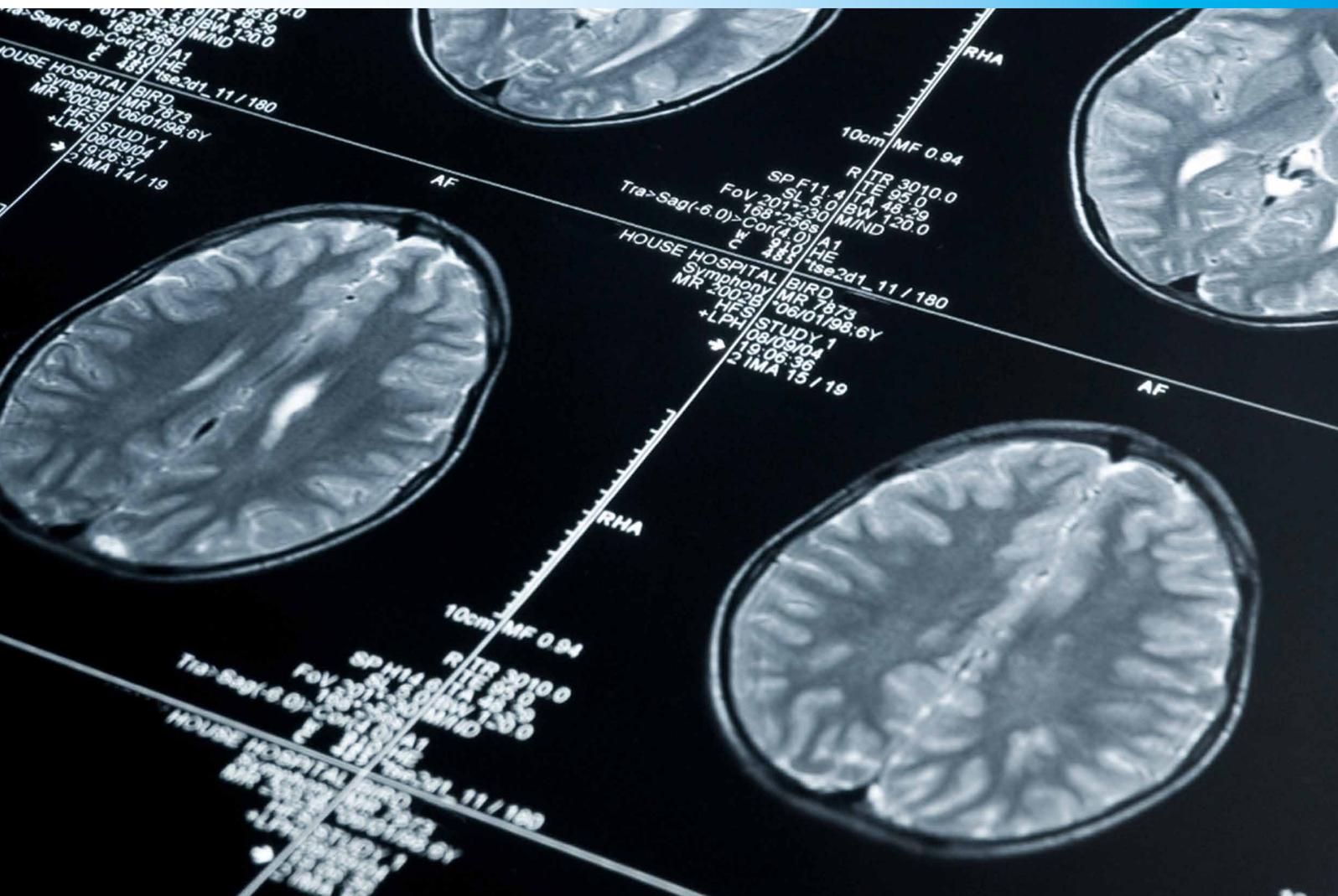


## Cooling solutions for imaging systems

Reliable. Global. Customer-specific.

