HYDAC INTERNATIONAL

HYDAC WGK
Closed cooling circuits for hydropower plants

EN 10.106.10.0/03.21

Water-glycol cooling circuits (WGK) for hydropower plants (up to 30 MW)

YOUR PROFESSIONAL PARTNER

With over 9500 employees worldwide, HYDAC is one of the leading suppliers of fluid power, hydraulic and electronic equipment.

More than 50 subsidiaries and over 500 sales and service partners guarantee competent on-site service – wherever you need our support. Our wide range of products, combined with our expertise in development, manufacturing, sales and service, allows HYDAC to provide comprehensive fluid conditioning concepts - from individual filter components to the complete system.

When energy is transported and converted, there are losses in the form of heat. The task of cooling systems is to dissipate this heat. Efficient cooling systems can prevent damage and increased wear, enabling Life Cycle Costs to be reduced.

HYDAC Cooling's product range includes coolers, heat exchangers and cooling systems for almost all industries and applications.

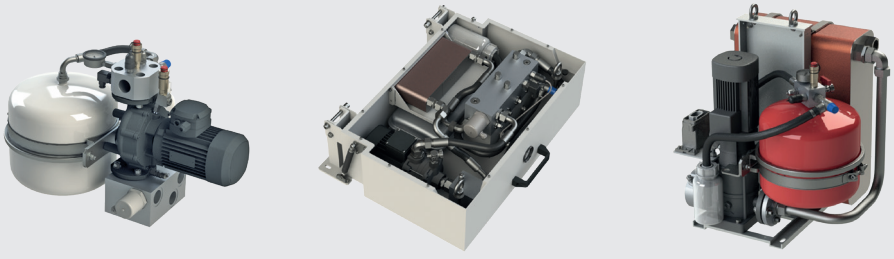
OUR SOLUTIONS FOR YOU

The HYDAC WGK is a compact system for closed cooling circuits which work with coolants such as water-glycol or water. It primarily consists of a motor-pump unit, an expansion tank and other sensors. The WGK has a modular structure and can be supplemented with additional components according to requirements. The coolant is normally recooled via heat exchangers positioned underwater or via additional air coolers and plate heat exchangers.

- Modular cooling system, tailored to the desired flow rate
- Optional redundant motor-pump unit for increased availability and safety
- Optional 3/2 way mixing valve to keep the coolant at a constant temperature
- Use of reliable and tried-and-tested components

YOUR BENEFITS

- Compact and particularly low-maintenance system
- Planning is easier due to its consistent design
- Quick and easy pressure vessel testing with low coolant loss
- Continuous development and optimisation



