



Hybrid Blue[®]

ADC

Advanced
Dry Cooler

50 – 2,000 kW



JAEGGI – The Original

Since 1929, JAEGGI has been engaged in the development, production and sale of heat exchangers. Since 1995, the company has been part of the Guntner Group, a worldwide established manufacturer of components for refrigeration, air-conditioning technology and industrial applications with a total workforce of 2,600 people. Our production centres in Europe, America and Asia secure us direct market access and spare parts service worldwide.

JAEGGI places efficiency and eco-friendliness on an equal footing. Our products and services make an active contribution to lowering your operating costs and conserving resources.

Our coolers are tested for hygiene conformity and aerosol emissions. The ISO 9001 quality management system, carried out by the Swiss Association for Quality and Management Systems SQS, guarantees our customers premium quality and maximum reliability anywhere in the world.

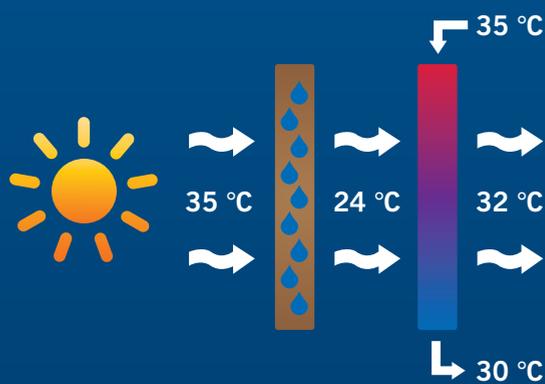
Adiabatic dry coolers

Efficient re-cooling is an economic success factor in the industry, particularly in air-conditioning applications and data centres. In addition to the overall size, low investment, low operating costs and low noise emissions are all important criteria for choosing equipment.

The Hybrid Blue® ADC is an advanced dry cooler variant. The simplicity of its dry cooler is particularly convincing. When the outdoor temperature is high, the ambient air can also be pre-cooled to ensure low coolant outlet temperatures.

Adiabatic pre-cooling is achieved via humidification pads in an angular arrangement in front of the dry cooler. Innovative, technological details show: JAEGGI is consistently developing their intelligent technologies. As an expert in hybrid dry coolers with a high level of system competence, JAEGGI delivers premium quality and outstanding service.

Humidification pads are used to pre-cool the ambient air at the air inlet area.