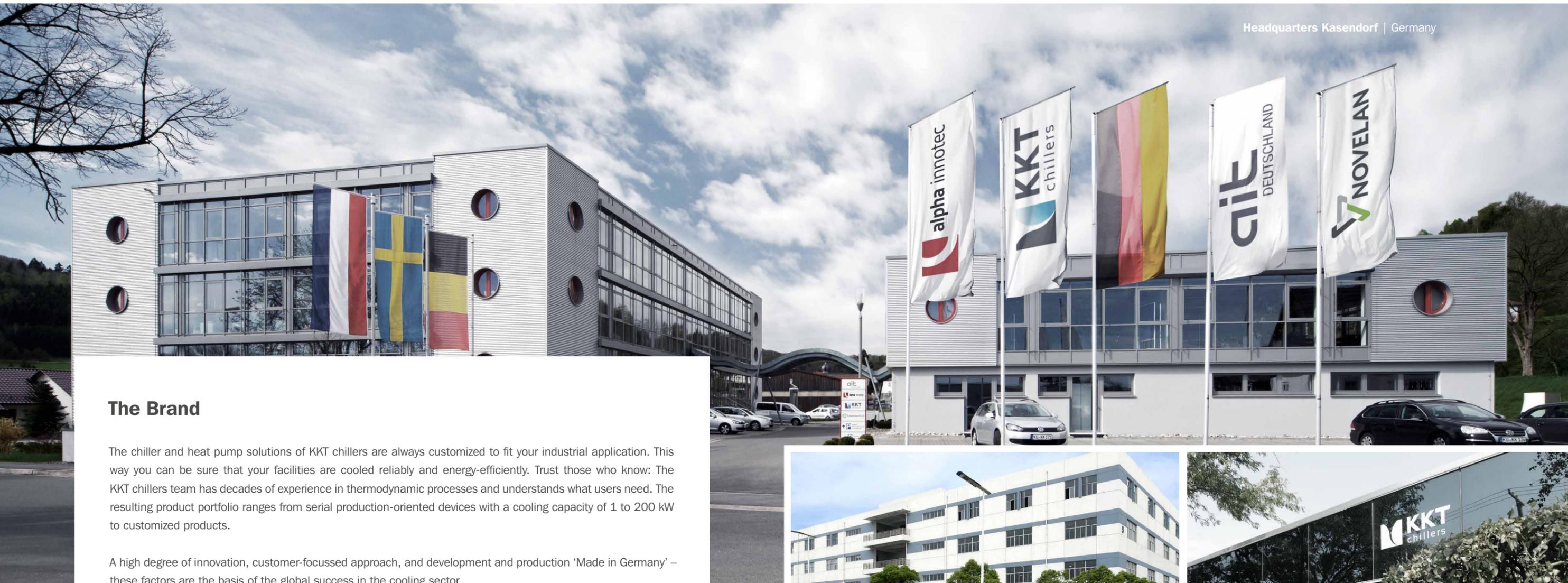


# KKT CHILLERS

INNOVATION IS OUR STANDARD.



Headquarters Kasendorf | Germany



## The Brand

The chiller and heat pump solutions of KKT chillers are always customized to fit your industrial application. This way you can be sure that your facilities are cooled reliably and energy-efficiently. Trust those who know: The KKT chillers team has decades of experience in thermodynamic processes and understands what users need. The resulting product portfolio ranges from serial production-oriented devices with a cooling capacity of 1 to 200 kW to customized products.

A high degree of innovation, customer-focussed approach, and development and production 'Made in Germany' – these factors are the basis of the global success in the cooling sector.

The in-house Technology Center is at the cutting-edge of development laboratories and test institutes. The state of the art centre combines the latest inspection and testing standards.

KKT chillers has long become a valuable global player in the chiller market, thanks to the sites in Germany, USA and China as well as the global service network.

KKT chillers – a brand of ait - deutschland GmbH.



