Water Cooling Station
for Energy Storage Systems

Battery Cooling Station - BCE
Battery Cooling Cabinet - BCC

Battery Cooling Station BCE

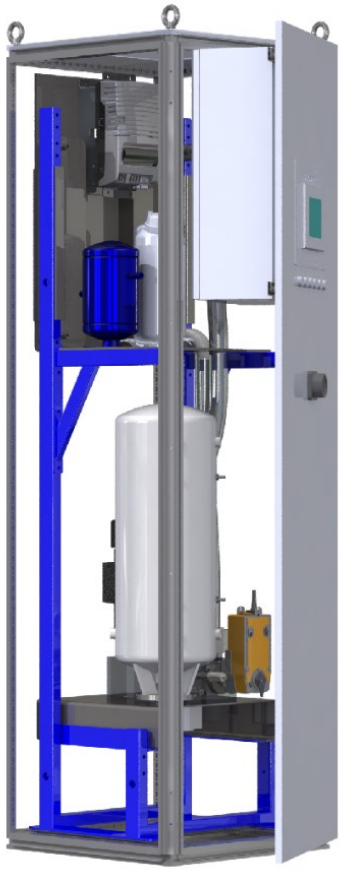
Battery Cooling Station BCE is a closed loop water cooling system for energy storage systems. The station is designed to be easily integrated with the existing cooling circuit. Cooling station is ready assembled in a compact subframe and can be used as an open frame cooling station or to be mounted into an electrical cabinet.

Operation

The cooling station circulates coolant between battery system and heat exchanger. 3-way valve is used to ensure constant temperature. The cooling station is controlled by PLC (with touch screen and Profinet– connection). The cooling station is delivered with an integrated chiller unit when the secondary cooling circuit temperature is too high for the battery cooling application. The cooling station is typically delivered with integrated water to water heat exchanger or with external water to air heat exchanger.

Benefits

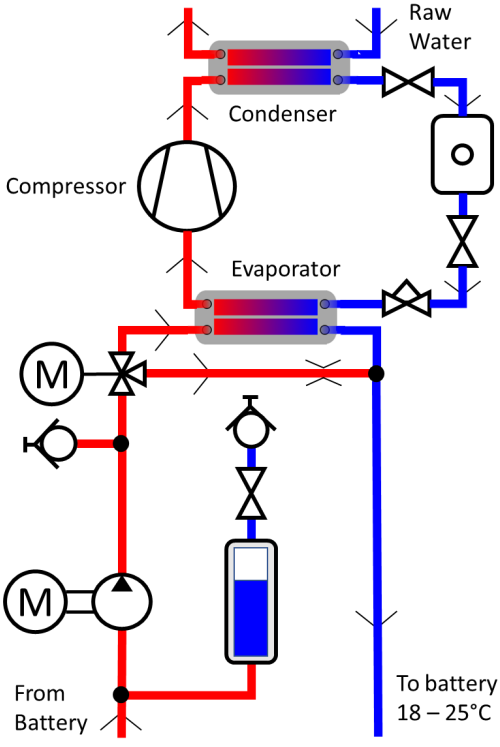
- Easy to integrate with the battery cooling circuit
- Minimum footprint needed - typical installation is inside 600x600x2000 mm cabinet
- Fast and easy commissioning (automatic de-aeration and visual coolant level indication)
- Stainless steel industrial pumps and copper free materials in main coolant circulation ensure long and reliable operation
- Use of hydraulic block technique minimizes the possibility of leaks



Picture 1: BCC in a standard 600x600x2000 mm cabinet

Technical details

Cooling capacity	from 5 kW up to 200 kW (depending on temperature difference)
Condenser unit	Typically stainless steel Titanium available for Sea Water Can be a W2W or W2A heat exchanger
Chiller unit	Integrated chiller unit with compressor
Coolant flow	from 50 up to 1000 l/min
Coolant	Water-glycol mixture
Water Connections	Coolant circulation: BS EN ISO 288-1, int. thread or DN flange for large sizes Raw water: depending on system size
Instrumentation	Temperature sensors (2 pcs) Pressure sensors (2 pcs) Coolant level indicator Coolant level alarms (1 pcs)
Materials	All materials in contact with the coolant are copper free
Other options	Water treatment system (De-Ionizing) available for low conductivity needs Cold water buffer (for compensating high heat loss peaks from cyclic loads)



