

Manufacturer of Coolers and Heat Exchangers worldwide

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Experience and competence...

FROM TRADITION TO PROGRESS

AKG is an innovative family-owned company with a success story spanning more than 100 years. Founded in 1919 as a car radiator company, AKG started out repairing and producing radiators in small series. As early as 1946, AKG established a direct partnership with the automotive industry – a legacy still reflected today in the name "Autokühler" used by several companies within the group.

Over the years, AKG has continuously expanded its technological expertise and diversified into new application areas. Today, the company generates the majority of its revenue in sectors such as construction and agricultural machinery, compressed air technology, vehicle manufacturing, rail vehicles, household appliances, and special applications.

With customized system solutions, AKG has built a strong global reputation as a reliable partner. The brand stands for premium coolers, heat exchangers, and thermal management systems that meet the highest quality standards.

OUR MISSION IS

- Technical expertise
- Product innovation
- Customer orientation
- Quality and reliability

COMPANY PHILOSOPHY

AKG's success is driven by creativity and technological innovation. The company's impressive growth rates in recent years confirm its strategic direction: we embrace the diverse demands of the market and turn them into tailored solutions for our customers. A team of over 150 highly qualified engineers and technicians from research, development, project management, and sales works closely with our customers to develop heat exchangers for a wide range of applications. Using state-of-the-art manufacturing processes, we ensure our products meet the highest quality standards while being produced in an environmentally responsible manner.

THE AKG GROUP

The AKG Group is centrally managed from Hofgeismar, driving the company's progress and ongoing success. With a dedicated team of over 3,000 employees, more than 2.5 million heat exchangers in a wide variety of designs are manufactured each year.

The group operates independent production facilities and sales offices worldwide, ensuring a strong international presence.

AKG - a strong global group.

...innovative and highly efficient!

AKG OFFERS THE RIGHT SOLUTION FOR EACH COOLING PROBLEM!

A pioneering spirit has always been the driving force behind AKG's engineers for over 100 years.

Market monitoring and continuous product improvements were the starting point for several inventions at AKG, continuing to provide direction for heat exchanger technology in the years to come.

- Compact, high efficiency, motor-integrated cooling systems for engine coolant, charge-air and oil
- High temperature charge-air coolers
- Aluminium refrigerant heat exchangers for compressed air dryers
- Bonded high-performance condensers for tumble dryers manufactured from aluminium or plastic
- High performance heat sinks for electronic modules
- Thermal Solutions products: fuel cell cooling systems, hybrid systems, battery and electronics cooling, and PVT solutions







Heat exchangers for various applications

RESEARCH AND DEVELOPMENT

In the area of research and development, AKG uses in-house developed special software for the optimal design of coolers in addition to the conventional FEM and CFD simulants.

A highly developed testing area allows exacting trials to prove the heat exchanger performance data and strength parameters.







AKG Benefits

- Over 100 years experience
- Customer specific solutions
- Comprehensive research and development
- Optimized costs and space efficency
- Highly flexible dimensionable
- Global availability
- High cooling capacity
- Innovative and highly efficent
- High durability



Flexibel and forward-looking...

Innovative and high-performance products are manufactured using advanced manufacturing technology. AKG is state of the art is terms of its product diversity. This applies in particular to brazing – the key process for heat exchanger production.

FLEXIBLE PRODUCTION

The layout of multiple production lines allows AKG to process small and large production orders at the same time with short lead-times.

QUALITY

AKG's commitment to quality includes all aspects of customer service, from design, order, production, to aftermarket support. Each business unit of the AKG Group in Europe, USA, Turkey, India and China is certified in accordance with DIN EN ISO 9001.



BRAZING

Each individual cooler design, cooler application and/ or batch size can be brazed with one of three technologies: Flux Bath Brazing, Controlled Atmosphere Brazing or Vacuum Brazing.

ENVIRONMENTAL PROTECTION

AKG has a strong commitment to protect the environment. The manufacturing organization and all production processes assure minimum waste generation and utilize every recycling opportunity possible. This guarantees that not just economical goals are met, but environmental criteria as well. AKG is certified in accordance with DIN 14001 and 50001.

E-Mobility

E-MOBILITY

The mobility sector worldwide is demanded to contribute to reducing greenhouse gases, which will lead to increasing demand for electric and hybridized applications in the future. AKG has gathered substantial knowledge in this area through early research. Therefore, AKG can support customers in their development work and offer efficient thermal management for all electrical components.