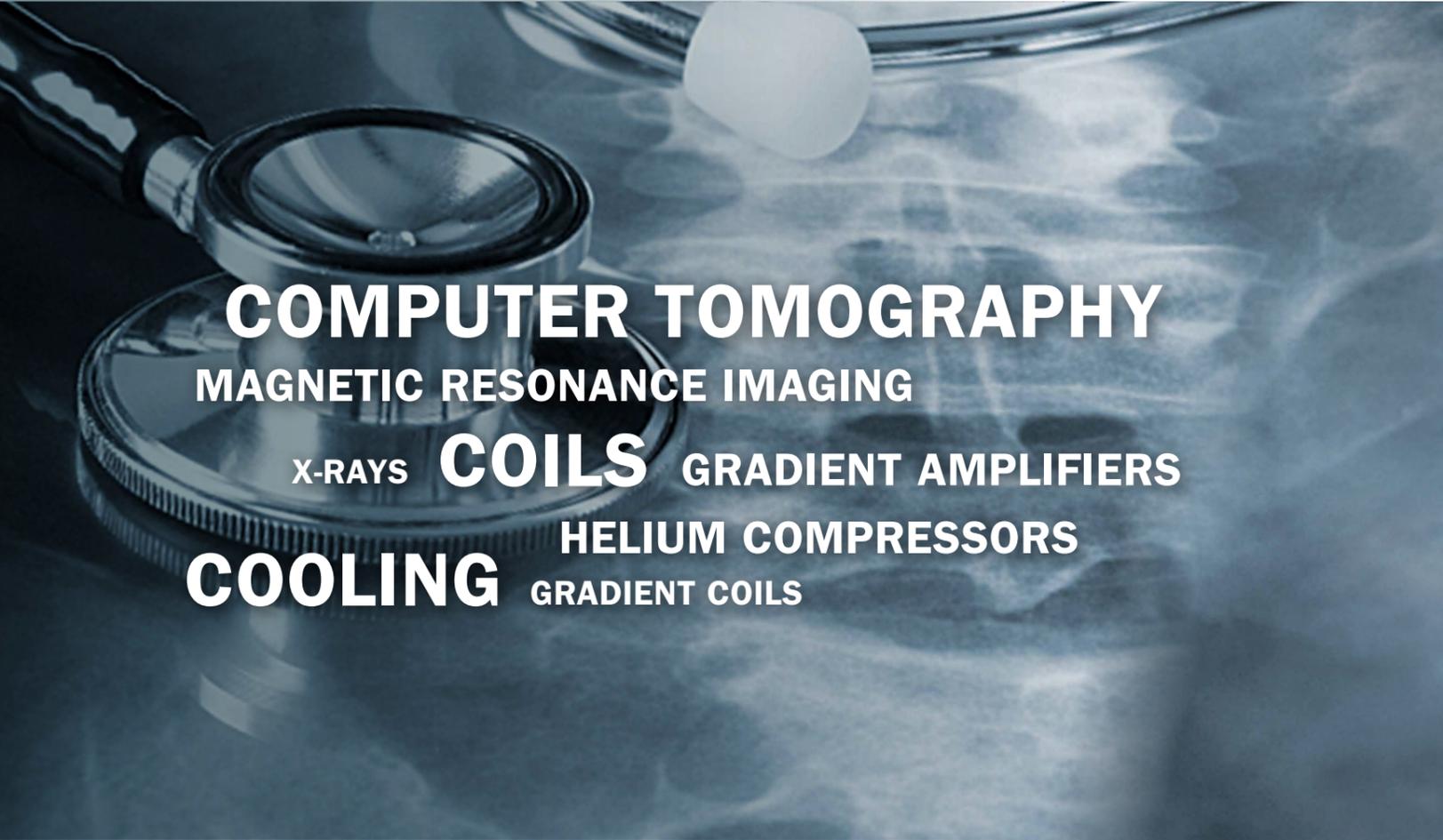
Location Suzhou | China



Location Elk Grove Village | USA

## HEALTHCARE

**COOLING OF X-RAYS, CTS, MRIS  
AS WELL AS THEIR COILS AND HELIUM COMPRESSORS.**



**COMPUTER TOMOGRAPHY**  
**MAGNETIC RESONANCE IMAGING**  
**X-RAYS COILS GRADIENT AMPLIFIERS**  
**HELIUM COMPRESSORS**  
**COOLING GRADIENT COILS**