HYDAC WGK in various versions

NOTE

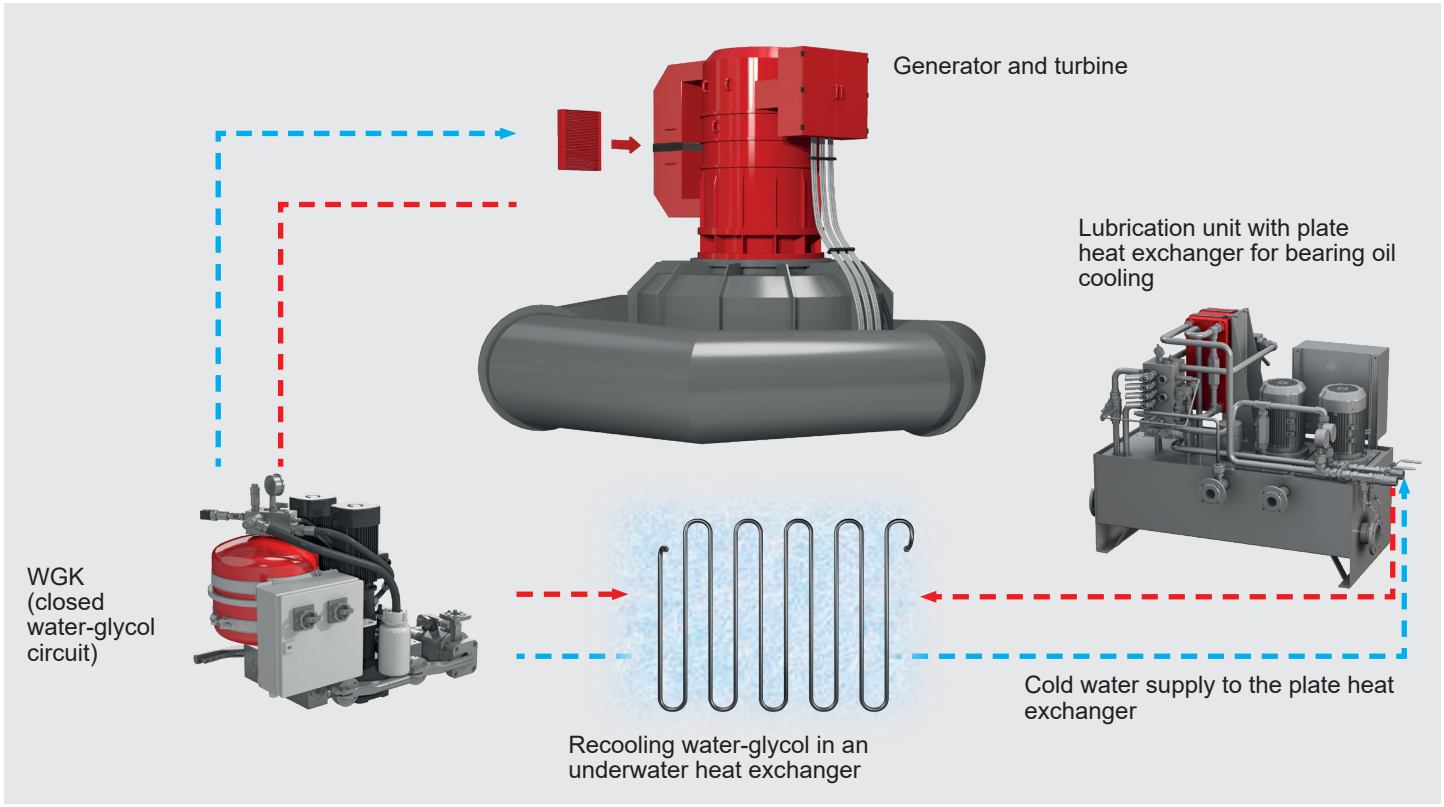
The information in this brochure relates to the operating conditions and applications described.

For applications or operating conditions

not described, please contact the relevant technical department.

Subject to technical modifications.

1. APPLICATIONS IN HYDROPOWER PLANTS



COOLING IN HYDROPOWER PLANTS

When energy is generated hydropower plants, heat losses arise due to copper windings and bearings heating up. To increase efficiency, keep bearing shells at a constant temperature and prevent other damage and increased wear (e.g. on the generator), the following cooling applications are necessary:

- Generator cooling
- Bearing oil cooling
- Control oil cooling

2. TECHNICAL DATA

Coolant	● Water ● Water-glycol mixture
Ambient temperature T_∞	up to 60 °C
Flow rate	50, 100, 300, 500, 750, 1500 l/min
Max. pressure	6 bar