INDUSTRIAL
PROCESSES

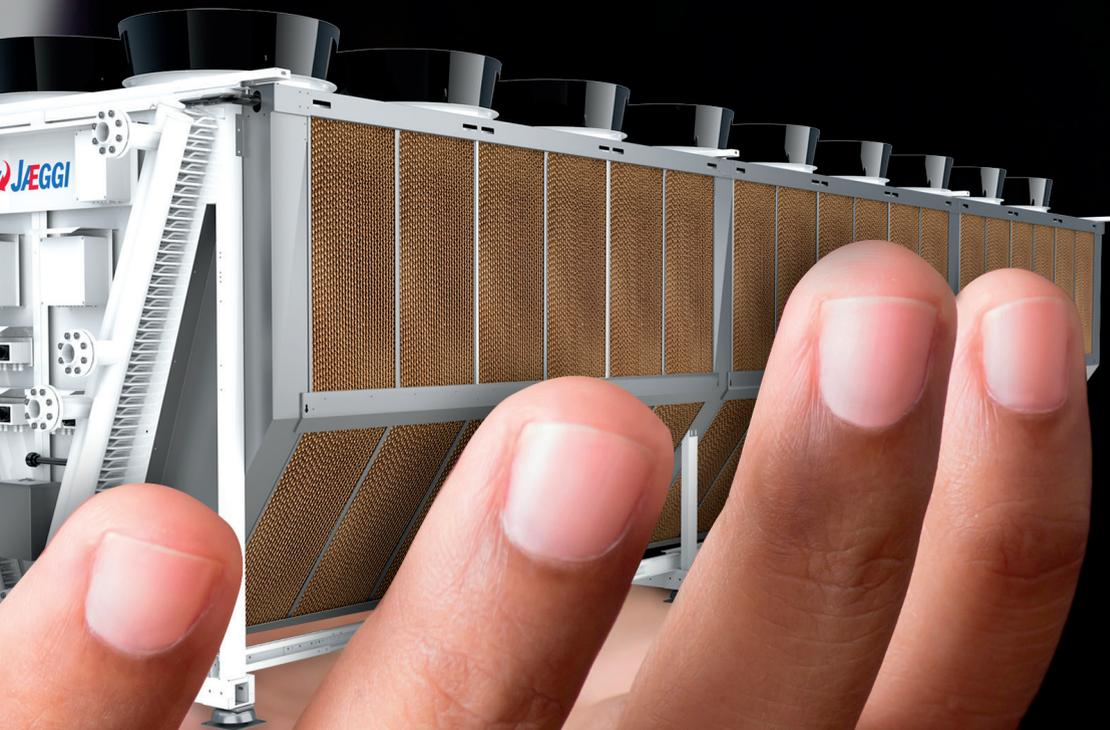
RE-COOLING
OF COMPRESSORS



RE-COOLING
OF IT EQUIPMENT

RE-COOLING OF
COOLING PROCESSES

RE-COOLING OF
AIR-CON AND REFRIGERATION



Tailored solutions for any application

Intelligent control of speed and wetting

- Water saved by volume control
- Very low energy consumption thanks to EC fans
- Very low water consumption because dry/wet switchover is set at a high level

Multifunctional use of humidification pads

- Easily removed for dry operation
- Pads locate on cooler during winter, no need to store them elsewhere
- Frames protect the pads from damage
- No spraying
- No water treatment needed
- Unlimited wetting duration

System checked for aerosol output

- Hygienic operation
- Plume-free
- No water circulation
- Automatic draining
- Dry cooling coil
- No deposits or corrosion

All controls possible

- GMM step
- GMM phase cut
- GMM sincon
- EC fans with GMM EC
- Wired ready to use

Crane transport with no need for lifting beam

- Easily transported by crane thanks to two moveable lifting lugs
- Quick and easy installation
- Optimal distribution of forces
- Rigid structure, resistant to deflection

