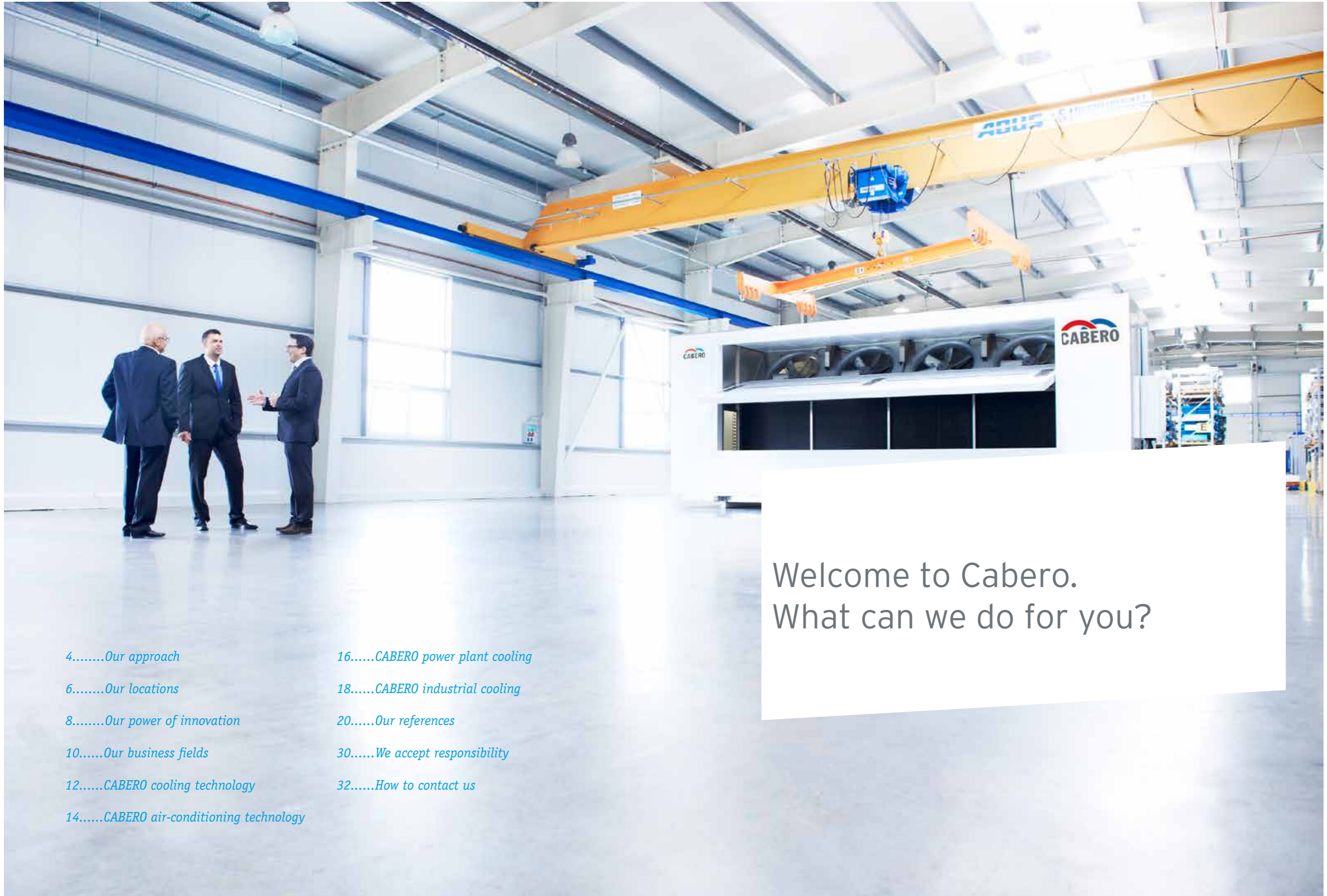


# Engineered to succeed°

*CABERO – leading in refrigeration technology,  
air-conditioning technology,  
power plant cooling,  
industrial cooling.*





Welcome to Cabero.  
What can we do for you?

