,000 square feet at the company's Syracuse, Indiana, headquarters and manufacturing facility, floor space was at a premium. "We placed a top priority on increasing space and improving the work environment for CNC production," Wade said.

"A centralized system, installed remotely, would open the floor, as well as reduce noise level and temperature in the plant."

When Wade asked Darren Gruber, Engineering Manager, if it were possible for

DEKKER to design and equip a centralized vacuum system. Darren replied, "Yes, of course. Centralizing systems is exactly the kind of collaborative engineering solutions we specialize in."

The centralized design relocated the pumps in a separate addition that was built on to the plant. The system incorporates thirteen Vmax 40 HP oil-sealed vacuum pump systems (VMX0553KA1), three 100 HP oil-sealed vacuum pump systems (VMX1203KA1) and one 300 HP oil-sealed vacuum pump system (VMXVFD4003-250KA1).

Preventive maintenance was enhanced through "adders" that have helped safeguard POLYWOOD's Vmax systems, including:

- Inlet Filter: high-efficiency air filter; 5 microns or finer is typical
- Vacuum Relief Valve: to prevent over-pressurization of the system
- Spin-on Oil Filter: secondary filter that helps protect the heat exchanger from overheating issues

POLYWOOD and DEKKER: The Sequel

POLYWOOD's success continued to skyrocket, dictating that further expansion was necessary. The company scouted

locations, and chose a 480,000 square-foot facility in Roxboro, North Carolina, as its second manufacturing site. DEKKER was immediately cast in the role of vacuum system supplier. The facility design again used a centralized vacuum system housed separately from production, using three powerful Vmax 100 HP systems.

One significant additional factor that needed to be accounted for was North Carolina's higher average annual temperature. To help maintain optimal performance in the subtropical climate, DEKKER responded with water-cooled pumps as opposed to the air-cooled units in the Syracuse facility. DEKKER offers the water-cooled option on the Vmax line to improve heat dissipation, resulting in a cooler environment/facility.

From the first pumps that went online in 2012, the DEKKER Vmax systems have played their roles superbly, running at peak efficiency, and requiring only minimal, annual maintenance. POLYWOOD plans to ramp up production exponentially, eventually using twelve 100 HP pumps at the North Carolina facility.

With CNC machines that run at full capacity, DEKKER solutions bring out the best in POLYWOOD through optimal productivity and return on investment. Now more fans can enjoy their outdoor lifestyles, and POLYWOOD is on track to increase the number of American jobs it provides from 550 to more than 750 in the next three years.

Wade said, "DEKKER has been very responsive to our needs. Whether it's parts, which are readily available, or training for our team, they respond promptly. They've been terrific."

Raise your profile in the industry. With the expertise to size and centralize the system that best fits your application, DEKKER can help your company deliver blockbuster performance.