Maximum capacity range

- Capacity range from 50 kW to 2 MW
- More than 700 variants possible

High power density

- V construction
- Unit height
- Minimal footprint



Service

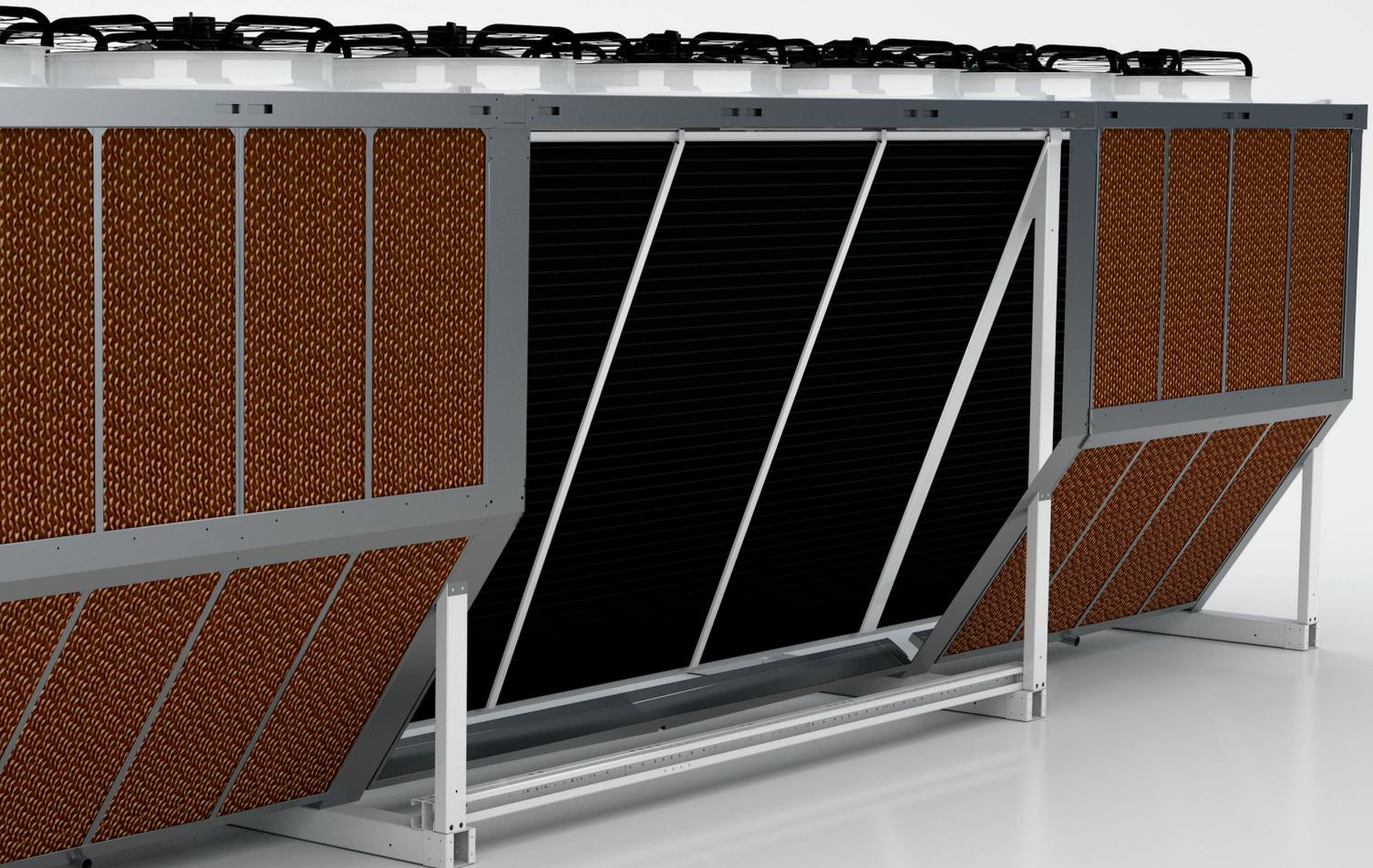
- Maintenance
- Cleaning
- Provision of spare parts
- High system competence

Dry operation

- With no wetting of the unit it operates like a conventional finned dry cooler
- Energy is dissipated to the ambient air via convection

Wet operation

- For high external temperatures or systems subject to higher cooling loads
- Even without directly wetting the heat exchangers, the fluid can be brought down below the ambient temperature
- Energy dissipated by convection



Numerous possible combinations

- Various combinations of materials
- Configurable tube materials and geometries
- Various tubeside circuit options
- Various fin spacings possible

Minimal number of support feet

- High level of static stability
- Saves effort on site with sub-construction
- Optionally with spring supports

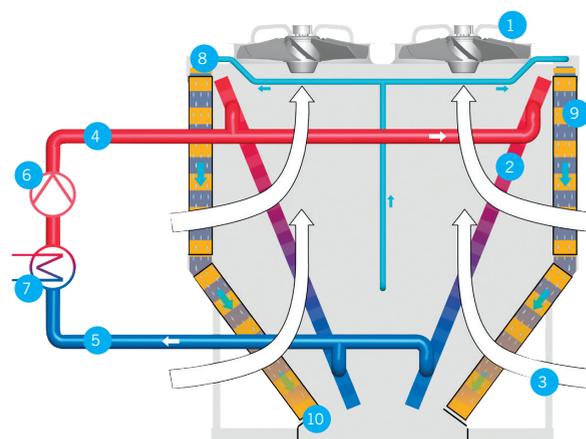
Dry or wet operation

Adiabatic operating principle

JAEGGI hybrid dry coolers can be operated either wet or dry.