*4.....Our approach*

*6.....Our locations*

*8.....Our power of innovation*

*10.....Our business fields*

*12.....CABERO cooling technology*

*14.....CABERO air-conditioning technology*

*16.....CABERO power plant cooling*

*18.....CABERO industrial cooling*

*20.....Our references*

*30.....We accept responsibility*

*32.....How to contact us*

## Customer satisfaction: A question of technology.

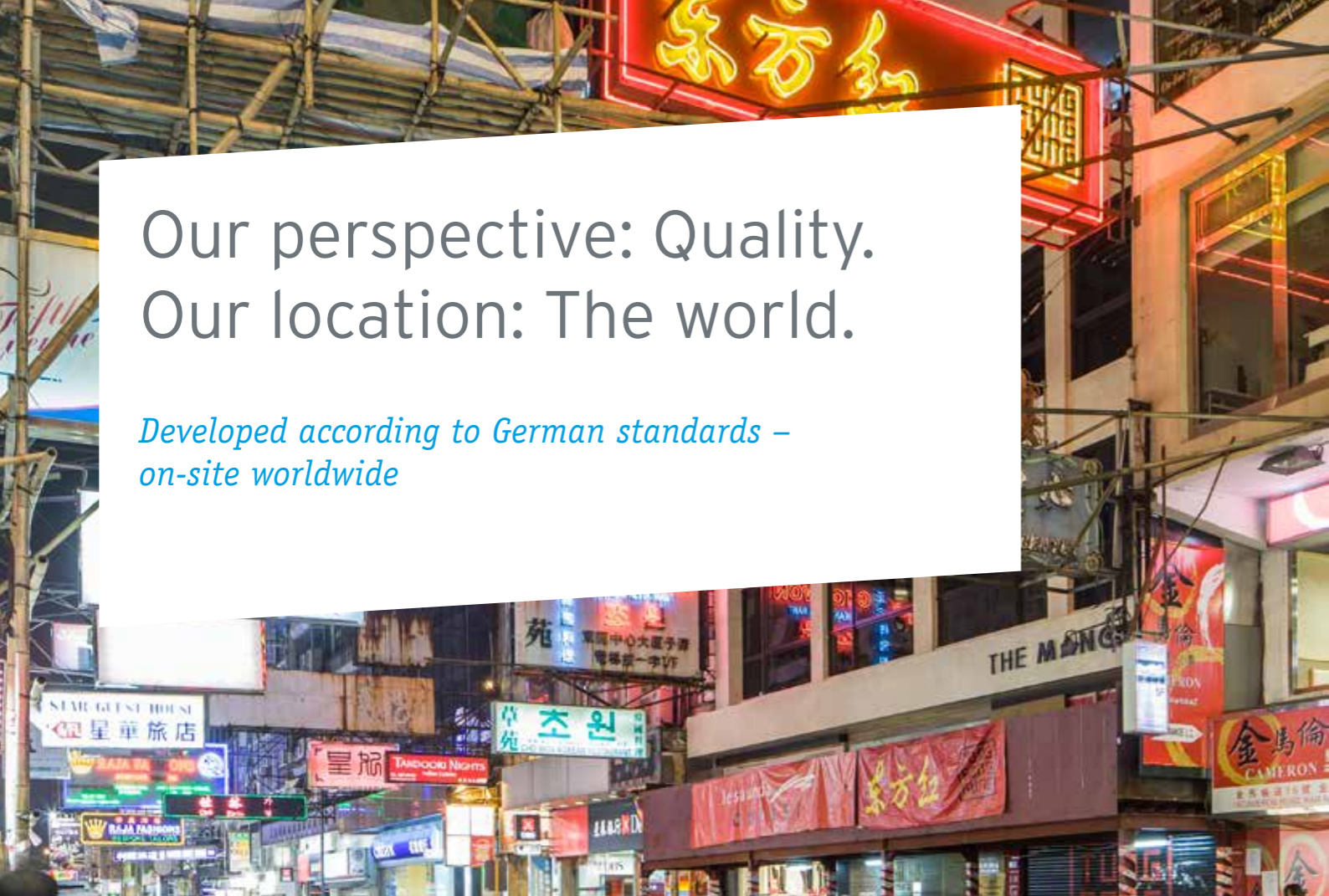
*Engineered to succeed – CABEREO technologies for your success*

***Your requirements are our mission*** CABEREO is one of the leading producers of heat exchangers for refrigeration and air-conditioning technology. As independent supplier of innovative solutions, we have been making a name for ourselves worldwide since 1980 with well designed products and dynamic processes. The focus here is always on the goals of our customers: Our experienced engineers do not just follow short-lived trends, but it is their declared objective to perfectly support your intentions with state-of-the-art technology - flexibly, solution-oriented and forward-looking.

Modern control centre in production: We have an eye on all production steps of manufacturing at all times and thus guarantee highest quality.