3. DESIGN AND FUNCTIONALITY OF THE HYDAC WGK

MAIN COMPONENTS OF THE WGK

Version with single pump

Version with double pump

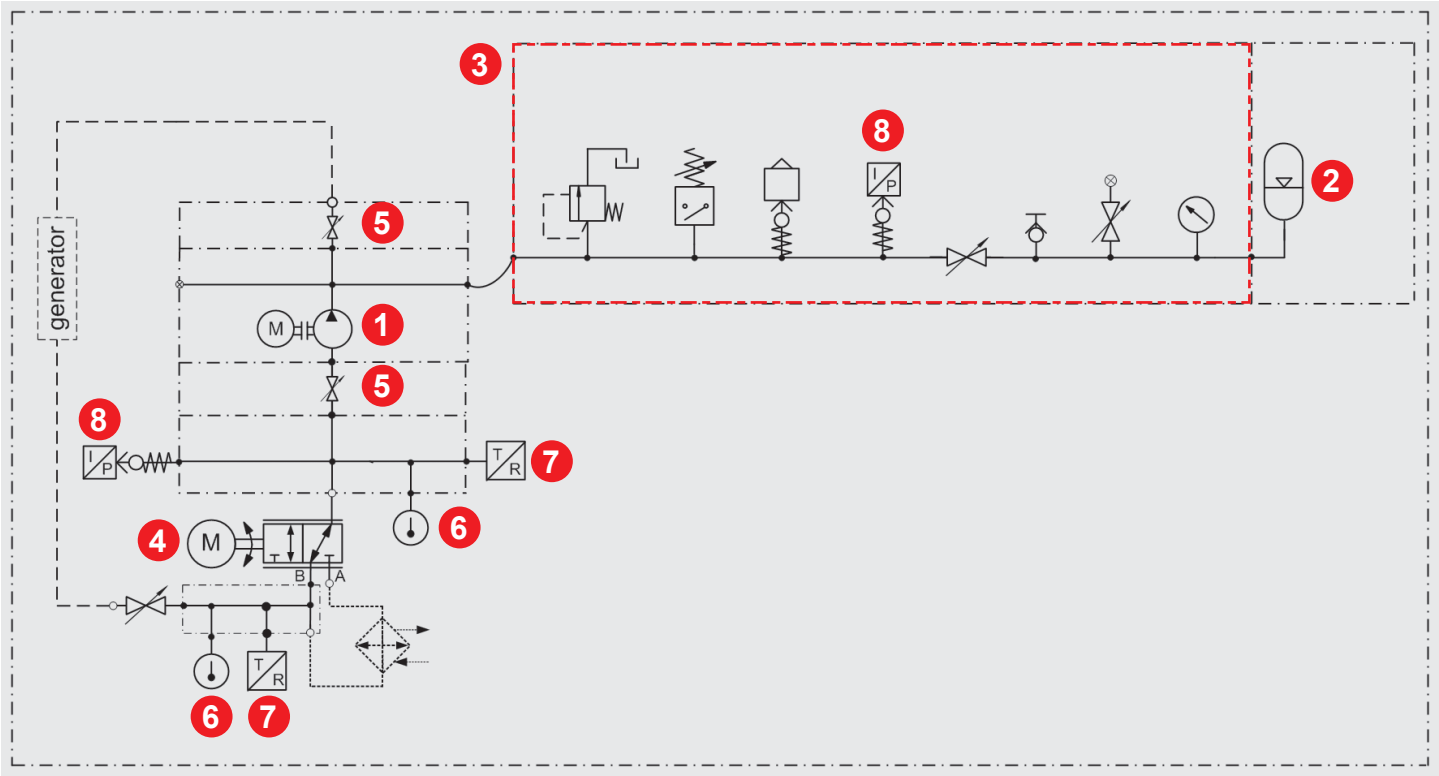
1 Pump
Single pump
Double pump
(as a redundant system)
Displacement: 50…1500 l/min

2 Expansion tank

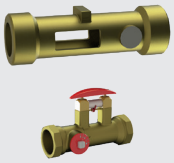
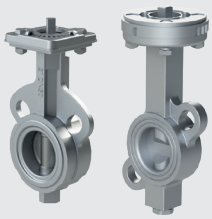
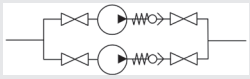
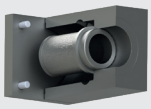
3 Block with pressure relief valve, pressure switch, automatic venting valve, pressure gauge, cap valve, filling port, gauge port

- Optional stainless steel version:
  All surfaces that are in contact with the coolant are made in stainless steel (VA)

The basic unit can be supplemented and expanded with additional functions by selecting the options presented in this brochure. Your HYDAC contact will work with you to select the components which are suitable for your application and desired flow rate.



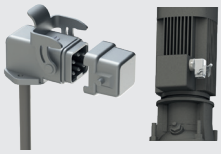
HYDRAULIC OPTIONS

4		3/2 way mixing valve Supply voltage: 230 V AC / 24 V DC Signal: 4...20 mA / 0...10 V
OR		Balancing valve
OR		Ball valves
5		Butterfly valves Use in single pump:  Use in double pump: Changing the motor and the seals or replacing the whole pump during operation (when mounted on pump base) 
OR		Strainer 
OR		MAG drive (magnetically coupled pump instead of wear-prone shaft seal)

SENSORS

6		Temperature gauge
7		Resistance temperature sensor PT100 with optional evaluation electronics
OR		Temperature transmitter ETS
8		Pressure transmitter 1x HDA 2x HDA: Flow rate measurement via Δp and pump curve
OR		IO-Link sensors with optional master