Both modes can provide excellent dry cooler performance with a small footprint and low operating costs. The cooling limit, i.e. the theoretically best possible return temperature for the ADC Hybrid Blue® is tied to the wet bulb temperature of the ambient air at the dry cooler.

Our experts will configure the ADC Hybrid Blue® specifically for your application and optimise it for its intended operation in your system. This is the only way of ideally dimensioning the dry coolers and minimising the operating costs of the complete system. Benefit from our experience!



- | | |
|-------------------|--------------------------|
| 1. Fan unit | 6. Primary circuit pump |
| 2. Heat exchanger | 7. Heat source |
| 3. Air flow | 8. Wetting water inlet |
| 4. Coolant flow | 9. Humidification pad |
| 5. Coolant flow | 10. Wetting water outlet |

Technical data for the ADC Hybrid Blue®

Dimensions in metres	2.4 m to 11.9 m (length) x 2.67 m to 2.77 m (width) x 2.85 m (height)
Weight empty, in kg	1,635 kg to 8,119 kg
Heat exchanger design	Floating coil principle
Certification and marks	Quality standard ISO 9001
Transport/delivery	<ul style="list-style-type: none"> • Delivered assembled • Unloaded using moveable lifting lugs • Wrapped in plastic film in inclement weather
Safety	High operational reliability and leak containment thanks the floating coil principle
Maintenance	Easy to maintain, with a cleaning system for the heat exchanger and modular system of wetting units
Installation	<ul style="list-style-type: none"> • Small footprint, high capacity • Modular wetting units, easy switchover to winter operation • Storage of humidification pads at the unit

Environmental Hygiene in Focus

Testing by independent bodies

In pursuit of the highest possible safety compliance of its Advanced Adiabatic Dry Coolers, JAEGGI had the sophisticated design of its units officially inspected by an independent body. Moreover, the sales staff's competence was strengthened and confirmed by a "hygiene training according to VDI 2047 Part 2". JAEGGI naturally takes the requirements of the relevant laws and standards of other countries into consideration too. In particular, JAEGGI has engaged with independent advice from one of the co-authors of ACOP L8 to ensure that their Advanced Adiabatic Dry Coolers remain fully compliant with all current UK guidelines. With these measures JAEGGI offers added value on three levels: Consulting expertise over the entire life cycle of the units; safety through independently tested units; and qualified staff.



Recognised Rules of the Technology

With respect to the environmentally hygienic operation of dry/wet cooling systems

- In Germany, the recognised technical regulations and the VDI guideline 2047-2 have been merged into one document. Furthermore, the latest findings and important notes and templates for the operation and documentation of such cooling systems have been incorporated into the revised VDMA Standard Sheet 24649.
- In UK and Ireland, the established guidelines of ACOP L8 have been supplemented by the issue of HSG274 Part 1. Similar to the VDI, HSG274 Part 2 has an increased requirement for risk-based assessment of each system based on their individual merits. It goes on to provide further differentiation between intrinsically safer dry/



wet hybrid cooling systems and traditional higher risk cooling towers. It advises that cooling systems should be designed and installed with features which minimise legionella risk. These rules ensure that all the information necessary for the hygienically safe operation of cooling systems are available to plant designers, engineers and operators, but also to component suppliers.

Skilled Support through all Life Stages provided by Certified Staff

Moreover, the staff of JAEGGI are skilled in matters of hygiene advice. From the planning phase, with technical advice and documentation, through to a risk analysis for Adiabatic Dry Cooler installation and maintenance. JAEGGI staff are always available with help and advice throughout the lifetime of your equipment. JAEGGI not only attaches specific value to unit examination, but also to the expertise and consulting skills of its employees, not just in service but also in sales. In this regard, together with the service staff, numerous members of the internal sales team, and field staff have successfully undergone „hygiene training according to VDI 2047 Part 2“. This ensures JAEGGI's clients receive expert advice in the hygienic operation of its modern, high-efficiency, dry/wet cooling systems. This certified training is provided only by VDI and approved VDI training partners and is completed with a written exam. JAEGGI thus offers its customers added value on three levels: Consulting expertise over the entire life cycle of the units; safety through independently tested units; and certified staff.