COLD PLATES

Cold plates are used for indirect cooling of batteries and power electronics in mobile and stationary applications. If the battery is heavily loaded for a longer period of time, for example during rapid charging, high power dissipation occurs, which would quickly heat up the battery. The resulting high battery temperatures cause permanent damage to the battery and reduce its life cycle. In extreme cases, the battery can start to burn due to thermal runaway of the cells. For this reason a good cooling of the battery is necessary.

However, batteries that are too cold are also damaged by operation at low temperatures, which shortens the battery life cycle. In addition, the performance of batteries that are too cold will be greatly reduced. Therefore, the required heating of the battery can be recognized in a flexible and application-oriented way, especially by using a thermal management system in combination with cold plates.

THERMAL MANAGEMENT SYSTEM

The amount of energy is very limited in mobile electrical applications. Therefore, the efficient use of the available energy is necessary on one hand, and the use of waste heat is essential on the other. Both points can be recognized with a heat pump by intelligent wiring of the coolant inflows and outflows. The AKG Stacked Shell Cooler was developed to make the heat pump as compact and efficient as possible. These can be flexibly adapted to any specific application and offer an optimal heat transfer depending on fluid properties and thermal parameters.





This project (HA project no.:1372/22-77) is funded by the Electromobility in Hesse funding program



— AKG Thermal Management System – Compact Module

The AKG Thermal Management System for electric vehicles is designed to regulate and maintain optimal temperature conditions for batteries, ensuring their efficient operation, long lifetime and reliable power. Our system is designed for off-road and on-highway applications.

With a compact and modular design, our Thermal Management System is easily integrated in many types of equipment. The battery is cooled using a closed refrigerant circuit and can optionally be heated with an electrical high voltage heater. An on-board controller manages the complete thermal system operation.

Our heat exchangers play a crucial role in transferring the absorbed heat through the cooling medium to the refrigerant and the surrounding environment. AKG's design and placement of the heat exchangers within the Thermal Management System are optimized to maximize cooling effectiveness while minimizing energy consumption.

Benefits

1. Modulare design

Pre-assembled modules, no individual parts need to be integrated into the vehicle and flexible to customer requirements

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2. Closed-loop refrigerant circuit Low maintenance; no additional refrigerant lines to the vehicle needed



3. Simulation

Simulations at the component and system level speed up the vehicle development on the customer's side



4. Robustness

Same performance verified under different inclinations and robustness confirmed in vibration tests



Applications – Markets

Reference And American America Agricultural equipment Generator set Automobile Commercial vehicle Municipal vehicles Construction equipment

Battery storage





5. Global product portfolio AKG's diversified product portfolio offers all heat exchangers types needed for the vehicle



6. AKG stacked shell cooler Optimally designed for Thermal Management Systems with less weight and high performance



7. AKG engineering service Comprehensive engineering support regar-

ding the integration of Thermal Management Systems into the vehicle architecture



8. Environmental friendly

Low refrigerant volume means the use of natural refrigerant (propane/R290) is possible



Thermal Solutions.

AKG Fuel Cell Cooling System

Elevating Efficiency in Off-Road equipment: Advanced Thermal Management for Fuel Cell Electric Vehicles Step into the future of off-road equipment with our state-of-the-art thermal management solutions for fuel cell electric vehicles (FCEVs). As pioneers in the field of off-road cooling solutions, we are proud to introduce our state-of-the-art heat exchangers and thermal management systems that improve performance, efficiency and durability of FCEVs. In the world of alternative drivetrains, optimizing thermal efficiency is critical and our solutions stand at the forefront of innovation. Join us as we advance thermal management for the efficient and sustainable operation of FCEVs. Discover how our precision-engineered heat exchangers are driving the development of sustainable off-road vehicles for a greener future.

Fuel Cell Cooling

Fuel cells require efficient cooling when converting hydrogen and charge air into electrical energy, with only air and water as byproducts instead of exhaust gases. To avoid short circuits within the fuel cell, the use of an electrically insulating coolant is essential. Our vacuum-brazed aluminum heat exchangers are particularly suitable for these coolants. To keep the required conductivity criteria, deionization processes are used to maintain the low conductivity of the coolant. Deionization must be continuously applied when using heat exchangers from other brazing processes. Two fuel cell cooling methods are commonly used: direct and indirect. These are selected depending on the cooling requirements of the fuel cell system. AKG specializes in lightweight, high performance heat exchangers that provide exceptional cooling and heating capabilities for fuel cell applications.