### Safe cooling for imaging systems

Rely on the expertise of KKT chillers when it comes to cooling systems for imaging equipment. For over 20 years, chillers made by KKT chillers have been applied to cool highly sensitive imaging systems. Thousands of these reliable chillers are in use all around the world. The medical coolers are specifically aligned with individual products and product series of medical equipment manufacturers. The wide range of series-oriented devices is based on a modular design and can be customized perfectly to meet your requirements. KKT chillers can also offer turnkey solutions.



### Reliability

Thanks to their individual alignment with your specifications, the chillers of KKT chillers are particularly precise and reliable. On top of that, the team of engineers and technicians at KKT chillers ensures top quality – from the project launch to the inspection of chillers at the in-house test facilities and the 24/7 customer support.

### Digital data management

What is the water temperature right now? And the water pressure? Your chiller can answer these and other questions at the push of a button – because it digitally records all the relevant process and control variables. This means that for the Compact-Line (cBoxX), data can be called up via many different interface protocols including PROFIBUS, Modbus, DeviceNet, CANopen and PROFINET. This setup also allows reliable and cost-effective remote facility maintenance.

### Include the expertise of KKT chillers

When it comes to highly complex development projects it makes great sense to consider the issue of process and component cooling early on. To this end, KKT chillers offers “Resident Engineering”: the KKT chillers engineers will support your development process from the outset, providing you with extensive knowledge in matters of cooling technology.

### Closed cooling cycle

For MRI (magnetic resonance imaging) and CT (computer tomography) alike, closed-cycle cooling systems without a tank are a proven solution, as evidenced by the approx. 6,500 chillers by KKT chillers currently in use.

#### YOUR BENEFITS

- ✓ Total weight approx. 250 kg lower than for open systems with tank.
- ✓ No contamination of the cooling water circuit through environmental impacts possible.
- ✓ No cleaning effort for tank.
- ✓ No evaporation of the refrigerant thanks to completely sealed cooling water circuit.
- ✓ Low overflow risk due to small amount of water in the chiller.

## MRI – MAGNETIC RESONANCE IMAGING

### DIRECT OR INDIRECT: SIMPLY PERFECT COOLING.

A MRI creates cross-sectional images of a body that allow for a diagnosis concerning organs and pathological changes of organs. Strong magnetic fields and magnetic alternating fields in the radio frequency range resonate with certain atomic nuclei in the body and trigger an electric signal in a receiving system. The superconducting magnet and the required helium compressor of a MRI system must be cooled at all times. KKT chillers offers custom-fit solutions for cooling all MRI components during a scan up to a maximum load of 80 kW. KKT chillers specializes in integrated chillers for the direct cooling of your MRI equipment; in addition KKT chillers also offers indirect cooling systems.



### “COOL YOUR MRI“ and “SAVE YOUR HELIUM“ KKT chillers offers customized solutions.

#### How can we maximize the uptime of our MRI?

Your MRI's uptime depends significantly on the cooling system. You can increase the system's availability by adding redundant components, such as a second pump in the chiller.

#### How can we continuously cool the MRI system before its completion to avoid the loss of helium, e.g. at a construction site or at customs?

Specifically for situations like these, KKT chillers offers two interim cooling options. You can either choose a chiller from the Nano-Line (nBoxX) for each magnet or helium compressor or you can cool several magnets or helium compressors centrally with a chiller from the medixX product range.

Image copyrights owned by Philips

## MRI – MAGNETIC RESONANCE IMAGING

### COMPARISON OF DIRECT AND INDIRECT COOLING SOLUTIONS.

#### DIRECT MRI COOLING SOLUTIONS:

KKT chillers offers integrated chiller solutions that cool all consumers directly without additional heat transfer: the ECO chillers. ECO stands for Energy Cost Optimized. The name says it all.