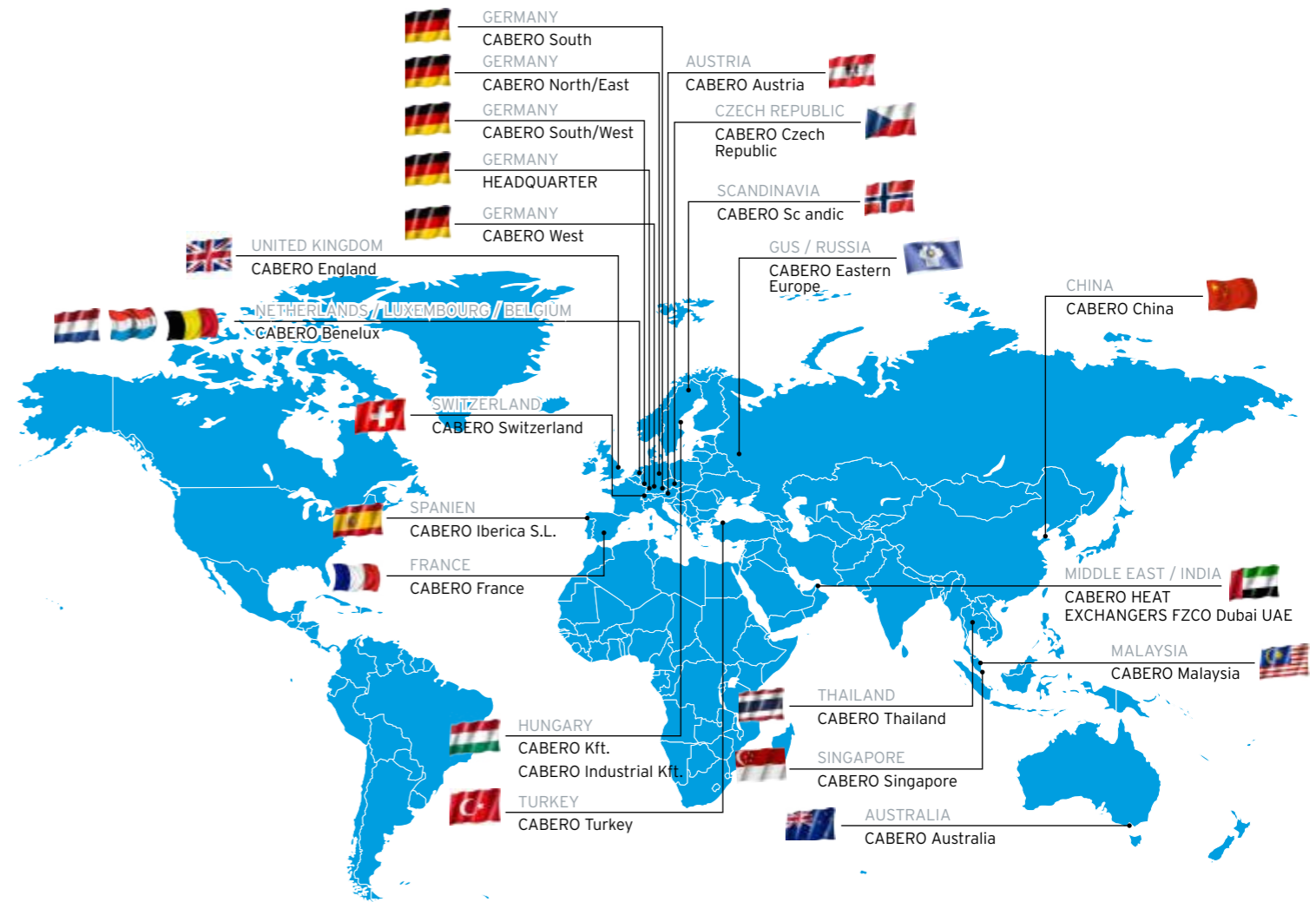


***Know-how in every CABEREO product*** Whether it is refrigeration technology, air-conditioning technology, power plant or industrial cooling: We cooperate closely with operators, planners and refrigeration plant mechanics and know their needs. Our sales engineers define the optimum complete or individual solution with specifically developed software, naturally including a range of accessories, and they determine the operating costs for each design of the required system. Equally evident is the sustainability of our products with regard to production and operation. CABEREO pays off - for your company as well as for the environment.



# Our perspective: Quality. Our location: The world.

*Developed according to German standards –  
on-site worldwide*



*Service and sales near you* Our well attuned organisation designs, plans and realises customised solutions from the CABERO headquarters in Grafrath near Munich. Furthermore, we have established state-of-the-art production facilities and warehouses in Germany, Hungary and China. Those choosing CABERO also choose unlimited service: We are at your service with sales offices in 22 national and international locations. This enables us to get active immediately if required.

Our products are in demand worldwide:  
CABERO is represented on all continents.

