



# Precision requires perfect compressed air

Dental laboratory relies on an oil-free scroll compressor from ALMiG to meet the highest quality standards!

The digital revolution has also reached the dental industry. Where plaster impressions were once the standard, precise 3D scans and computer-controlled milling machines now dominate. Compressed air is far more than just a supporting tool – it is the heart of modern dental manufacturing. It powers high-precision CNC milling machines, cools sensitive materials during processing, and ensures the required cleanliness throughout the entire process.

## 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 DENTAL INDUSTRIESERVICE in Hochdorf – your reliable service partner!

## The Challenge

The dental laboratory of the dentists at the Hundertwasserhaus in Plochingen produces high-quality dental restorations and was facing a challenge: The existing compressed air supply could no longer keep up with the increased demands of modern CNC milling machines. The solution came from ALMiG – a compact scroll compressor that delivers maximum performance despite limited available space.

## From Analog Impressions to Digital Precision

"We manufacture dental restorations to the highest quality standards," explains the laboratory manager. "The requirements for our compressed air supply are very specific." The laboratory processes a wide range of materials – from PMMA and zirconium oxide to composites and lithium disilicate. The spectrum ranges from single crowns and complete bridges to occlusal splints.

Work in the dental laboratory has fundamentally changed in recent years. "Dental restorations are now increasingly created using digital data," he describes the transformation. "Dentists scan the jaws and provide us with the files. We then mill the required components with extremely high precision." However, this digital transformation also brought new technical challenges.

## When the Air Runs Out

The existing compressed air system was increasingly reaching its limits. "The volume simply wasn't sufficient anymore," the laboratory manager recalls. "The pressure was not consistently available, and the system overheated." The consequences were severe: milling processes stopped in the middle of production, expensive blanks became unusable, and delivery deadlines were put at risk. When the system finally failed altogether, it was clear that a new solution was needed – and fast.

The new CNC machines placed significantly higher demands on the compressed air supply. "These machines require a constant supply of compressed air," he explains. "We also wanted to be able to operate a second CNC machine in parallel." But it wasn't just about volume – the quality of the compressed air also had to be right.



SCROLL 04 from ALMiG Compressor Systems with refrigerated dryer

## Highest Requirements for Air Purity

Strict quality standards apply in the dental industry. "We require oil-free and dry compressed air in accordance with DIN ISO 8573-1 Class 1:4:0," explains the laboratory manager. Specifically, this means particle Class 1 for maximum purity, moisture Class 4 with a pressure dew point of 3 °C, and oil Class 0 – in other words, 100% oil-free.

These requirements are far from arbitrary. Even the smallest traces of oil or moisture can impair highly precise milling processes and compromise the quality of dental restorations. "Our work involves precision in the micrometer range," he emphasizes. "Nothing can be left to chance."

"We require oil-free and dry compressed air in accordance with DIN ISO 8573-1, Class 0."

## Regional Partnership as a Key Success Factor

Several factors were decisive in the search for a new solution. "We had very limited space available," the laboratory manager describes the initial situation. "In addition, the system had to operate continuously and be as quiet as possible." Another crucial aspect was service.

"The choice fell on ALMiG because we have a manufacturer right here locally," he explains. "Regional proximity and on-site service were key factors for us." Dental Industrieservice from Hochdorf was selected as the service partner – an experienced partner familiar with the specific requirements of the dental industry and able to respond quickly when it matters most.

## Compact Solution with Maximum Performance

The installed solution is as compact as it is powerful: an ALMiG SCROLL 04 scroll compressor, combined with a refrigerated dryer featuring integrated compressed air filters and a compressed air receiver. "The available space was used as efficiently as possible," says the laboratory manager with satisfaction.

ALMiG's scroll technology offers decisive advantages for the sensitive requirements of a dental laboratory. Thanks to the operating principle of intermeshing scrolls, compressed air is generated completely oil-free – without the need for additional treatment. The integrated refrigerated dryer ensures the required level of dryness, while the built-in compressed air filters provide an extra level of safety.

## Operational Reliability that Delivers

The results speak for themselves. "We now have a high level of operational reliability," the laboratory manager says with satisfaction. "Milling processes are completed as intended and no longer stop unexpectedly." What previously caused regular issues is now a thing of the past. "We can now operate a second CNC machine in parallel as well," he adds. "That simply wasn't possible with the old system."

The constant compressed air supply has a direct impact on productivity. No more interrupted milling processes, no wasted materials, and no delayed deliveries. "This gives us the reliability we need for our day-to-day work," he emphasizes.

## 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 m<sup>3</sup>/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.

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## Maintenance According to Plan

The maintenance concept follows clear guidelines. "We adhere strictly to the manufacturer's specifications," explains the laboratory manager. Regular inspections are carried out by Dental Industrieservice from Hochdorf – a short distance that can be crucial when service is required.

Scroll compressors are known for their ease of maintenance. Thanks to the small number of moving parts and the oil-free design, maintenance intervals are generously spaced. "That's a real advantage for us," he says. "Less maintenance means less downtime."

## An Optimal Solution for Dental Applications

Looking back, the laboratory manager is very satisfied with the decision. "With the SCROLL, ALMiG has delivered an optimal compressor for our requirements," he concludes. The combination of oil-free compressed air, compact design, quiet operation, and reliable performance meets all expectations.

"We'll sit down again in a year and carry out a detailed analysis," he says, looking ahead. Should the laboratory continue to grow and require additional capacity, they already know which technology they will rely on.

For other dental laboratories facing similar challenges, he has a clear recommendation: "ALMiG's scroll technology is ideally suited for our industry. The combination of oil-free compressed air, reliability, and support from a regional partner like Dental Industrieservice truly makes the difference."



More information on Scroll