



CASE STUDY

KAISER BRÄU MODERNISES ITS COMPRESSED AIR SUPPLY WITH ULTIMA



Oil-Free Compressed Air and Usable Waste Heat for the Brewery in Neuhaus an der Pegnitz

Good beer takes time. The technology behind its production, however, must be ready precisely when it is needed. Kaiser Bräu has therefore commissioned a CompAir ULTIMA U55s-RS, modernising its compressed air supply.

Replacing the previous piston compressor technology reduces electricity demand while also making heat available for process water. The modernisation delivers a realistic annual electricity saving of around 20% from compressed air generation alone.

The Project at a Glance

▶ Customer	Kaiser Bräu GmbH & Co. KG
▶ Industry	Brewery / Food & Beverage
▶ Applications	Oil-free compressed air for bottling and brewing, as well as heat recovery during the compressed air production process
▶ CompAir Installation	CompAir ULTIMA U55s-RS



Franconian Brewing Tradition Meets Modern Production

Below Veldenstein Castle, between Nuremberg and Bayreuth, lies the home of Kaiser Bräu.

The independent family brewery was established as a commercial operation in 1929 and has been producing at its Auwald site since 1991. With its Kaiser and Veldensteiner brands, it has deep regional roots and is also known beyond the region.

In addition to brewing its own beers, it undertakes contract bottling for other breweries. This combination of brewing and bottling places differing demands on the plant's utilities.



From Malt to Bottled Beer

The production process begins with storing and milling the malt.

In the brewhouse, the milled malt is mixed with water. During mashing, starch is converted into fermentable sugars; the lauter tun then separates the liquid wort from the solids. The wort is heated with hops, clarified to remove trub and cooled. Yeast initiates fermentation. After storage and maturation, filtration follows depending on the beer style, and finally bottling.



Compressed Air Keeps Operations Moving

In breweries, compressed air often works behind the scenes: it actuates pneumatic valves, moves cylinders and supports filling and packaging machinery.

In this way, it helps to control liquid flow paths and handle containers at the required production rate. For Kaiser Bräu, the precise allocation of connected compressed air users will be added during the customer approval process.

A stable supply is essential for such applications.

Air quality is equally important: wherever compressed air reaches areas close to the product, contamination risks must be controlled. ULTIMA's oil-free compression meets ISO 8573-1 Class 0 for oil and prevents compressor oil from entering the compressed air. Drying and, where required, additional filtration are specified to suit each application.



Energy Efficiency Starts with Actual Demand

Kaiser Bräu already takes a systematic approach to energy use.

An energy management system compliant with ISO 50001 has been part of its operational management since 2016. Monitoring individual electricity consumers helps the brewery plan targeted improvements. Modernising the compressed air supply builds on this approach: every kilowatt-hour saved in generating the same usable volume of compressed air reduces ongoing production costs.

CompAir assessed the existing supply and measured its energy requirements. Air demand recorded in 2024 forms the basis of the comparison. With approximately 2.53 million cubic metres of compressed air per year, even small improvements in the energy required per cubic metre can deliver substantial economic benefits. The key is therefore to match the compressor to actual demand and the relevant control range.

Together, electricity savings and heat recovery result in realistic annual savings of approximately €20,712.



Why ULTIMA is Replacing Piston Compressor Technology

The reason for the change was to improve the energy efficiency of the existing supply.

The oil-free, variable-speed ULTIMA U55s-RS screw compressor is already operating at Kaiser Bräu. Two separately controlled permanent magnet motors directly drive the compression stages. The control system coordinates their speeds with one another and with air demand. The term “digital gearbox” describes this electronic synchronisation; no mechanical gearbox is required.

This allows the volume of air produced to be adjusted to demand. Direct drive avoids gearbox losses and reduces the number of mechanical drive components. The range also features a compact design and operation engineered for low noise levels. For Kaiser Bräu, the main reasons for the investment are lower electricity consumption and the utilisation of waste heat.



Around 63,000 kWh Less Electricity per Year

The previous compressor combination consumed 312,715 kWh of electricity annually.

With ULTIMA, annual electricity demand for the same air volume is 252,657 kWh. The stated difference is 60,058 kWh, or around 20%. At an assumed electricity price of €0.20 per kWh, this represents approximately €12,612 per year.

The annual electricity saving relates to the specified volume of air. The cost saving is calculated using an electricity price of €0.20 per kWh.



CompAir



Customer Testimonial

"Our goal was to modernise the existing compressed air supply and improve its energy efficiency. CompAir provided excellent support in analysing the current situation, identifying potential savings and implementing the solution. We were impressed by the holistic approach, which considers not only the reduction in electricity demand but also the utilisation of heat of compression. With ULTIMA, we can now reduce our energy requirements and use the recovered heat to warm our process water.

The results show that energy savings and heat recovery combined yield realistic annual savings of approximately 20,112 euros. This equates to a CO₂ reduction of 21,140 kg."

Stefan Benaburger,

Brewmaster – Production, Kaiser Bräu GmbH & Co. KG

Annual Comparison for the Same Air Volume

Annual comparison at the same air volume	Annual figure
▶ Compressed air generated	2,526,578 m ³
▶ Electricity demand – previous compressor combination	312,715 kWh
▶ Electricity demand with ULTIMA	252,657 kWh
▶ Annual electricity saving (as stated in source)	60,058 kWh
▶ Annual cost saving at €0.20/kWh	Approx. €12,612



Heat of Compression Becomes Useful Energy for Process Water

Heat is generated during compressed air production.

Kaiser Bräu uses ULTIMA's heat recovery system to return this energy to the operation. Process water acts as the heat sink and is heated from approximately 10 to 65 °C. This can replace part of the heating energy that would otherwise be required. Heat is transferred through a heat exchanger; compressed air and process water remain separate media.

With 45 kW of usable thermal output and 3,000 hours of utilisation, 135,000 kWh of heat becomes available annually. At a heat price of €0.060 per kWh, this represents a realistic additional saving of €8,100 per year. Together, electricity savings and heat recovery result in realistic annual savings of approximately €20,712.



Compressed Air as Part of the Brewery's Energy Management Strategy

With ULTIMA, Kaiser Bräu has combined the modernisation of its compressed air supply with the plant's heating requirements.

In operation, the two benefits work together: less electricity to generate the same volume of compressed air and additional heat for process water.

At the energy prices used in the calculation, the modernisation thus reduces annual energy costs by approximately €20,712.



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