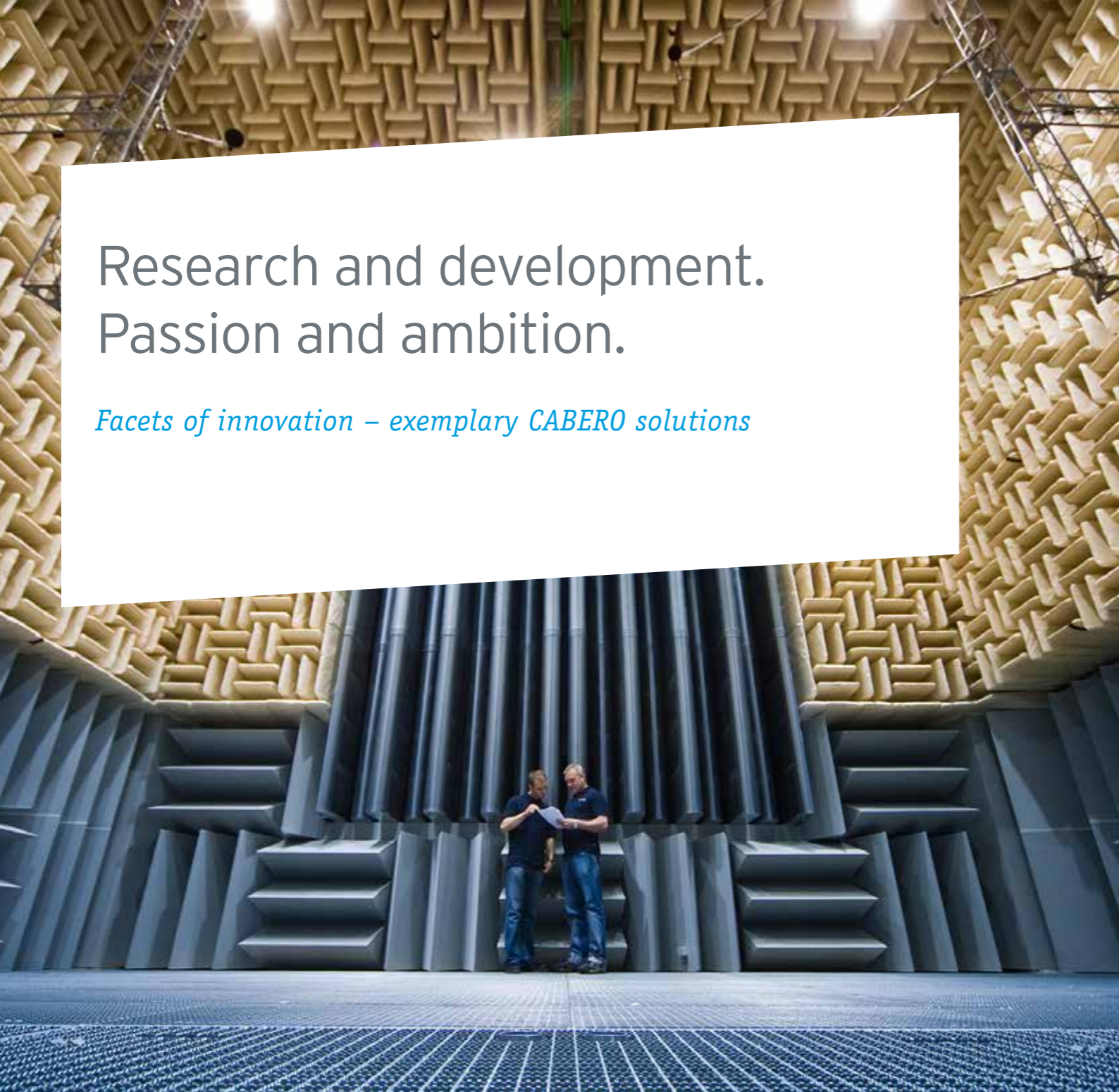
GERMANY Headquarter	GUS / RUSSIA CABERO Eastern Europe	SCANDINAVIA CABERO Scandic	MIDDLE EAST INDIA CABERO HEAT EXCHANGERS FZCO Dubai UAE
GERMANY CABERO South	CHINA CABERO China	THAILAND CABERO Thailand	SPAIN CABERO Iberica S.L.
GERMANY CABERO West	SWITZERLAND CABERO Switzerland	AUSTRALIA CABERO Australia	HUNGARY CABERO Kft.
GERMANY CABERO South/West	CZECH REPUBLIC CABERO Czech Republic	MALAYSIA CABERO Malaysia	HUNGARY CABERO Industrial Kft.
GERMANY CABERO North/East	NETHERLANDS LUXEMBOURG BELGIUM CABERO Benelux	SINGAPORE CABERO Singapore	UNITED KINGDOM CABERO England
AUSTRIA CABERO Austria	FRANCE CABERO France	TURKEY CABERO Turkey	

Production occurs in three state-of-the-art halls in our new factory in Kaposvar, Hungary.



# Research and development. Passion and ambition.

*Facets of innovation – exemplary CABERO solutions*



**Flexibility instead of standard solutions** CABERO has been supplying line builders and planners all over the world with customised performance for different products and market segments for 35 years. Flexibility is everything - for each product poses its very own challenges. To achieve best possible results, our development experts also carry out extensive field trials: This turns intelligent concepts into long-term solutions which combine maximum reliability and safety with great savings on operating costs.