GMM – Energy-Efficient Intelligence for all Areas

The GMM system is available for AC or EC fans. A number of different technologies are used, but one feature is common to all management systems: They are equipped with a number of functions that serve to enhance energy efficiency.

	AC fans			EC fans
	A number of technologies are available for AC fans depending on the application.			Maximum efficiency can be achieved with EC fans and the GMM EC.
	GMM phase cut	GMM f-drive	GMM sincon®	GMM EC
Energy efficiency	Cooling circuit ● ● ● ● ○	Cooling circuit ● ● ● ● ●	Cooling circuit ● ● ● ● ●	Cooling circuit ● ● ● ● ●
	Speed controller ● ○ ○ ○ ○	Speed controller ● ● ● ● ○	Speed controller ● ● ● ● ○	Speed controller ● ● ● ● ●
Controller	Precision ● ● ● ● ○	Precision ● ● ● ● ●	Precision ● ● ● ● ●	Precision ● ● ● ● ●
	Noise ● ○ ○ ○ ○	Noise ● ● ● ● ○	Noise ● ● ● ● ○	Noise ● ● ● ● ●
Investment	Investment costs ● ● ● ● ○	Investment costs ● ● ● ○ ○	Investment costs ● ● ● ○ ○	Investment costs ● ● ● ○ ○
	Service life ● ● ● ○ ○	Service life ● ● ● ● ○	Service life ● ● ● ● ●	Service life ● ● ● ● ●
				

● ○ ○ ○ ○ not so good ● ● ● ● ● very good

HYBRIMATIC – Intelligent control saves operating costs

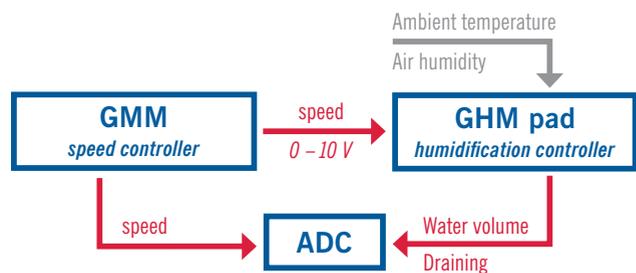
The efficient operation of hybrid dry coolers depends very much on the intelligence and strategy of their functional control. The built-in control continually controls all the significant parameters and automatically adapts the operating mode to the current system state. This guarantees a smooth and efficient unit operation and compliance with the predicted consumption values.

The HYBRIMATIC is designed as a programmable logic controller and allows for:

- Control the cooling water outlet temperature
- Wetting water management
- Output of operational and fault signalling
- Communication with building management systems

Customer benefits from our controller

- Optimised operation of individual units
- Parameters can easily be set for ideal use in a variety of applications
- Low operating costs
- Easily integrated into your building management system by conveying operational messages via contacts or a bus system
- Easy to install, supplied ready for connection
- Compact, adaptable and expandable



Optional equipment for your Hybrid Blue®



AxiTop Diffuser

The AxiTop diffuser improves airflow at the fan outlet. This accessory makes it easier to overcome the pressure drop at the air-side. With skillfully adapted geometry the fan can achieve the same performance at lower speed. Lowering the speed reduces both noise emissions and power consumption.