Heat Exchanger for Medical Technology

MEDICAL TECHNOLOGY

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AKG develops and produces tailor-made heat exchangers for medical technology devices. Based on decades of experience and the use of the latest manufacturing and test methods, heat exchangers for gaseous and liquid media are manufactured for the use in ventilators, X-ray or MRI devices. The use of special materials and connection methods enable an optimal adaptation to the respective customer requirements. This guarantees the highest possible precision and quality for safe and reliable operation.





On-Highway

COMMERCIAL VEHICLES AND BUSES

Commercial vehicles must withstand a wide range of demands and remain reliable in operation. AKG develops customized cooling solutions for everything from small to heavy commercial and special-purpose vehicles, working closely with our customers' engineers.

MUNICIPAL VEHICLES

For municipal vehicles and multifunctional equipment carriers, AKG supplies high-performance cooling modules and components. Every solution is individually tailored to meet specific requirements.

AUTOMOTIVE

For over a century, AKG has been a reliable partner to the automotive industry. We manufacture high-performance heat exchangers for leading vehicle models worldwide. In close collaboration with our customers, we develop customized solutions – from individual heat exchangers to complete radiator modules.

MATERIALS HANDLING DEVICES

AKG heat exchangers are used in industrial trucks around the globe. As an OEM supplier, we provide customized system solutions known for their high flexibility.

Thanks to precise adaptation to specific operating conditions, we deliver the best technical and economic solution for every installation space. Our portfolio includes individual coolers, cooling modules, and complete cooling systems – including electrically or hydraulically driven fans.













Off-Highway

CONSTRUCTION EQUIPMENT

Construction machines of all types generate heat from many different sources (drive motor, transmission, hydraulics, air conditioning, etc.), which must be discharged via suitable heat ex-

AKG develops and manufactures customized heat exchanger solutions for all applications and cooling media - from engine coolants, charge air, and fuels to engine, transmission, and hydraulic oils, as well as other cooling fluids. A particular highlight is the development of the first thermal management system for fully electric hydraulic excavators, setting new benchmarks in ef-

AGRICULTURAL AND FORESTRY MACHINERY

In close collaboration with the leading manufacturers of agricultural and forestry machinery, AKG develops solutions for the cooling of engine and hydraulic systems. Special cooling air fins permit high performance cooling with low susceptibility to

The Modular Cooling System (MCS) was developed especially for heavy-duty applications with increased cooling require-

A special advantage of this modular solution is that the individual elements can be replaced in the unit within a very short time, thus reducing machine downtimes.





Railway

In recent years AKG Thermotechnik International (AKG) has gained a lot of application experience with systems in the rail vehicle industry. Based on this wide range of experience in the system business, AKG is able to offer its customers more complete solutions for cooling tasks.



COOLING MODULES

When it comes to cooling rail vehicles, AKG offers you reliable and robust cooling solutions tailored to your needs. From converter cooling with coolant and transformer oil cooling to combined systems – everything is available. The accessories extend far beyond protective grilles, filters, expansion joints and sensors. From the compact cooling unit with low weight to the meter-high cooling tower, we are your reliable partner on the rail. We develop and produce underfloor as well as roof cooling systems installed in trains according to your wishes. The components developed by AKG are used in trams and electrically powered trains (regional and high-speed trains), diesel locomotives and magnetic levitation trains.



SYSTEM SOLUTIONS

When designing system solutions, special attention is paid to ensuring that combining individual components into assemblies results in cost savings, so that the system solution does not become more expensive than the previous approach using individual components. In some cases, components that were previously mounted on the cooler can be integrated into the radiator manifold or welded directly to the cooler. To support the sales team in acquiring and managing system projects, AKG has assembled a team of experts specializing in key disciplines such as acoustics, strength calculations, fans, hydraulic and electric drives, sensors, vibration, and mounting systems. These experts are involved in system projects as needed.