CABERO Defrost on Demand

How can the intervals between defrost cycles be increased significantly while resources are used more efficiently? CABERO Defrost on Demand (DOD) can do what conventional systems cannot achieve: The innovative system continuously evaluates various measuring points with a specific algorithm to independently control the defrost cycles of a system in the best possible way.



CABERO control technology

High level of performance with low use of media - a matter of course thanks to intelligent CABERO control technology. All parameters are continuously and automatically checked and adapted through the specified control loops. This saves precious resources, every operating hour. All data are clearly visualised via touch panel or integration into the on-site BMS.



CABERO Coil Protect System

To be on the safe side: If the quality of the circulation water changes and has an excessive mineral or salt content, the CABERO Coil Protect System is triggered immediately. It effectively prevents further wetting and informs the operator with an error message: This always provides the best protection for the heat exchanger coils.



CABERO adiabatic nozzles

Adiabatics is a core competence of CABERO - with patented quality. Adiabatic systems use spray nozzles which can be operated with low or high pressure to significantly reduce the air intake temperature during hot weather. This saves valuable energy. Another benefit: The smooth surface of the sprayed fins allows effective and water-saving cleaning.

# Four business segments, one claim: Service.

*Planning, implementation, service – we are committed  
to your objectives*



## CABERO REFRIGERATION



*Refrigeration is indispensable  
for modern society:  
We provide it.*

## CABERO AIR-CONDITIONING



*Tailored efficiency: Our innova-  
tions lower operating costs.*

## CABERO POWER PLANT COOLING




*Because system failure is never  
an option: Our technologies are  
reliable.*

## CABERO INDUSTRIAL COOLING



*We know the demands of the  
industry: Which is why we are  
able to meet them precisely.*



Refrigeration is a science in itself.  
For us as well.

*CABERO refrigeration technology – we determine the temperature*

**Refrigeration with precision** Industrial heat exchangers and evaporators from CABERO find their application in the most different areas: Production and storage facilities for foodstuffs and consumer goods cannot do without them anymore. Each device here is individually tailored to its specific requirements on site: Our experience and our understanding of technical quality ensure the best solution for each project - with full planning and cost certainty.



Modern technology also in detail: Orbital welding enables consistently high levels of seam quality for our products.

***This technology thinks of everything*** All devices of CABERO refrigeration technology meet the high demands of temperature specifications, operational safety or reliability. Naturally, product- and environment-specific details like humidity or air flow are to be considered: Due to innovative technology, each CABERO heat exchanger or evaporator contributes to the quality assurance of the goods - before, during and after production.

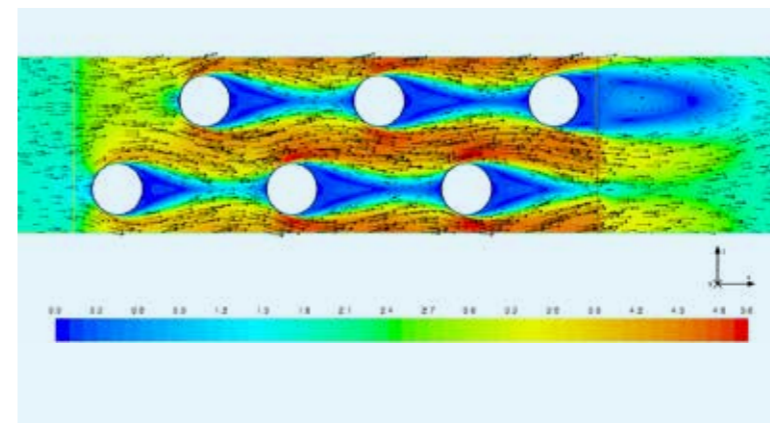


**Focus on employees** Technology is always there for people: This is why before starting any system design, we make sure that our systems integrate perfectly into each organisation. Whether it is hygiene specifications or minimised noise and draught exposure: CABERO refrigeration technology contributes to a healthy and positive work environment and thus contributes to the productivity of each individual employee.

## An important effect of innovation: efficiency.

*CABERO air conditioning systems – our technologies pay off*

**Success begins with experience** According to the laws of thermodynamics, an adiabatic system exchanges no heat with its surroundings. We were the first company to turn this into a technology: adiabatics. Over the course of the last decades, we have installed hundreds of systems with adiabatic spray nozzles all over the world. Numerous product innovations for state-of-the-art air conditioning technology have since ensured the satisfaction of our customers – and the ability to plan for low operating costs with great precision.



By means of thermodynamic simulations, the CABERO engineers determine the ideal flow speed to prevent flow separation drops and escaping moisture.