#### YOUR BENEFITS

- ✓ All consumers of the MRI system can be supplied directly at a supply temperature of 20°C.
- ✓ Energy-efficient: up to 45% more energy-efficient than indirect cooling as no system separator with a primary supply temperature of 9°C is required.
- ✓ Economical: up to 35% lower power consumption as only one pump is required.
- ✓ Future-proof: use of state-of-the-art components, such as speed-controlled compressors, pumps and fans.
- ✓ All operating data are transferred to the central MRI data management via a CANopen interface.

#### INDIRECT MRI COOLING SOLUTIONS:

With the Compact-Line (cBoxX) product range, you can benefit from maximum output on minimum space also with an indirect cooling system.

#### YOUR BENEFITS

- ✓ Powerful: highly efficient components such as EC fans, electronic expansion valves, etc.
- ✓ 50% lower refrigerant demand compared to conventional chiller concepts, thanks to the application of the high-efficiency refrigerant R410A as a standard and specifically aligned components, such as a micro channel.
- ✓ No dangerous goods declaration needed: refrigerant filling levels (up to a cooling capacity of 100 kW) are below the statutory threshold and thus don't require a dangerous goods declaration.
- ✓ Reduce shipping costs: approx. 60% lower weight compared to other products of the same performance class in the market.
- ✓ Transparent: view all of your chiller's operating data as clear text in the display.

**Which cooling system is the ideal solution for you? We are looking forward to discussing the options in detail with you.**

Courtesy of Siemens Healthineers



Discover all the advantages of the KKT chillers cBoxX. Just scan the code to get right to the product video.



**COMPACT-LINE**  
COOLING CAPACITY 30 - 200 KW

**ECO-CHILLER**  
COOLING CAPACITY 60 KW

## CT – COMPUTER TOMOGRAPHY

### INDIRECT COOLING SOLUTIONS.



Courtesy of Siemens Healthineers



Today, the computer tomography is one of the main methods in radiology. A CT system takes a variety of X-ray images from different directions. Based on a computer evaluation, these are then converted into cross-sectional images of body parts or objects. KKT chillers is a specialist in the field of indirect cooling of water-cooled CT systems at a cooling capacity of between approx. 10 kW and approx. 20 kW. The operating principle is simple but effective: a heat exchanger in the CT's gantry is supplied with cooling water. As the CT scans require different cooling capacities, it is recommended to apply a cooling system optimized for partial loads.