ELECTRONICS

The electronics industry offers a wide range of applications for coolers and cooling systems with sometimes very different operating conditions. However, the same basic requirements apply to all applications: highest quality and reliability manufactured according to certified processes and delivered on time. The AKG Group successfully meets this challenge every day.

WIND POWER

In recent years, AKG has been a component supplier for manufacturers of wind turbines. After gaining knowledge and understanding of the complexities of the wind power industry, AKG can now offer its own customized cooling solutions for a complete wind turbine system with different types of coolers for various applications. Examples include: generator cooling, passive cooling, transmission cooling, switch cabinet cooling, pump station, transformer safety cooling and other components such as pipes, clamps, hoses, etc.







Gearbox Cooling (active)







- 5 Passive Cooling
- 6 Generator Cooling (active)
- 7 Liquid Cooled Heat Sink
- 8 Cabinet Cooling
- 9 Pump Station

Aviation

In addition to our proven Galley Cooling heat exchangers, which are used in the A 380 and A 350 aircraft, AKG also offers coolers for engines, transmissions and on-board systems on aircraft and helicopters.



ON-BOARD SYSTEMS

The tight installation space and the demand for lightweight components consistently offers new challenges to the AKG development team. The answer is customized cooler solutions based on decades of experience in design, manufacturing and certification of performance and weight-optimized aluminum coolers.



AIRCRAFT ENGINES AND TRANSMISSIONS

AKG is offering oil coolers, radiators, intercoolers and oil-to-coolant heat exchangers for turboprop and piston engines, helicopters as well as for general aviation aircraft. A broad portfolio of fins and heat exchanger designs make sure that AKG is always able to offer the optimal solution to the customer.

ELECTRICAL AIRCRAFT PROPULSION SYSTEMS

AKG supplies combined oil and coolant coolers for the latest generation of electric and hybrid-electric aircraft propulsion systems, cooling the motors and inverters.

Compressors and Refrigeration Dryers

COMPRESSORS

When compressing gases, temperatures between 100°C and 300°C can occur, depending on the pressure difference. These temperatures often need to be specifically cooled, allowing moisture to be separated at the same time. Air compressors generate large amounts of heat, which makes efficient heat exchangers essential for making compressed air usable.

AKG develops and manufactures optimized heat exchangers for various applications and gases with operating pressures of up to 45 bar. The portfolio includes aluminum heat exchangers designed for temperatures up to 250°C and pressures up to 44 barg. On request, AKG also offers CE-marked solutions for the food and medical industries in compliance with the PED directive.







REFRIGERATION DRYERS

The air drawn in by the compressor contains moisture, which must be reduced depending on production requirements. As the air's moisture-carrying capacity decreases with falling temperatures, water can already be separated in the compressed air aftercooler. However, downstream air treatment is required to achieve particularly dry compressed air.

AKG refrigeration dryers reduce air humidity by cooling it in the evaporator. An efficiently utilized recuperator optimizes the use of cooling capacity for moisture removal with minimal energy consumption. The dryers consist of a recuperator, an evaporator, and a separator.

As part of the AKG Green concept, AKG develops innovative dryers designed for natural refrigerants. In particular, AKG safety coolers contribute to the sustainable use of flammable refrigerants.

Engines & Aggregates

For decades, AKG has been a reliable system partner for cooling solutions in construction and agricultural machinery, mining equipment, mobile compressors, aggregates, and Gensets – including applications for data centers.

In close cooperation with leading manufacturers, AKG develops compact high-performance cooling systems that efficiently cool engine oil (as well as charge air) using coolant. These water-cooled oil coolers can also integrate multiple cooling circuits to handle waste heat from other processes within the system.

For power packs and aggregates, AKG offers customdesigned water-cooled charge air coolers (WCAC). By cooling the charge air with coolant and installing the WCAC directly on the engine, these systems ensure a constant charge air temperature and enable more responsive engine performance. With increasingly strict emission regulations, demands on both engine and cooling systems continue to rise. AKG develops tailor-made solutions that are directly integrated into the engine infrastructure, helping to sustainably improve performance, efficiency, and emission levels.

AKG also offers a range of standard coolers, which can, for example, serve as oil coolers for containerized emergency power aggregates.



High Power

High Power include high-performance diesel and gas engines with outputs exceeding 750 kW. Diesel engines in this segment, in particular, offer numerous advantages: they are more fuel-efficient than gasoline engines, deliver high power, operate at lower speeds, and generate less heat. Additionally, they are robust and reliable.