**Thermodynamic simulation** Any innovation has to be well prepared: The test bench therefore also includes complex flow simulations which display the heat transfer process within the CABERO devices, taking into account all special features of the design from the outset. This allows a visual representation of the air flow, enabling our developers to draw valuable conclusions from these findings with the aim of increasing the efficiency of a system.



Due to the exposed position of the premises near the Berlin Zoo, strict requirements regarding noise emissions had to be met – no problem for the CABERO heat exchangers.

**CABERO performance for a Berlin landmark** One of the most spectacular recent real estate projects in Berlin uses all the CABERO heat exchanging technology: The Bikini House at the heart of Berlin, near the zoo, was renovated with state-of-the-art measures and reopened in 2014. On the roof: 8 heat exchangers with an output of 6 MW. They ensure that thousands of customers can enjoy a unique shopping experience at the perfect temperature in this complex every day.



Sustainability with CABERO technology: The Tower 185 in Frankfurt is one of only five buildings in Germany which was awarded the gold International Green Building Certificate LEED.





# Energy needs cooling. Safely.

*CABERO power plant cooling – for all systems to run smoothly*

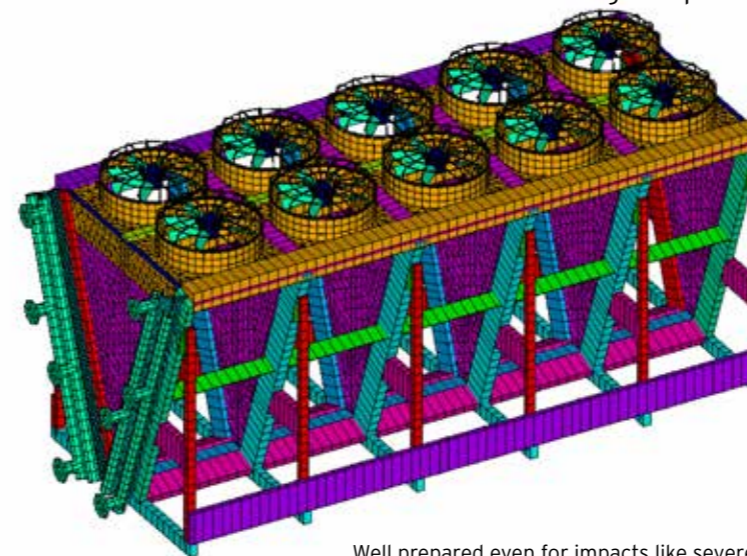
**Customising for sensitive areas** There is no absolute safety. But no one is closer than CABERO: It was determined in tough endurance tests that only the CABERO heat exchanger withstands an earthquake measuring 8.7 on the Richter scale. And that even though the tested heat exchanger is just one of our standard products: This is the highest quality in series production, installed in many nuclear power plants worldwide.



Ecological energy through biomass plants: CABERO systems ensure uninterrupted operation here.

**Refrigeration of decentralised energy generation** In addition to the large power plants, there is a growing number of compact systems like wind power or biomass plants, which increasingly contribute to the energy supply. In order to achieve the highest possible efficiencies in such systems, the generators must be cooled effectively. Furthermore, emergency coolers are required for disruptions for example during maintenance work. The products from CABERO are the first choice here.

**Valuable energy through biogas** CABERO power plant cooling contributes to generating several hundred kilowatt hours of electricity from numerous tons of manure and slurry in one single biomass plant. Thus for example, a heat exchanger of type GCH was installed in the biomass plant in Kaufering near Munich with a capacity of 1 MW, securing the energy production sustainably. Already hundreds of biomass plants worldwide use CABERO' cooling competence.



Well prepared even for impacts like severe earthquakes or shock waves: Complex simulations prove the exceptional torsional stiffness of the CABERO steel constructions.

## Continuous service: CABERO core competencies.

*CABERO industrial cooling – we support industrial processes*

**Solutions across all sectors** Whether it is engine test stations or assembly lines in the automotive field, production facilities of the food industry or indoor climate chambers for medical applications: Our experts embrace the processes of the customers and their specific requirements - this is the only way highest precision can be achieved. It is not only industry relying on this: TÜV Süd also uses highly efficient systems from CABERO to generate optimum test situations.



