

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

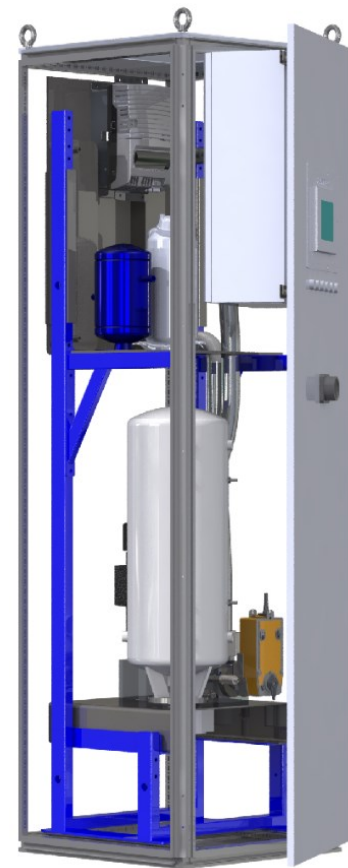
The cooling station circulates coolant between battery system and heat exchanger. 3-way valve is used to ensure constant temperature. The cooling station is controlled by PLC (with touch screen and Profinet– connection). The cooling station is delivered with an integrated chiller unit when the secondary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

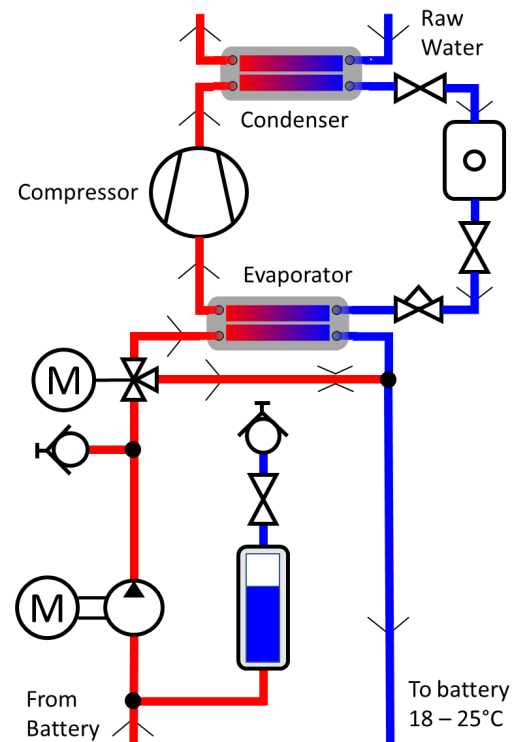
- Easy to integrate with the battery cooling circuit
- Minimum footprint needed - typical installation is inside 600x600x2000 mm cabinet
- Fast and easy commissioning (automatic de-aeration and visual coolant level indication)
- Stainless steel industrial pumps and copper free materials in main coolant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

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 1: BCC54S & C1 in a 600x600x2000mm cabinet



Picture 2: PI– diagram

Water Cooling Station for Energy Storage Systems

Battery Cooling Station - BCE Battery Cooling Cabinet - BCC

Data sheet 2(2)

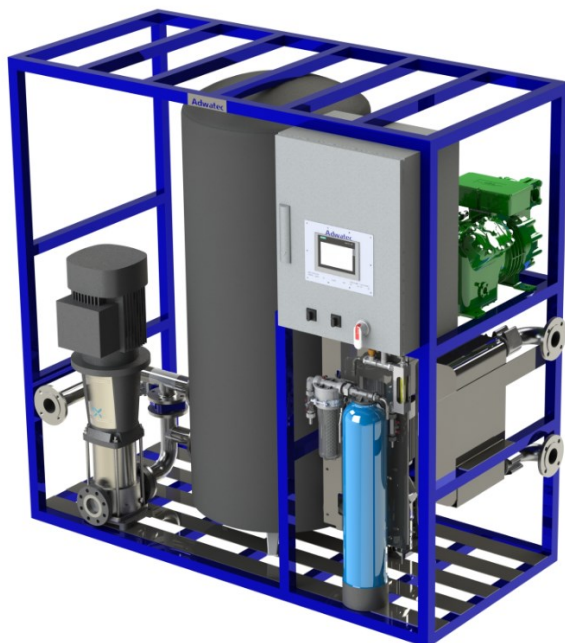
Selection Table 1

Product code	Motor frequency [Hz]	Flow rate range [l/min]	Cabinet size acc. cooling power (see product key)			
			C1	C2	C3	C4
BCE54	50	50 - 100	Size 1	Size 2	Size 3	TBA
	60	75 - 130				
BCE103	50	100 - 230				
	60	100 - 270				
BCE153	50	180 - 360				
	60	210 - 450				
BCE322	50	450 - 650	Size 2	Size 3		
	60	450 - 750				
BCE452	50	750 - 950	TBA			
	60	750 - 1100				

Cabinet size 1 = W600 x D600 x H2200
 Cabinet size 2 = W800 x D800 x H2200
 Cabinet size 3 = W1200 x D800 x H2200

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 (BCE/BCC)	BCE	10x	R	3 -	W -	C1 -	P -	D5 -	0
Cooling unit									
Pump size									
Number of pumps									
Bypass valve									
Heat exchanger									
Cooling power									
Control									
Voltage and frequency									
Cold Buffer									
Cooling unit									
Without cabinet	BCE								
With cabinet	BCC								
Pump size									
Look Table 1									
Number of pumps									
Redundant			R						
Single			S						
Bypass valve									
3-way valve included				3					
Heat exchanger (Condenser)									
Water to air / External					E				
Water to water					W				
Cooling power									
5-20 kW (VFD controlled)						C1			
15-45 kW (VFD controlled)						C2			
40-90 kW (VFD controlled)						C3			
> 90 kW						C4			
Control / Wiring									
Connection box (internal wiring made)							C		
PLC							P		
Note! Chiller controls always included									
Voltage and frequency									
380-415 V, 50 Hz								D5	
380-480 V, 60 Hz								E6	
600-690 V, 50 Hz								F5	
600-690 V, 60 Hz								F6	
Cold water buffer for high peak loads									
No cold water buffer									0
Cold water buffer included (separate cabinet)									B

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