Picture 2: PI– diagram

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Selection Table 1

Cooling station selection with water to water heat exchanger

Model series BCE, BCC (S=single pump, R=redundant pump)				
Product code	Motor frequency [Hz]	Flow rate range [l/min]	Max. cooling power [kW]	Can be installed into cabinet (W x D x H), mm
BCE54	50	50 - 100	5 - 20	600x600x2000
	60	75 - 130		
BCE103	50	100 - 230	20 - 50	
	60	100 - 270		
BCE153	50	180 - 360	50 - 100	
	60	210 - 450		
BCE322	50	450 - 750	100 - 150	Dimensions depending on system design
	60	450 - 750		
BCE452	50	750 - 1000	150 - 200	
	60	750 - 1000		

Table 2: Pump motor specifications

Pump size	50 Hz		60 Hz	
	El. power	Voltage	El. power	Voltage
5-4	0,85 kW	380-415 V	1,7 kW	380-440 V
10-3	1,1 kW	380-415 V	2,2 kW	380-440 V
15-3	3,0 kW	380-415 V	4,0 kW	380-440 V
32-2	4,0 kW	380-415 V	7,5 kW	380-440 V
45-2	7,5 kW	380-415 V	15 kW	380-440 V

Adwatec product Code Key for BCE/BCC

CODE KEY EXAMPLE	BCE	xxx	S	-	3	-	E	P	D5
Cooling unit									
Pump size (5-4, 10-3, 15-3, ...)									
Number of pumps (S or R)									
Bypass valve									
Heat exchanger (W or E)									
Control									
Voltage and frequency									
Options and Specialities									

Cooling unit type

With or without cabinet, BCC / BCE

Pump size

Look at Selection Table 1

Number of pumps

Single or Redundant — S / R

Bypass valve

3-way valve included — 3

Heat exchanger

External (Water to Air) — E

Water to Water — W

Control / Wiring

Nothing — 0

Connection box (internal wiring made) — C

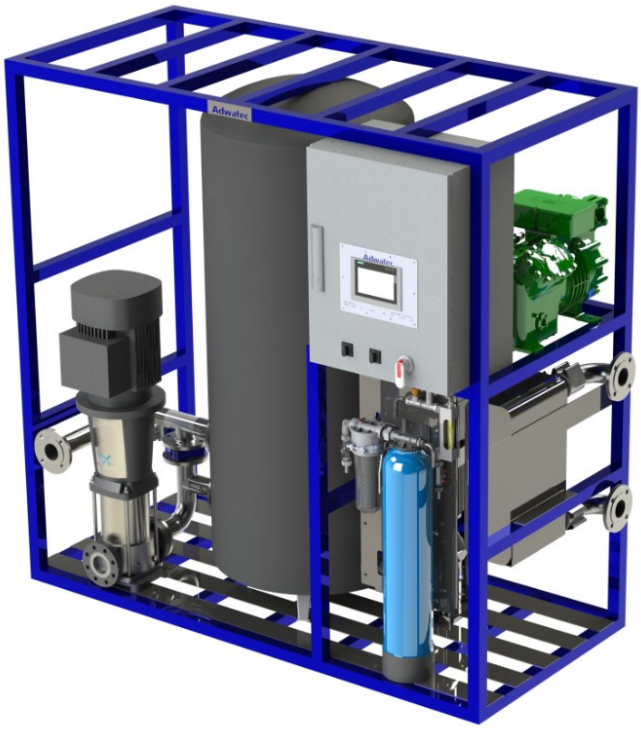
PLC — P

Voltage and frequency

380-415 V, 50 Hz — D5

380-480 V, 60 Hz — E6

600-690 V, 60 Hz — F6



Picture 3: Example picture of a large battery cooling unit to be used e.g. with large Energy Storage Systems installed inside a sea container