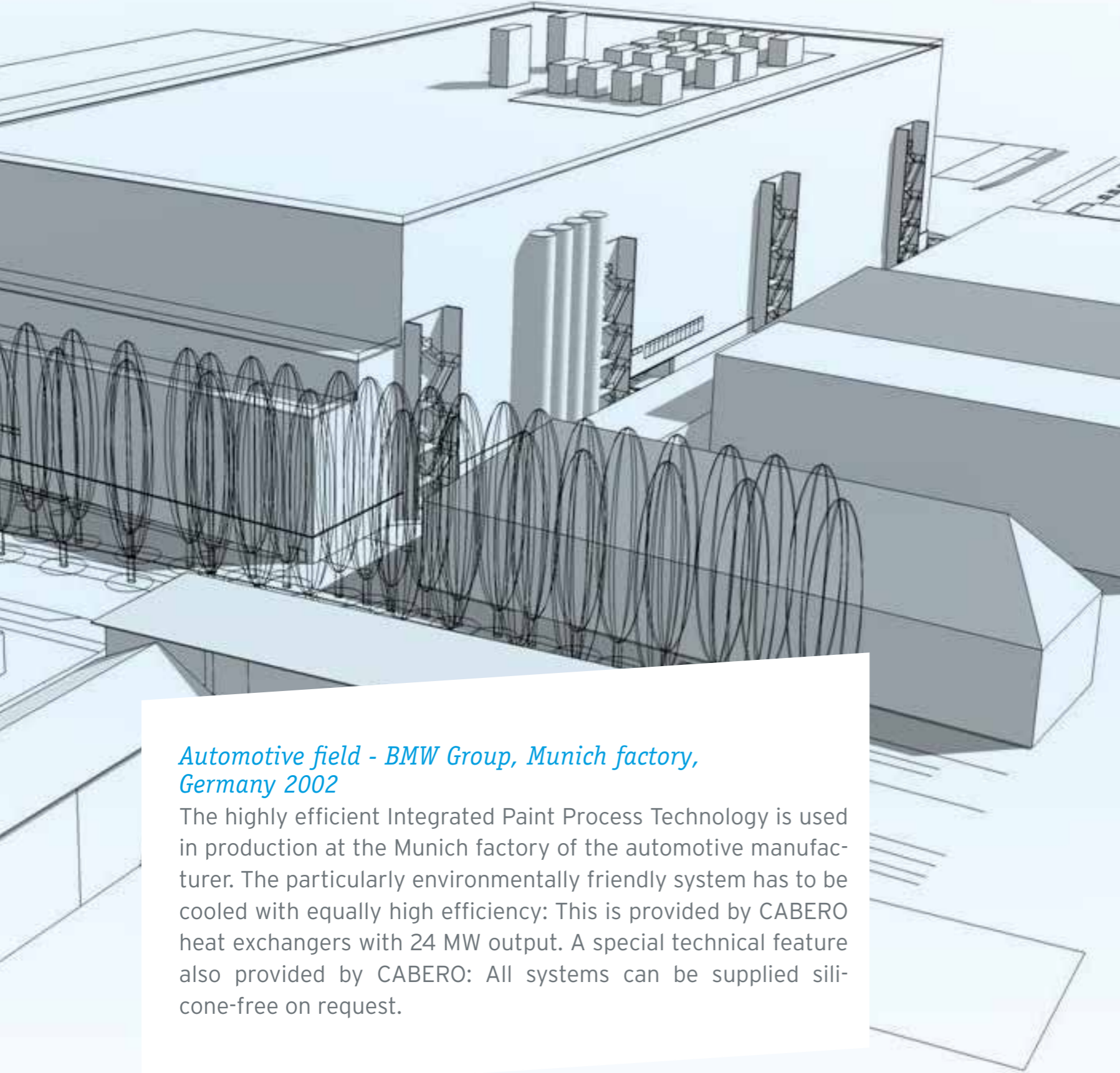
Whether Audi, BMW, Porsche or Mercedes: Leading manufacturers of premium automobiles rely on process cooling from CABERO.

**Perfectly dimensioned capacity** Our experts realise the right solution for numerous OEM manufacturers from the mechanical engineering and automotive industry in close cooperation with customers - from more compact systems like the Mercedes AMG test station in Affalterbach up to the comprehensive system for a whole factory like the BMW factory in Munich. For the steel construction industry we also provide perfect performance in the right dimensions for the whole value chain including complete systems.



Successful together: CABERO and ONI create cost-saving system solutions for the energy-intensive injection moulding.

**Achieving more together** Time and again, innovations are created based on the cooperation with partners from the industry, eventually turning into patents. For example we developed a completely self-draining heat exchanger for our long-standing customer ONI, one of the leading manufacturers of energy saving technology. The system works without the environmentally harmful coolant glycol - and enables approx. 300 to 400 hours more free cooling per year compared to conventional dry coolers.



*Automotive field - BMW Group, Munich factory, Germany 2002*

The highly efficient Integrated Paint Process Technology is used in production at the Munich factory of the automotive manufacturer. The particularly environmentally friendly system has to be cooled with equally high efficiency: This is provided by CABERO heat exchangers with 24 MW output. A special technical feature also provided by CABERO: All systems can be supplied silicone-free on request.





