



Go with the Flow

Vacuum Blowers for American Leather

Based just outside Dallas, Texas, American Leather was established in 1990. Founder and CEO Bob Duncan was inspired by “just-in-time” principles and the idea that custom leather furniture could be made and shipped in three weeks or less. And he was right. American Leather offers over 130 collections sold in stores across America including Room and Board, Crate and Barrel, Macy’s, Design Within Reach, and Relax the Back.

Innovative technology and automation play a key role in American Leather’s manufacturing processes and have helped create a delivery standard that’s three times faster than the industry average. One primary example is their recent change from using rotary screw vacuum units to rotary lobe blowers for vacuum hold down on router tables.

CNC router tables are often packaged and sold with rotary screw vacuum units on the premise that it

is the vacuum holding down sheets of plywood as shapes are cut away by the router. American Leather purchased their first such router in 2003 followed quickly by subsequent purchases for a total of four router tables as their cutting needs and abilities developed. While these 40 hp vacuum units – made by Kaeser Compressors, Inc. – were providing approximately 27”Hg in vacuum, American Leather’s processes seemed to require increasing amounts of vacuum.

At one point, American Leather upgraded several of the 40 hp vacuum screws to 100 hp vacuum screws based on their tour of a competitive plant. But once again, challenges presented themselves. Once significant portions of the plywood sheets were cut away, the sheets themselves would begin to move – creating down time, inaccurate cuts and excessive scrap material. Special roller bars were even added to help

keep the sheets in place, but the problems continued.

In addition, the plant’s ambient conditions were tough on the vacuum screw units. Though the units were fitted with special inlet filtration in addition to standard filters, leather fibers and dust continued to collapse the filters. Several of the vacuum screw airends had to be replaced due to contamination. Maintenance on some of these units averaged \$9,000-\$11,000 per unit, per year. After five years of trying to make it work with vacuum screws, American Leather was ready for a change. There was one other option to bring these issues and their costs under control.

Contrary to the belief that it is the amount of vacuum providing hold down on routers, sales representatives from Kaeser Compressors (the same company who made the vacuum screw units) kept making the case that in fact it is a matter of air





flow that provides stability in these applications. This was a hard sell for Maintenance Manager Willie Palomo.

However, he knew Kaeser as a compressed air systems expert and a quality supplier. "I've worked with a number of different suppliers, and I knew that Kaeser offered really high quality equipment."

American Leather had replaced their large variable frequency drive compressor with a smaller, more efficient and better performing 50 hp standard Kaeser compressor for their plant air system some years earlier. Plus, their facility included almost 6,000 feet of Kaeser's modular aluminum SmartPipe™ compressed air piping. After all, Kaeser was the manufacturer of the vacuum screw units. They would have no reason to disparage the technology. Rather, they just believed the equipment was misapplied.

Kaeser representatives from the Dallas office finally convinced American Leather to install a positive displacement rotary lobe blower package. Unlike vacuum screws that use compressor technology to produce air volumes at higher rates of vacuum, blower vacuum provides larger flows at lower rates of vacuum. Palomo is the first to admit he was both nervous and skeptical when he first heard the concept. But his worries were unfounded.

American Leather installed the first 30 hp Kaeser Omega DB236 with external STC option for controls. It worked so well that they purchased additional DB236C units

which included integrated controls for quicker, easier installation and operations. Each provided a flow of 553 cfm at 15"Hg. Palomo as well as the entire router table production crew are thrilled by the performance, simplicity and savings.

But the benefits of the blower technology didn't stop at providing outstanding hold down on the routers. First, the Omega Blower packages have a significantly smaller foot print than the previous vacuum units – coming in at almost a quarter of the size of the 100 hp units. For a growing business like American Leather, floor space is extremely valuable and going from 175 sq. ft. to 70 sq. ft. allows them additional room for other important processes.

Second, the rotary lobe blower packages require less routine maintenance and are less sensitive to the ambient conditions. Palomo estimates the maintenance savings including less man power at almost \$25,000 per year. Third and most importantly, by installing a lower horsepower blower, there were significant energy savings. Prior to the blower installations, American Leather was using over 320 hp, and is now using only 120 hp. Calculations based on approximately 5,000 operating hours per year reduce their power costs from just over \$119,000 to less than \$45,000.

Using blowers is also a "greener" solution that supports American Leather's commitment to increasing sustainability. As a founding member of

the Sustainable Furniture Council, they are actively involved in recycling materials such as scraps of wood and leather as well as using bio-degradable foams, pigments and leathers in many of the furniture lines. The fact that the blowers use less oil than oil flooded vacuum screw units, consume less electricity, and require fewer consumables is a perfect fit.

"I am now convinced that it is airflow and not vacuum that provides this hold down force. How else could you explain going from 27"Hg to 9"Hg and getting better hold down?" stated Palomo. "We are really very happy with our new Kaeser blowers and this is just the beginning at American Leather." As Palomo and American Leather continue to monitor and track their reduced operating and maintenance costs, they are in the process of replacing all of the vacuum units with Kaeser integrated blower packages because sometimes it is better to go with the flow!

■ For more information on blowers for vacuum applications, visit us.kaeser.com/vac_blowers. To learn more about the American Leather project, email us at info.usa@kaeser.com

