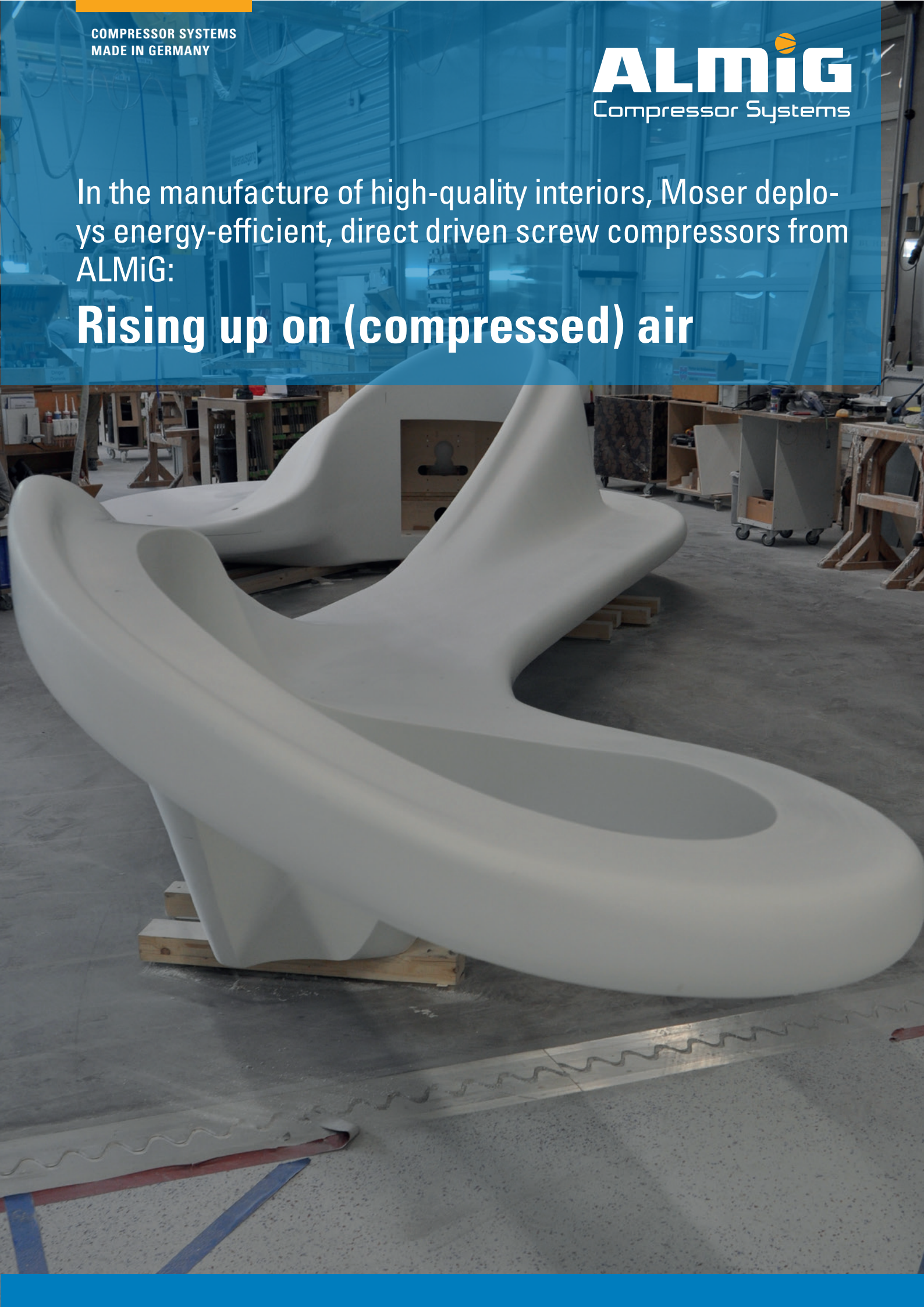
COMPRESSOR SYSTEMS
MADE IN GERMANY

ALMiG
Compressor Systems

In the manufacture of high-quality interiors, Moser deploys energy-efficient, direct driven screw compressors from ALMiG:

Rising up on (compressed) air

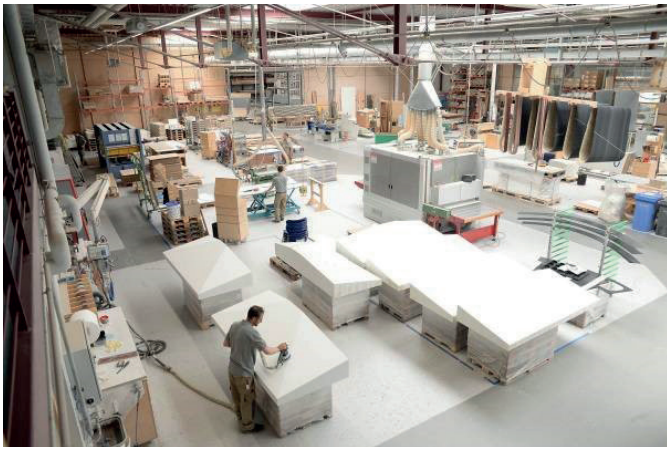


Moser GmbH, a joinery business based in Haslach in Baden, produces doors and windows and is one of the leading manufacturers of exclusive interiors. The machinery deployed in production use compressed air, an expensive form of energy. In order to make production more efficient and to be ready for the firm's constant growth, Moser is replacing the compressed air supply system, that was rather outdated, with three V-Drive series direct-driven screw compressors from ALMiG. With their energy-saving speed control, they adapt to the constant changes in load and avoid expensive idle times. The integrated heat recovery system makes it possible to reuse just over 75 percent of the energy input.

Creative and forward-looking solutions, the necessary technical know-how and custom-fitted production – Moser GmbH is on a growth trajectory. In its production, this manufacturer relies on screw compressors from ALMiG.

"We are turning some crooked stuff here," jokes Thomas Moser and points to a member of staff at a computer designing an elegantly curved counter. Who is the customer? He is very reticent in his answer. "Our clients include private owner-builders, regional municipalities and also very big names – not only in Germany but the world over," he reveals. Alongside traditional joinery work, such as windows and doors, Moser GmbH, based in Haslach, a town in Baden between Offenburg and Freiburg, places the focus of its state-of-the-art production facilities on high-quality interiors. These include things like the stylish counter displayed on the screen, which will soon enter into production. The team manufactures these designer objects for customers such as hotels, museums and business to be used as reception, office or sales counters. "While we rely on wood and aluminium for windows and doors, we often use mineral materials such as Corian® for interior fittings," explains general manager Moser. "With our machines, we can shape the material virtually at will."

The business was founded in 1955 as a small joiner's shop. Thomas Moser joined his parents' business in the 1970s and assumed ownership in 1981. Today, he has around 130 employees.



The large production hall houses the processing of various surfaces, which often include Corian®.

While Moser GmbH supplies doors and windows mainly to customers in the region, the company is one of Germany's leading manufacturers with regard to interior fittings and is represented the world over – in China, for example. "What distinguishes us?" says the general manager, repeating the question. "We offer creative and forward-looking solutions, the necessary technical know-how and custom-fitted production with a state-of-the art machinery." The employees advise customers, design, manufacture and deal with the assembly work. They get all this from a single source. This is the basis for the continual growth of the business.

"There is a lot of compressed air behind every door and every shaped part"

Nothing works without compressed air

"There is a lot of compressed air behind every door and every shaped part," explains Moser, pointing to one of the grinding machines. "Specifically in the area of interior fittings, we use enormous amounts of this expensive energy source, surface treatment being one example." It is needed to blow away the dust and fine shavings resulting from the grinding process and, of course, to control the valves and cylinders on each piece of equipment. The firm also uses compressed air to shape the components of the curved counter. In addition, it is an important source of energy throughout the painting and varnishing process: for cleaning and pre-treating the components as well as applying paint and varnish. "In light of constantly increasing energy costs, this is the reason why we intend to look at the areas where we can make savings," says Moser. One possibility is efficient generation of compressed air. The compressors previously used by the firm were rather outdated. They consumed a lot of energy and had, in the meantime, reached their limits in terms of performance. "We needed a solution that would enable us to consistently drive forward our growth plans," continues the general manager.

"With a view to identifying a suitable solution, we performed an analysis of our compressed air needs"

On account of the good experiences made in the past, Moser has decided to continue to use ALMiG compressors. ►

From the manufacture of a counter through to seating elements, no item of furniture is impossible at Moser.

"With a view to identifying a suitable solution, we performed an analysis of our compressed air needs," reports Volker Gräschke, Regional Head of Sales at ALMiG, who has advised the Baden-based company for many years now. Availability was an issue that Thomas Moser considered to be especially important. "On this basis, we supplied three V-Drive series direct-driven, speed-controlled screw compressors", Gräschke explains.