Epoxy coating

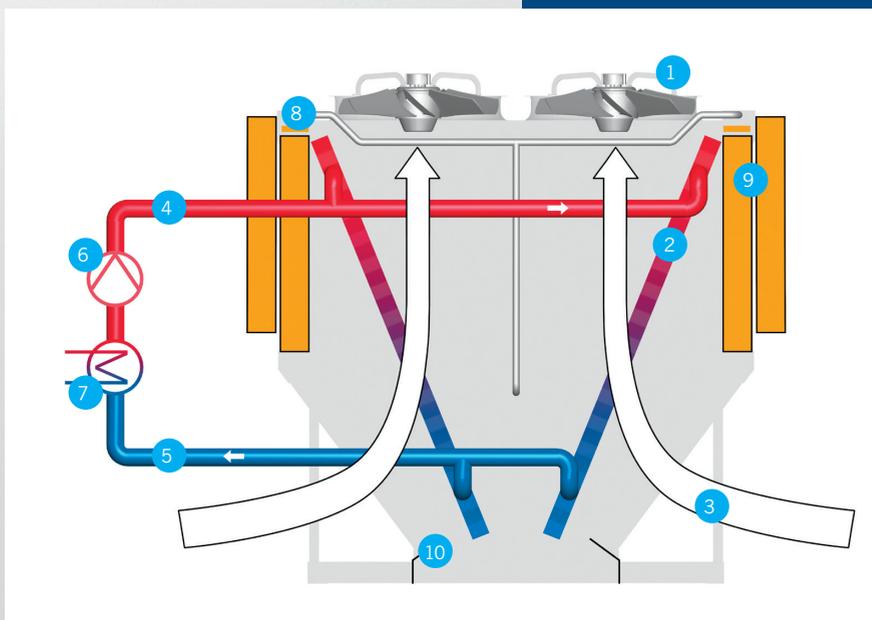
The service life of finned heat exchanger depends very much on the concentrations of the various substances in the air, and hence the application. The service life of these heat exchangers can be significantly increased by using epoxy-coated fins. Epoxy resin is a thermosetting plastic which, once hardened, exhibits high strength and chemical resistance.



Multifunctional use of humidification pads

Dry operation without humidification pads

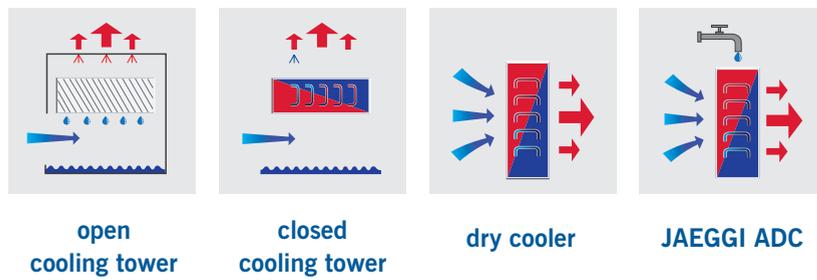
- Humidification pads can be installed to reduce energy consumption
- Reduced pressure loss, leading to savings of up to 10 %.
- Easily removed for dry operation
- Pads are relocated on the cooler, no need to store them elsewhere
- Frames protect the pads from damage
- Very low water consumption because dry/wet switchover is set at a high level
- With no wetting of the heat exchanger it operates like a conventional finned dry cooler
- Energy is dissipated to the ambient air by convection



1. Fan unit
2. Heat exchanger
3. Air flow
4. Coolant supply
5. Coolant return
6. Pump for primary circuit
7. Heat source
8. Wetting water inlet
9. Humidification pads
10. Wetting water outlet