ELECTRICAL OPTIONS

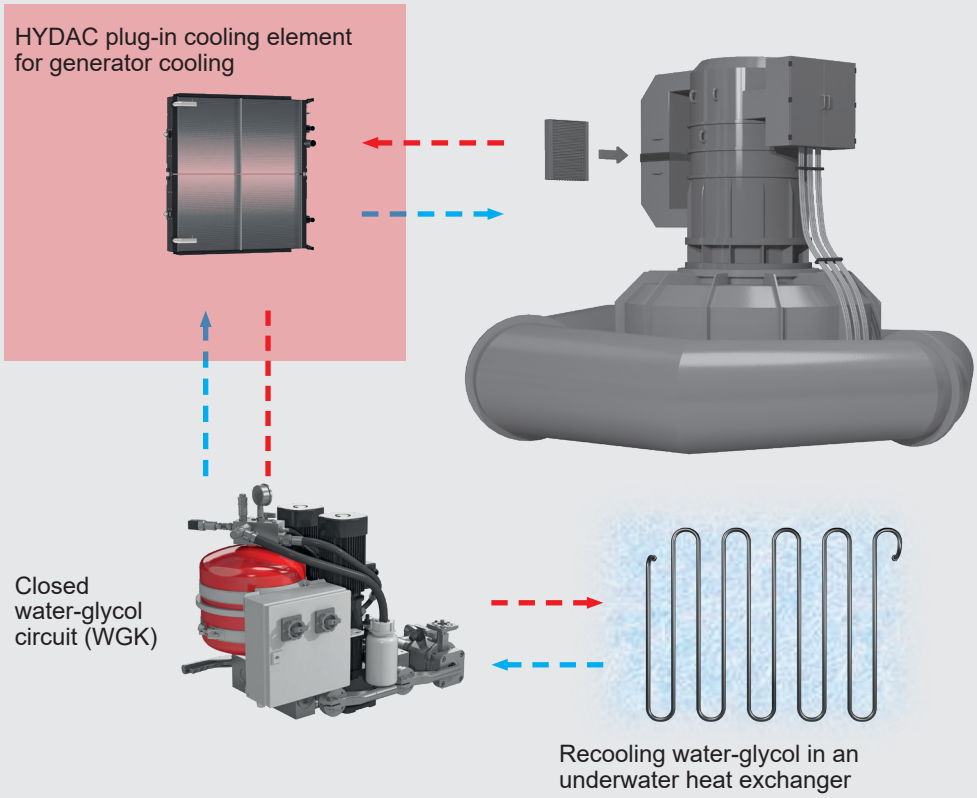
		Terminal box
		Harting connector
		Frequency inverter for speed-controlled pumps

ADDITIONAL COOLING OPTIONS

9		Air cooler
OR		Brazed or gasketed plate heat exchangers for the cooling of lubrication oil or hydraulic oil

HYDAC PLUG-IN ELEMENTS FOR GENERATOR COOLING

Heat exchangers are required to cool the generator. They do this by carrying away the generator's waste heat via the coolant. In this process, the circulating air flows through the heat exchanger where it is cooled.



Your HYDAC contact will work with you to select the right HYDAC plug-in cooling element for your application.

HYDAC WGK and plug-in cooling elements for generator cooling

You can find further information on HYDAC Cooling products on our homepage www.hydac.com

HYDAC WGK CHECK LIST
CLOSED COOLING CIRCUITS FOR THE HYDROPOWER INDUSTRY

Project _____

Company / contact person _____

Telephone _____

E-mail _____

Application _____

_____

Design data

Ambient temperature T_{∞}	min	_____	°C	max _____	°C
Coolant temperature $T_{W/G}$	min	_____	°C	max _____	°C
Operating point:					
● Flow rate		_____	l/min	approx. 50-1500 l/min	
● Pressure		_____	bar	max. 6 bar	
Water-glycol coolant		_____	%	Glycol percentage 0-50 %	
Voltage		_____	Hz	_____	V

Ambient conditions

Location (country) _____

Installation altitude: _____ m

Required corrosion protection class according to DIN EN ISO 12944-2

- ◯ C3 (standard)
- ◯ C4

Basic unit

- ◯ Single pump
- ◯ Double pump (redundant)

Hydraulic options

- ◯ Mixing valve
- ◯ Balancing valve
- ◯ Ball valves
- ◯ Butterfly valves
- ◯ Strainer
- ◯ MAG drive

Electrical options

- ◯ Terminal box
- ◯ Harting connector
- ◯ Frequency inverter

Sensors

- ◯ Temperature gauge
- ◯ Resistance temperature sensor PT100
- ◯ Temperature transmitter ETS
- ◯ 1x pressure sensor with adapter (pressure measurement)
- ◯ 2x pressure sensor with adapter (Q + pressure measurement)
- ◯ IO-Link sensors
- ◯ with additional master for IO-Link

Additional options

- ◯ Air cooler
- ◯ Brazed plate heat exchanger
- ◯ Gasketed plate heat exchanger
- ◯ Plug-in cooling element