### “COOL YOUR CT“

#### KKT chillers offers customized solutions.

##### How can we optimize the operating costs of the chiller?

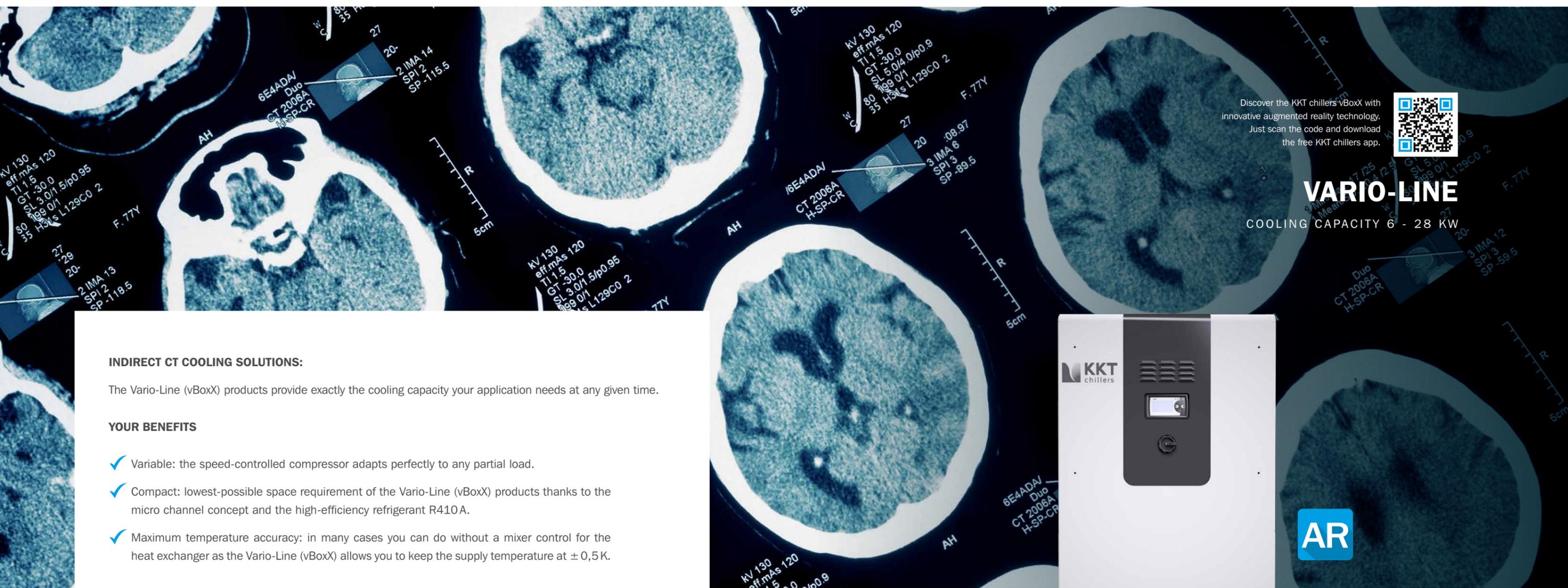
The compressor is by far the biggest consumer of a chiller. A speed-controlled compressor – like those fitted in the Vario-Line (vBoxX) – reduces power consumption significantly as this type of compressor adapts perfectly to the respective partial load.

##### How can we minimize the adjustment work and thus potential sources of disturbances or errors for the heat exchanger chassis in the CT's gantry?

As the speed-controlled compressor and speed-controlled fan work seamlessly with an electronic expansion valve, the supply temperature to the heat exchanger is absolutely exact. This means you don't need e.g. a 3/2-way valve control.

# CT – COMPUTER TOMOGRAPHY

## INDIRECT COOLING SOLUTIONS.



Discover the KKT chillers vBoxX with innovative augmented reality technology. Just scan the code and download the free KKT chillers app.



### VARIO-LINE

COOLING CAPACITY 6 - 28 KW



#### INDIRECT CT COOLING SOLUTIONS:

The Vario-Line (vBoxX) products provide exactly the cooling capacity your application needs at any given time.

#### YOUR BENEFITS

- ✓ Variable: the speed-controlled compressor adapts perfectly to any partial load.
- ✓ Compact: lowest-possible space requirement of the Vario-Line (vBoxX) products thanks to the micro channel concept and the high-efficiency refrigerant R410A.
- ✓ Maximum temperature accuracy: in many cases you can do without a mixer control for the heat exchanger as the Vario-Line (vBoxX) allows you to keep the supply temperature at  $\pm 0,5K$ .

## AFTER SALES SERVICE

EXPERT SERVICE TECHNICIANS IN ACTION.



### Service – around the clock.

No one can predict a system breakdown. But should it happen, KKT chillers' years of experience and well-structured service organization guarantee fast response and trouble-shooting.

Do you require help with one of your chillers? You can reach KKT chillers 365 days a year, 7 days a week, 24 hours a day.



### Service – around the world.

To ensure swift and reliable maintenance and repair services, KKT chillers runs a close-knit global service network, which is continuously optimized and expanded in keeping with your requirements and plant locations.



For frequently updated contact information of the individual service locations, please see

[www.kkt-chillers.com/en/service/service-locations/](http://www.kkt-chillers.com/en/service/service-locations/)

24/7  
Customer Support

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For an overview of all applications, please see [www.kkt-chillers.com/en/applications/](http://www.kkt-chillers.com/en/applications/)



[kkt-chillers.com](http://kkt-chillers.com)