

CASE STUDY Pharma industry



Overview

▶ Customer

Fresenius Kabi Deutschland GmbH, Germany

▶ Application

Oil-free compressed air in clean room quality

▶ Products

- 2 ULTIMA compressors U110RS-10W
- 2 adsorption dryers UHOC 1700-B
- Assure full maintenance contract

Oil-free compressed air in clean room quality

CompAir guarantees more process reliability for production in healthcare company

Fresenius Kabi, a large healthcare company in Friedberg/Hesse, Germany has commissioned a new oil-free compressed air and adsorption dryer system from CompAir in just two days, replacing a cost-intensive rental compressor.

Head of Utilities and mechanical engineer, Axel zur Strassen, who has been working for the company for more than 20 years, planned the entire project alongside his team – installing two ULTIMA U110RS-10W compressors and two UHOC 1700-B adsorption dryers from CompAir.

However, the decision had to be made quickly because Fresenius Kabi was using a cost-intensive rental machine due to a technical defect and wanted to return quickly to self-sufficient and efficient production – now with the help of CompAir compressors.

The purchase of the ULTIMA compressors and the change of technology partner was part of a broader production expansion.

Always the top priority: product quality for the critically and chronically ill

Fresenius Kabi is known worldwide as a health care company with a wide range of vital drugs and medical products for infusion, transfusion and clinical nutrition. Used in the therapy and care of critically and chronically ill patients, the products are produced at the Friedberg/Hesse site by several hundred employees 24/7 and approximately 340 days a year.

A particular challenge is that the compressed air also comes into direct contact with the pharmaceutical products during production. In the cleanroom environment, the products must be strictly guaranteed to be free of oil and particles, requiring the use of reliable and oil-free compressors.

Uncomplicated connection during operation

Axel zur Strassen comments: "We connected the new compressors to the existing compressed air network and thus ensured the immediate supply of compressed air."

To ensure that this worked smoothly, the mechanical engineer, his team and colleagues from the quality department had prepared the commissioning down to the smallest detail: "We equipped the entire piping system with the relevant measurements, such as residual oil, dew point, and options for sampling microbiological parameters and particles.

This enabled us to check these parameters immediately after the commissioning of the new equipment and to put the new compressed air network into operation."



As part of the subsequent performance qualification process, the team then collected data over the course of a month to ensure that the compressed air remained impeccably clean. In the meantime, the compressed air system is up and running, and dew point or oil-free levels are continuously recorded online, while discrete measurements on particles or bacterial counts are taken at regular intervals.

No deposits, no worries: the plus of stainless-steel pipes

These measured values are particularly relevant for Fresenius Kabi because many of the technical components, such as valves and pistons in machines or control cabinets, are driven by compressed air and piped to the various clean rooms accordingly. The compressed air produced must therefore meet the same regulatory standards in terms of particle count and purity as the ambient air in the clean room.

The company had been working with an established compressor manufacturer for a long time but decided on a new technology partner in CompAir. A key reason was the cooling capabilities of the ULTIMA technology.

The compressor's components are re-cooled via an internal circuit. The intercooling of the stages (two-stage compression) is achieved by means of cooling water from the operational cooling system (open). To reduce the risk of contamination further, the company plans to install a separate cooling circuit. Here, the compressors will be decoupled from the open cooling system and re-cooled via an internal, separate cooling circuit.

In worst case scenarios, only the affected plate heat exchangers are then required to be cleaned and the entire pipe system does not have to be checked for blockages.

The cooling water that is used is strongly alkaline. In the past, this had degraded the aluminium lines of the previous compressed air technology. CompAir's stainless steel plate heat exchangers also help solve this issue.

"If the positive results we are achieving continue, this package of compressor and dryers will continue to be a positive addition to our business for the future."

Axel zur Strassen,
Head of Utilities (Media supply),
Fresenius Kabi in Friedberg

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On the agenda: predictive maintenance

The U110RS-10W compressors and UHOC 1700-B adsorption dryers have now been running for more than 5,000 operating hours without any issues. Next on the engineer's agenda is the implementation of an enhanced control system and measurement data acquisition.

Fresenius Kabi's decision in favour of CompAir is also due to the technical design of the adsorption dryers. High-quality zeolite drying agents, held in two containers, adsorb the residual water content from the compressed air and ensure the lowest pressure dew points with low additional energy input.

This means that when one vessel is saturated with adsorbed water, the dryer automatically switches to the other vessel and the first vessel is regenerated using the ULTIMA's waste compression heat. Compared to other heat of compression dryer technologies, the lifetime of the two-tank designs is significantly longer. "While other drying technologies often accumulate very high costs in long-term use, these are manageable here", says Axel. In addition, the ease of machine upgrade and controllability influenced the decision:

"Now the output can be increased from 110 kW to up to 160 kW without changing the hardware." In addition, the compressor package is very compact but at the same time easily accessible for maintenance, an important factor due to the limited space available.

With CompAir, Fresenius Kabi is optimally positioned for the future – both through the use of its technology and through the Assure full maintenance contract, which the company opted for reasons of economy.



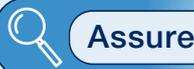
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- ▶ Real-time data collection
- ▶ Extended service life
- ▶ Cost efficiency
- ▶ Optimised energy consumption
- ▶ Performance optimisation
- ▶ Reduction of downtime

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The next step is the implementation of further systems: From 2023 onwards a wide variety of technical measured values are to be captured by a full control system, with which, for example, any potential for breakdown in the compressed air system can be predicted.

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