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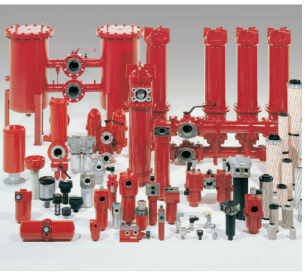
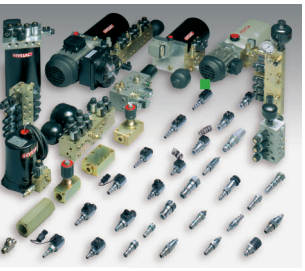
Accumulator Technology 30.000



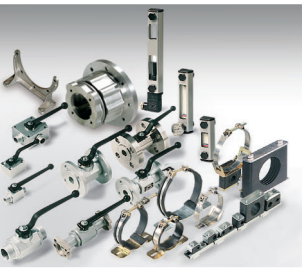
Filter Technology 70.000

Process Technology 77.000

Fluid Service 79.000



Compact Hydraulics 53.000



Accessories 61.000

Electronics 180.000

Cooling Systems 57.000

Global Presence.
Local Expertise.
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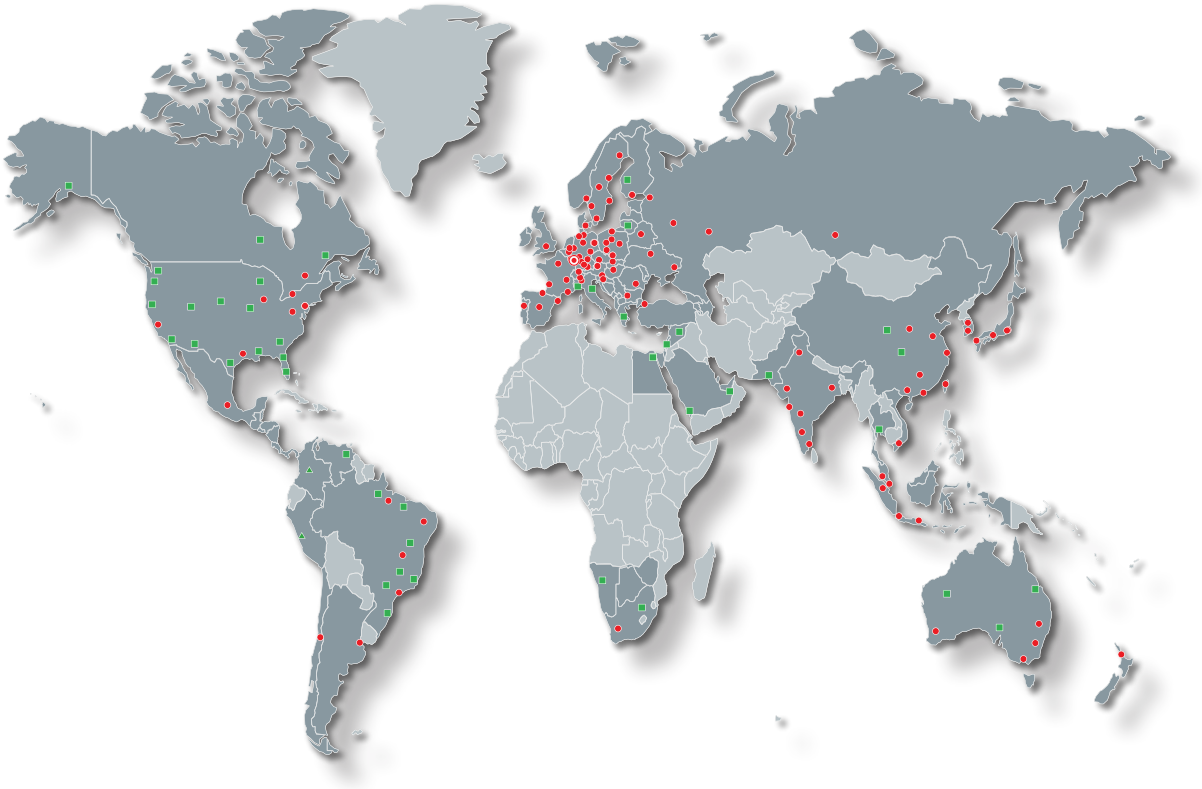

- HYDAC Headquarters
- HYDAC Companies
- HYDAC Sales and Service Partners
- Free Sales Partners

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EN 10.106.10.0/03.21