These engines are used across various sectors, including industry, banking, healthcare, residential buildings, agriculture, and data centers. They are suitable for emergency, peak, and continuous power supply and are available in voltage ranges of 380-415V, 6300-6600V, and 10,000-11,000V, providing flexible solutions for diverse requirements.









A key component of the High Power is AKG's spacesaving cooling system, specifically designed for the power generation, oil, and gas industries. It utilizes aluminum bar-plate coolers for engine cooling and optionally for hydraulic, fuel, lubricating, and transmission oil cooling. Depending on the application, various cooling solutions such as the Cube Cooler, Remote Cooler, and Front Cooler are available, ensuring reliable temperature control and contributing to the efficiency and longevity of the High Power.



Household Appliances

HOUSEHOLD APPLIANCES

As the market leader in this sector, AKG has been developing and producing heat exchangers for air-cooled condensation laundry dryers and washer/dryer combination units since 1981. Continuous improvements in performance, quality and handling of these high-performance heat exchangers enables fast and consistent energy-efficient drying processes.

The products are specially developed for the individual customer requirements and manufactured cost-effectively using the latest production technology.



Baking, cooking and exhaust air appliances

BAKING, COOKING AND EXHAUST AIR APPLIANCES

AKG is your partner for the development and production of efficient heat exchangers for condensation of vapors on or in the furnace. Whether baking station, combi steamer, extractor hood, or in professional kitchens or in sales rooms - AKG will gladly advise you on the right heat exchanger technology.

We created an optimal product that can be individually customized to your needs. You benefit from over 35 years of experience in development and production of steam condensers at AKG.





ADVANTAGES

- Highly efficient dehumidification
- Compact design
- Independent installation site Reliability
- Cost advantage





AKG CoolEngineer

Our AKG CoolEngineer is your digital tool to select the right cooler for your application. With simple steps you can configure your cooler and adapt it to your specific requirements. Start by selecting the appropriate series and immediately receive a suggested list of coolers. Then refine your search with additional criteria: Fan motorization, cooling capacity and size. Our calculation tool will then show you exactly the coolers for your requirements.

Save time and effort in finding the optimal cooler and use AKG CoolEngineer!

Thanks to state-off-the-art components and high manufacturing quality, our coolers are not only energyefficient and durable but also cost-effective. However, should a part need to be replaced, this can be done easily at any time due to our modular design.

Sustainable Cooling Solutions

As the world's leading supplier of customersystem solutions, we particularly fooriented cus on sustainability and environment protection. We are proud that our aluminum is 100% recyclable. This enables us to ensure that our products are not only effective, but also environmentally friendly.

AKG offers the ideal solution for any cooling application with low total cost of ownership and optimized product carbon footprint!



AKG-Line-T

High-performance cooling systems made of aluminum for mobile and stationary use!

Our AKG-Line-T standard series offers industrial high-performance cooling systems made up of aluminium, that convince with reliable product quality at competitive prices. These units are manufactured according to German engineering and are available in various designs for mobile and stationary use. The assemblies include universally applicable complete systems that comply with European standards and are also suitable for extremely harsh operating conditions. The fans are driven bythree-phase (TA/TLA series), direct current (TD/TLD series), or hydraulic motors (TH/TLH series), depending on the requirements.

The knowledge and experience gained so far from the toughest practical applications have been incorporated into the product development of the AKG-Line-T. The cooling units are manufactured with the highest quality standards in our own AKG factories and is extensively tested in the company's R&D center. This ensures that our customers always receive the best possible solution.

Features

- High-performance cooling systems made up of Aluminium in robust plate/bar design capable of withstanding operating pressures up to a maximum of 26 bar, as well as weight-reduced (-30%) tube/fin construction capable of withstanding operating pressures up to a maximum of 16 bar
- The heat to be dissipated is transferred from the medium to be cooled to the ambient air
- Universally applicable in hydraulic oil, gearbox oil, engine oil, lubricating oil, and coolant circuits
- For cooling mineral oil, synthetic oil, bio-oil, HFA, -B, -C, and -D liquids, coolant water with at least 50% antifreeze and corrosion inhibitors, other media upon request

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Since 100 years, manufacturer of Coolers and Heat Exchangers worldwide!