Reliable and oil-free compressed air supply for research and testing processes

The digital and technological revolution has transformed modern electronics testing. Where basic experimental setups were once sufficient, sophisticated laboratories with precise climatic chambers and automated measurement systems now define the standard. Compressed air is far more than just a supporting utility – it is the lifeblood of long-term component testing. It powers the equipment, maintains stable environmental conditions, and ensures the high quality and reliability required for rigorous academic and industrial research.

Rooted in the Region

For over 100 years in "the Ländle." ALMiG Kompressoren GmbH, headquartered in Köngen, Baden-Württemberg, develops and manufactures efficient compressed air solutions for your industry.

Highly Efficient and 100% Oil-Free

The SCROLL series of scroll compressors combines creative engineering with advanced technology to deliver 100% oil-free compressed air at an exceptionally low noise level.

From Planning to Installation

Everything from a single source by ALMiG KOMPRESORY s.r.o. in Lundenburg, CZ– your reliable service partner in Czech Republic!

The Challenge

The main challenge was the unreliable compressed air supply, which interrupted long-term tests, as well as getting used to the new, more complex control system.

Compressed air: The Heart of Modern Electronics Labs

The Faculty of Electrical Engineering at the Czech Technical University in Prague operates its own laboratories for the practical training of students as well as for testing electrical and electronic components on behalf of industry partners.

A key component of this infrastructure is the compressed air supply for climate test chambers, where long-term tests are conducted under controlled environmental conditions.

The existing solution was based on an older oil-free reciprocating compressor. However, this was increasingly reaching its limits:

- Frequent breakdowns and unplanned downtime
- Insufficient capacity for growing demands
- Interruptions during long-term tests, which had to be repeated

This situation led to increased time expenditure, additional costs, and reduced reliability in the testing process

Objectives & Requirements

The project had clear technical and operational objectives:

- High reliability for uninterrupted long-term testing
- High-quality oil-free compressed air to prevent contamination in climate chambers
- 24/7 operation, including weekends
- Increased capacity compared to the existing system
- Low noise level for use in laboratory environments

Compressed air quality was particularly critical, as contaminants regularly led to maintenance work in the climate chambers.

SCROLL 04 from ALMiG Compressor Systems

Technology, Quality, Safety: That's Why We Chose ALMiG

When selecting a new solution, the following criteria were key:

- Technical reliability
- Ease of maintenance
- Noise levels
- Future-proof technology
- The decision was made in favor of a solution from

ALMiG Kompressoren, primarily due to:

- Expert technical advice
- Optimization of the existing system
- Provision of modern, oil-free compressed air technology

"For companies and research institutions with similar requirements, an oil-free scroll compressor solution is an excellent choice."

Modern Technology for Reliable Continuous Operation

For its new compressed air supply, the faculty chose a modern scroll compressor from ALMiG, which is specifically designed for continuous operation.

The oil-free system delivers a constant supply of high-quality compressed air, which benefits the sensitive climate test chambers and ensures smooth long-term testing. Thanks to its quiet operation, the system fits perfectly into the laboratory environment, while the advanced control system enables precise monitoring and easy operation.

Thus, the solution combines technical innovation with high reliability and ease of use, meeting all the requirements of the Department of Electrical Engineering.

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High quality thanks to a stable compressed air supply

Significant improvements were achieved following the transition:

Operations

- No more unplanned downtime
- Continuous supply to the climate chambers
- Stable performance even during long-term tests

Quality

- Significantly improved compressed air quality
- Reduced maintenance requirements for the test chambers

Efficiency

- Elimination of test repeats due to interruptions
- Greater planning reliability in laboratory operations

Operation & Maintenance

The maintenance plan is intentionally kept simple:

- Weekly visual inspection
- Check the compressor and the control system (Air Control S)
- No significant maintenance required during daily operation

Overcome challenges and gain experience

“The biggest challenge was switching to the new control technology.”

While the old reciprocating compressor was equipped only with a pressure switch featuring a start/stop function, the new system required training in the modern control system. However, this hurdle was quickly overcome.

Reliability Meets Innovation: Successful Implementation and Outlook

“The new compressed air solution has proven to be quiet, low-maintenance, and extremely reliable.”

It ensures a continuous supply to the climate test chambers and significantly improves the quality of long-term tests. For research and industry, the system provides a stable foundation upon which laboratory processes can be confidently built.

In retrospect, it is clear that the implementation was a complete success and that no adjustments are necessary.

One year after commissioning, a detailed analysis will evaluate long-term performance and provide further insights for future projects.

The Scroll Compressor Series

The 100% oil-free SCROLL scroll compressors from ALMiG are equipped with a highly efficient IE3 motor and operate at a very low noise level of 61 dB(A) (SCROLL 04), ensuring exceptionally smooth and quiet operation. Thanks to their compact design, the compressors are ideally suited for installation in small or confined spaces or directly at the workplace.

The scroll compressors operate within a volumetric flow range of 0.35–1.70 m³/min at operating pressures of 8 and 10 bar. Power output ranging from 4 to 15 kW is transmitted almost loss-free via a low-maintenance V-belt drive.

More information on Scroll

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