Comparison

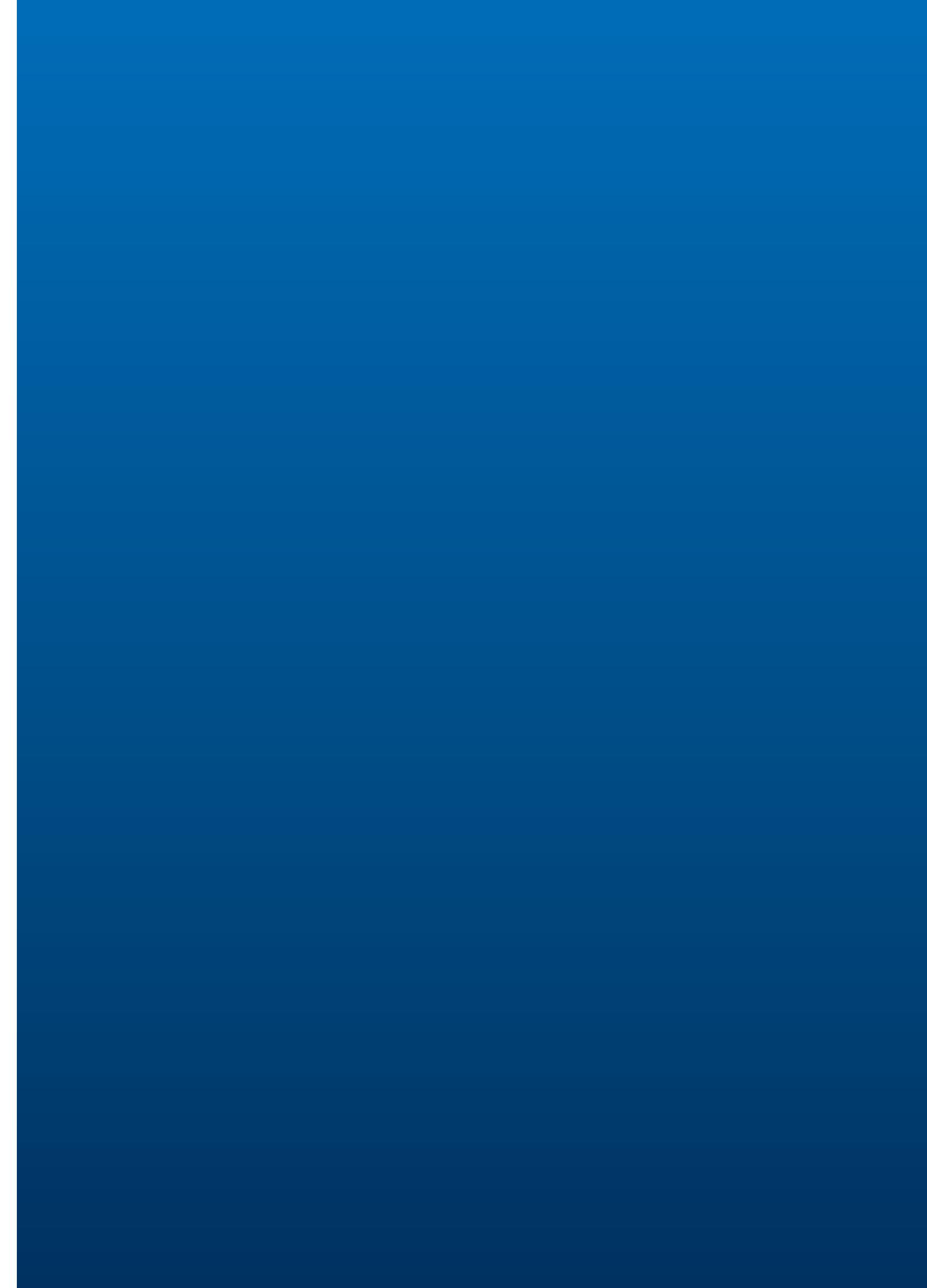
Comparison of the available cooling technologies according to a number of criteria:



	open cooling tower	closed cooling tower	dry cooler	JAEGGI ADC
Low-temperature cooling water	++++	+++●	+●●●	+++●
No introduction of contamination	+●●●	++++	++++	++++
Low energy consumption	+++●	+++●	++●●	++++
Low water consumption	+●●●	+●●●	++++	+++●
No aerosols or vapour plumes	+●●●	+●●●	++++	++++
Low sound level	+●●●	+●●●	++●●	+++●
Investment costs	++++	+++●	+●●●	+●●●

+ ● ● ● ● not so good

++++ very good



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