"One special feature is their optimised energy-saving speed control"

The latest generation of compressors

The powerful V-Drive 37 screw compressors are the most recent generation. "One special feature is their optimised energy-saving speed control", elaborates Gräschke. This enables the compressor system to achieve an excellent level of efficiency over the entire speed range. Compressed air generation can be adjusted exactly to actual needs. By avoiding idling periods, permanent load cycles and the higher compression levels these bring, Moser will be able to save significant amounts of electricity. With several thousand load cycles a year, this soon translates into a considerable amount of energy. Compared to compressors with loaded/idle mode control, the ALMiG units already use around 30 percent less energy on this count.

The powerful V-Drive series screw compressors: The energy-saving speed control achieves an excellent level of efficiency over the entire speed range.

The V-Drive 37's output can be varied between 1.77 and 7.57 cubic metres per minute. The operating pressure can be adjusted steplessly from five to 13 bar. "During start-up, we run all the machines at eight bar per machine and then lower the pressure by 0.1 bar at a time until we reach the optimum level. After all, one bar constitutes roughly seven percent of the energy costs," says Gräschke. For a high level of availability, all three compressors are always on standby. In basic load cycle mode, the units start up one after the other. One of the units then acts as a fail-safe in case a compressor needs to be serviced or repaired. In addition, this enables the firm to react reliably to peaks and is equipped for further growth over the coming years.

The ALMiG Air Control HE control unit coordinates the three compressors depending on consumption. This makes it possible to fully exploit the energy-related benefits of speed control.

Reliable control

ALMiG Air Control HE coordinates the compressors currently in use depending on consumption. This enables the owner to fully exploit the energy-related benefits of speed control because the units only generate as much compressed air as they actually need. The pressure remains constant. "If consumption increases and approaches the maximum delivery volume of one unit, the second compressor cuts in. A speed reserve is maintained to avoid fluctuations in pressure caused by the compressors being activated and deactivated and to ensure the unit is running in an efficient range," Gräschke explains. In the main load phase, i.e. the main production time, two systems run in sync at the same speed. In the low-load phase, when less is ▶

being produced, only one compressor is used, which automatically adapts to the consumption profile. As the machines are in the mid speed range, both the energy requirement and noise emissions are lower. The machine components are also subject to lower loads, which impacts positively on the compressors' service life.

"Our premium controls are fitted with a balancing monitoring system as standard, this station also includes a web server," explains Gräschke. This makes it possible to read out all relevant data via the internet. Service technicians can track the performance over the last few days or weeks of operation and see to what extent the compressors are being utilised, when servicing is due and whether there are still reserves remaining. "If we notice that operating circumstances have changed considerably, the members of staff responsible can react immediately," says Gräschke.

Compressed air also assists staff to move heavy loads in an ergonomic way by means of a vacuum hose support.

Because compressed air not only controls valves but can also come into contact with the product – as is the case when components are being painted – the compressed air is prepared with a cyclone, a pre-filter, a refrigeration dryer and an ultra-fine filter. The parameters of the frequency-controlled, energy-saving refrigeration dryer are tailored to the respective system. "One benefit is that the external refrigeration dryers are kept separate from the compressor's hot zone," says Gräschke. "This avoids the creation of a 'refrigerator in an oven.'" The compressed air is subsequently further processed and directed into a manifold with a large cross-section and taken to consumers.

"We will be able to make considerable savings with regard to energy and operating costs"

Cutting heating costs with heat recovery

The integrated heat recovery system ensures that further energy savings are made. "With this system, a large portion of the energy consumed for the generation of compressed air can be converted into usable heat," elaborates Gräschke. This means that roughly 75 percent of the electrical energy input is recycled in the heating system or used as process or industrial water. For this purpose, the machines are fitted ex works with heat exchangers and water control valves to warm up heating water to 70 degrees Celsius. The oil that cools the compressors travels through a heat exchanger to heat up water that is led directly into the heating system. This offers great potential for savings, especially in winter.

Moser built a new utility room for the new compressors (in the centre, above). The units were lowered in through the roof for installation.

Moser GmbH has built an additional utility room for the new compressors. "We had to lower the new units in through the roof," explains Moser. He was impressed by the trouble-free assembly. "Together with the ALMiG partners, we took less than five hours on a Saturday to set up the units and put them into operation, without any disruption to everyday operations." The compressors have now been in use since autumn 2017. "We will be able to make considerable savings with regard to energy and operating costs over the course of a year," says the general manager with conviction. "We also benefit from a high level of compressed air availability." The V-Drive screw compressors are additionally designed to be low maintenance and require servicing only every 4,000 operating hours: all components are simply accessible from one side, the large sound insulation doors can be easily removed. This significantly reduces maintenance effort and downtimes. This means that servicing costs are kept under control.

Thomas Moser is convinced that the decision to continue working together with ALMiG was absolutely correct.

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