Unmatched precision through vacuum technology: Lorenz Hoffmann GmbH relies on Busch Vacuum Solutions

Energy savings of 3,500 kWh per year, hardly any maintenance effort, and the opportunity to use waste heat to heat buildings. Then add uncompromising precision.

A milling tool removes metal chips from a workpiece. Source: Lorenz Hoffmann GmbH.

MAULBURG, GERMANY, September 9, 2025 /EINPresswire.com/ -- The mechanical engineering company Lorenz Hoffmann is benefiting in many ways from converting the vacuum supply of its CNC machines to a dry screw vacuum pump from Busch Vacuum Solutions.

The milling cutter starts, coolant sprays, metal shavings fly. With accuracy to the millimeter, the milling tool in the production hall of Lorenz Hoffmann GmbH travels over a piece of metal fixed in place using vacuum. The company from Kressberg, south of Würzburg, Germany, is headed by Andreas and Christina Hoffmann, the second generation. They use high-precision CNC milling machines in their modern machinery fleet to produce prototypes, such as for machine building. These CNC machines are controlled by programs written specifically for the manufacturing of individual workpieces. They enable Lorenz Hoffmann GmbH to manufacture machine components with tolerance ranges so small that they are less than the thickness of a human hair. To make this possible, the milling tools rotate at up to 40,000 rotations per minute as they move along the specified contours. Complex geometric objects are created from the metal blanks. To meet the highest precision requirements during milling, the workpieces must not slip by even a hundredth of a millimeter during the

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>
> *Andreas Hoffmann, Managing Director*

milling process. This is why they are fixed in place with the help of vacuum. To do this, employees use special vacuum clamping plates connected to vacuum pumps.

At Lorenz Hoffmann, a COBRA PLUS supplies four CNC milling machines with the required vacuum. Source: Busch Group.

Prototypes, small-series production and ready-to-install components
In this way, Lorenz Hoffmann GmbH, with its 40 employees, has been manufacturing prototypes, small series production and ready-to-install components for various industries for over forty years. These include machine building, the automotive industry, and medical technology, as well as the wood industry and food production. In order to flexibly meet all customer requirements, the experienced engineers and technicians are constantly developing their processes and technologies. Absolute precision is the key factor for the high quality that has made the company a leader in the field of single-part, prototype and small-series production. It is therefore essential to clamp the workpieces securely with the help of vacuum technology from Busch Vacuum Solutions. In addition, using vacuum to clamp results in an enormous reduction in set-up costs.

Lower energy consumption, higher quality
The company had previously used one of its own vacuum pumps at each of its four CNC milling machines. Managing Director Andreas Hoffmann wanted to optimize the vacuum supply in his operation, so he replaced the four oil-lubricated rotary vane vacuum pumps with a single COBRA PLUS dry screw vacuum pump. This is connected to the four milling machines via pipelines, based on advice from Busch vacuum experts. "Purchasing the COBRA has saved us 3,500 kWh per year compared to the four oil-lubricated rotary vane vacuum pumps we previously used – and with even better holding power," says Hoffmann. This is because the COBRA PLUS is speed-controlled, so it adapts its power to the actual demand and therefore consumes less energy than an unregulated vacuum pump, whose motor always runs at full rotational speed. "The COBRA regulates itself and always delivers exactly the power we need. For example, if only one milling machine is in use, the COBRA operates at a lower rotational speed than when several milling machines are running simultaneously," explains Hoffmann. In addition, the COBRA PLUS is a fully networked vacuum pump with sophisticated control and monitoring functions. A color touchscreen displays, for example, power consumption, vacuum level and the rotational speed of the motor. Andreas Hoffmann is pleased that he can keep an eye on the vacuum supply at all times.

Better working conditions, low maintenance

All COBRA screw vacuum pumps from Busch operate completely contact-free, which means they do not require any oil in the compression chamber. "Since switching to the COBRA, we no longer need to change oil, exhaust filters or any other filters. This saves around four working days of maintenance per year. So far, the COBRA has been running without any malfunctions, and no maintenance has been necessary at all," says the Managing Director. In addition, the operation of a COBRA PLUS generates significantly less noise than the four old vacuum pumps. Since they were replaced with the COBRA, the production hall has become significantly quieter. For employees, this means a marked improvement in working conditions. "In the past, up to four pumps were running at 72 decibels each. The COBRA generates 63 decibels. That's why it's only half as noisy today and everyone can work much more comfortably," says Hoffmann.

Using waste heat for warm buildings

For Andreas Hoffmann, it is important to produce as sustainably and energy-efficiently as possible. He is always looking for ways to improve. By switching to the COBRA, he had the opportunity to use the waste heat from the new vacuum pump for heating. He and his team have developed a heat recovery system for this purpose. "The COBRA is water cooled. The warmed cooling water passes through an air heater. This is how we heat our production hall," explains the Managing Director. This air heater contains a fan and a heating coil that cools down the water so that it can be used again in the COBRA. As a result, the company needs significantly less heating oil than it would otherwise use. "In the summer, we direct the waste heat outside. In the winter, it remains in the manufacturing facility. As a result, it is now noticeably cooler in the production hall, even during the warm season. Previously, the production hall would always get quite hot in the summer," he adds.

Reimbursement thanks to BAFA funding

Germany is currently promoting energy-efficient technologies within the country, so Busch experts supported the company in submitting a funding application to the Federal Office for Economic Affairs and Export Control (BAFA). As a result, Lorenz Hoffmann GmbH was reimbursed 40% of the purchase costs for the new vacuum pump.

However, Andreas Hoffmann is particularly pleased with the energy benefits and is proud of his heat recovery system, which was made possible by the COBRA PLUS: "The purchase of the COBRA has paid off for us twice over. We have lower power consumption than before and can use the waste heat from the vacuum pump for heating in winter."

Florian Held
Busch Vacuum Solutions
+49 7622 6813376
email us here
Visit us on social media:
LinkedIn
YouTube