*Air-conditioning technology - Inselspital Bern,  
Arealversorgung, Switzerland 2014*

With 40,000 in-patients and 520,000 outpatient consultations per year, the Inselspital Bern is one of the most important university clinics in Switzerland. CABERO initially supplied 6 V-shape dry heat exchangers for the high-rise building, later supplemented by 18 adiabatic heat exchangers. To protect the patients, extremely high sound insulation requirements had to be met due to the close vicinity to the next building.

*Air-conditioning technology - Trainingszentrum Rote Bullen Leipzig, Germany 2005*

Opposite its Red Bull Arena, the ambitious football club Rasen-Ballsport Leipzig built a state-of-the-art training centre for the training needs of all professional and junior players. To provide the players with a constant training climate, two dry heat exchangers from CABERO, each with 425 kW cooling output, support the cold air supply for the extensive facility.



### *Klinikum rechts der Isar, Munich*

The "Klinikum rechts der Isar" hospital at the Technical University of Munich is a centre for state-of-the-art medicine: CABERO provides an indispensable element of the cooling technology in this complex with different heat exchanger models from table versions to V-block units. In recent years alone, units with an output of 8 MW were installed, all meeting the very strict noise emission regulations.



*Air-conditioning technology, food processing industry,  
fish processing – Thai Food, Kabin Bburi, Thailand 2014*

This facility manufactures fish products for the international market. It therefore requires the air to be cooled reliably with industrial evaporators. A work environment practically free from draughts was a top priority to increase productivity by reducing sick days among employees. The total output of the system, which uses the refrigerant NH<sub>3</sub>, is 1200 MW.





*Klima Architecture – Gummersbach shopping centre, Germany 2013*



*Industrial Cooling – Chocolats Halba Division of the Coop Wallisellen, Switzerland 2014*



*Klima Architecture – Tower 185, Frankfurt 2014, awarded with the gold International Green Building Certificate LEED*



*Data Centre – Rabo Bank, Netherlands 2014*



*IQ Business Center – Kiev Ukraine 2013*



*Large Data Centre from e-shelter. Process cooling from CABERO. Germany 2015*



We advocate strong partnerships.  
Including the environment.

*CABERO responsibility – for a sustainable future*



**Environmentally sound production** Efficiency is worth it: This is why we ensure the best possible use of resources and the environmentally sound disposal of harmful substances along the whole manufacturing process. 95 % of parts processed by us can be recycled and free from harmful substances - and our own patented developments enable us to continually increase the performance of our products. All CABERO production sites are certified according to DIN EN ISO 9001 and VDI 6022 in the field of ventilation and air-conditioning technology and indoor air quality. When controlling adiabatic systems and hybrids, the new VDI 2047 is considered, the hygiene certification according to HACCP is in preparation.



**Dimensions of sustainability** Apart from the self-draining heat exchangers without glycol, we provide our customers with the CABERO Emergency Retention System CERS: These emergency safety tanks protect the groundwater in case of leaks and leaking liquid of all kinds. Furthermore, CABERO PLUS Adiabatic Technology prevents any contamination of the environment with bacteria or even legionella, thus excluding health risks.



**Utmost attention to detail for the components** CABERO exclusively uses fans and air vents, which are ERP-compliant with the legal certainty according to EU directives. Specifically designed products, achieving optimum effectiveness, are used - with regard to the efficiency of their drive technology, the noise emissions and the operational safety. These data are measured in test benches specifically designed for this purpose according to DIN specifications.

ErP safety far beyond 2015 - thanks to intelligent fan systems from ZIEHL-ABEGG with integrated efficiency guarantee, ECblue or AC fans and maximum flexibility for each application.



AxiTop diffusers for axial fans from ebm-papst improve the heat dissipation in heating and cooling systems by means of an optimized air flow and at the same time provide the greatest efficiency and reduce noise emissions.

**Social commitment** We assume responsibility for the world in which we live - and for the people we meet. For example, we regularly support humanitarian projects and initiatives to help children in need.

If you want to achieve more:  
How you can reach us.

*Each project starts with an initial discussion:  
We look forward to hearing from you.*

Welcome to Grafrath: We always keep our focus.



*Engineered to succeed* Do you want to learn more about our services, products and references? May we assist you with our expertise in your individual technical projects?, and we look forward to supporting you at any time with know-how and commitment. Each project starts with an initial discussion: we look forward to hearing from you:



CABERO Wärmetauscher GmbH & Co. KG  
Jesenwanger Straße 50  
D-82284 Grafrath  
Telefon +49 8144 20 400 0  
Telefax +49 8144 20 400 900  
www.cabero.de  
info@cabero.de



**CABERO Wärmetauscher GmbH & Co. KG**

Jesenwanger Straße 50

D-82284 Grafrath

Telefon +49 8144 20 400 0

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