COMPRESSOR SYSTEMS
MADE IN GERMANY

ALMiG
Compressor Systems

Losan Pharma relies on direct-driven, speed-controlled screw compressors from ALMiG

Providing a perfectly balanced quantity

In order to organise production more efficiently at the new plant in Eschbach near Freiburg, Losan Pharma GmbH is having its operations certified according to the ISO 50001 for energy management systems. One of the most important "adjusting screws" for efficient operation is compressed air, which is used in a wide range of equipment and machinery. To allow this expensive energy source to adjust to constant changes in load, thus avoiding expensive idle times, the pharmaceuticals company uses two direct-driven, speed-controlled screw compressors from ALMiG's VARIABLE series. In addition, the integrated heat recovery system allows savings to be made on heating costs.

Film-coated or effervescent tablets, capsules, pellets or granulates: why are pharmaceuticals made available in such completely different forms? Someone who knows the answer to this question is Christoph Lang, Head of Technology and authorised signatory at Losan Pharma GmbH. This internationally recognised partner of the pharmaceuticals industry puts the manufacturers' products into the "dose form" required. "This is not so much a question of personal preferences, taste or colour of the medication, but more a matter of time-controlled release of the active agent inside the patient," he explains. Precise dosage and a chemically, physically and biologically stable form of the respective substance dictate the speed at which the person can absorb the preparation and the way it can develop its effect. "We are able to control exactly how the level of active agent develops over the course of the day", Lang explains.

Losan Pharma values internationalisation and is on a growth trajectory following restructuring and consolidations measures seen in recent years. Alongside the headquarters in Neuenburg am Rhein and the research laboratory in Frankfurt am Main, in the summer of 2017 the pharmaceuticals company opened its third location in the Breisgau Business Park in Eschbach, only a few kilometres from the headquarters. "We did not have any more room to grow", Lang reports. This has changed with the new building. Extending over two stories, the production area covers 7,400 square metres – and there is adequate space for further extensions not only inside the building but also all around it.

"What makes us special? In contrast to our competitors, we offer our partners a full service", Lang continues. "We advise our customers on the most suitable dose form, which we then manufacture using state-of-the-art technologies, such as nanogrinding, hot melt extrusion or special pelleting processes. We subsequently package the products in stickpacks, side-seal pouches, blister packs or tubes – including package information leaflets." At the customer's request, Losan Pharma provides additional services – ranging from contract development through to approval of the drugs – and manages the entire production process.

Losan Pharma places great value on efficient manufacturing processes. For this reason, the company has undertaken to have its operations certified according to ISO 50001 for energy management systems.

"Particularly in times of rising energy prices we thoroughly examine where we can make savings"

Compressed air as an "adjusting screw"

The company places great value on efficiency in its manufacturing processes. For this reason, Losan Pharma has undertaken to have its operations certified according to ISO 50001 for energy management systems. The objective is a continuous improvement in energy-related services. "Especially when energy costs are always on the rise, we examine quite specifically where we can make savings", explains Lang.

Ensuring efficient compressed air generation is one way of lowering costs. Because expensive energy sources play an important role throughout the plant. Lang, Head of Technology, points at two packaging lines in the clean room. We use compressed air not only as a source of operating energy, but also as control air for valves and cylinders.
"Once our structural and installation work here has been completed, we will have eleven lines at our disposal", he says. These include, for example, filling lines, pick-and-place systems, cartoning machines, "pushers" that shove or blow defective goods off the line, balances and various packaging plants.

"In production, we use compressed air in tablet presses, for example – or as sealing air", Lang continues. In order to avoid explosions when manufacturing combustible liquids, casings with electrical switching components are sealed using positive air pressure. "We also use compressed air to dislodge dust from filter systems during production or to power ventilation flaps", says Lang. ►

Losan Pharma relies on two direct-driven speed-controlled screw compressors of the VARIABLE 55 type from ALMiG.

Another use: we need to provide some film-coated tablets with a protective layer. Jets spray the particles directly onto the product with a fine atomising air stream.

The compressor is key

At the headquarters located in Neuenburg, Losan Pharma has been using ALMiG screw compressors since the company was formed in 1993. There are currently four plants in place there. Due to the positive experience so far, the decision-makers decided to use equipment from this supplier in Eschbach as well.

On a growth trajectory: in the summer of 2017, Losan Pharma opened its third location at Breisgau Business Park in Eschbach. This pharmaceuticals company once again values screw compressors from ALMiG at its new plant.

One important aspect: as part of energy management, the plan was to make it possible for consumption of this expensive form of energy to be adjusted to meet actual needs in a flexible manner. "For this reason, we installed two speed-controlled direct driven compressors of the VARIABLE series. We have found that these compressors are the most efficient in terms of energy consumption in comparison to other systems", explains Volker Gräschke, regional head of sales at ALMiG responsible for Losan Pharma.

"Compared to compressors with loaded/idle mode control, the ALMiG units already use around 30 percent less energy on this count."

Significant energy savings can be made by avoiding idling periods, permanent load cycles and the associated higher compression levels. With several thousand load cycles a year, this soon translates into a considerable amount of energy. "Compared with compressors with loaded/idle mode control, the ALMiG units already use around 30 percent less energy on this count", says Gräschke.

The VARIABLE 55 can be controlled in a range of between 2.2 and ten cubic metres per minute. An operating pressure of between five and 13 bar can be selected. "We currently work with 8.8 bar per machine. This means that there a total of around 18 cubic metres per minute available, more than we actually need," says Lang. The aim is to keep the pressure as low as possible. This can be achieved by constantly monitoring and eliminating any loss of compressed air in the distribution grid and in the machines.

The ALMiG AC HE control unit monitors and operate the two compressors 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 system, 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, both systems run in sync at the same speed. In the low- ►

load phase, when less is being produced, only one compressor is used. This is automatically adapted to the consumption profile. "One VARIABLE runs at all times, even if only a small amount of compressed air is required", says Gräschke.
As the machines are in the mid speed range, both the energy requirement and noise emissions are lower. The components are also subject to lower loads, which impacts positively on the compressors' service life. "This arrangement enables us to make use of another advantage: if one unit is being serviced, for example, we can cover 70 percent of our compressed air needs with the other compressor", Lang explains.

The external refrigeration dryers: their specifications are adapted to the compressor in question.

Oil-free and dry compressed air

Because compressed air not only controls valves, but can also come into contact with the product – when coating tablets, for example – it must be of the highest quality and be absolutely dry and oil-free to ensure patient safety. In order to avoid all forms of contamination, the air is treated with cyclones, pre-filters, refrigeration dryers, ultra-fine filters and active carbon adsorbers. An additional active carbon filter is in place in the bypass line when the active carbon adsorber is being bypassed for maintenance purposes, for example. The parameters of the 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.

Cutting heating costs with heat recovery

The integrated heat recovery system ensures that further energy savings are made. Because around 75 percent of the electrical energy invested goes into the heating system. "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", says ALMiG consultant Gräschke. The water used to cool the compressors is conducted directly into the heating system and various ventilation systems. This offers great potential for savings, especially at the colder times of year.
Another benefit provided by the compressors is their rugged design. This design ensures a high level of availability because repair work is seldom needed – especially in comparison to units with v-belts. "This also has a positive effect on costs", says Lang with a sense of satisfaction.

"If we notice that operating circumstances have changed considerably, Losan Pharma is in a position to respond immediately"

"Our premium controls are fitted with a balancing monitoring system as standard, this station also includes a web server. This makes it possible to read out all relevant data via the internet", Gräschke elaborates. Service technicians, can follow the performance of 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, Losan Pharma is in a position to respond immediately", says Gräschke.

Compressed air is deployed in various applications within the company – such as the control technology in the cartoning machine.

Using ALMiG compressors puts this pharmaceuticals company into a position to economise on energy and operating costs while achieving a high level of compressed air availability. At the end of the packaging line, Christoph Lang picks up a finished packet of tablets. "The compressed air in our company is dosed with precision – just like the substances in this medication."

Author: Florian Brähler, Product Manager at ALMiG