OPTIONS

P2 Pump	P2
P3 Pump	P3
Pressurized water tank	TP
Non ferrous pressurized water circuit (stainless steel water tank)	TPI [1]
Condenser anti-corrosion treatment	OEC
Compressors shut off valves	VSC
Condenser(s) air filter(s)	FP
Free cooling continuos fan(s) speed control - electronic fan(s)	FCE
Electrical switchboard anti-condensation heater	RS
230V electric service socket (in the electric cabinet)	EBS
Gateway for remote communication	ENB
Compressor(s) soft starter(s)	SFS [2]
Electronic controller sun/rain protection	SRP
Compressor(s) acoustic shield(s)	AI1
Flanged water connections kit (EN1092-1)	WC1
Threaded water connections kit (GAS)	WC2
Stainless steel threaded water connections kit (GAS)	WC2I
Control panel roof kit	FPR
Rubber anti-vibration mountings kit (no tank units)	FA1
Rubber anti-vibration mountings kit (units with tank)	FA2
Remote panel kit	ER
Wooden base	PWB
Barrier bag packing	PBB

- [1] TPI refers only to the stainless steel water tank. Other components (free-cooling water manifolds, 3-way valve and pipes) are in cast iron, carbon steel.
- [2] This option is available only if in accordance with the hydraulic and electromechanical options chosen by the customer. Contact our sales offices to confirm the availability

SOME OTHER UNITS AVAILABLE IN OUR PREMIUM LINE

QBE

2 to 25kW
Air-cooled chillers
with rotary and scroll compressors

CWE/HWE

13 to 140kW
Air-cooled scroll compressor
chillers and heat pumps

CFT

100 to 300kW
Air-cooled chillers
with scroll compressor

CDC

300 to 1200 kW
Drycoolers
also adiabatic system available

Архангельск (8182)63-90-72
Астана (7172)727-132
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
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Иркутск (395)279-98-46
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Кемерово (3842)65-04-62
Киров (8332)68-02-04
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Москва (495)268-04-70
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Нижний Новгород (831)429-08-12
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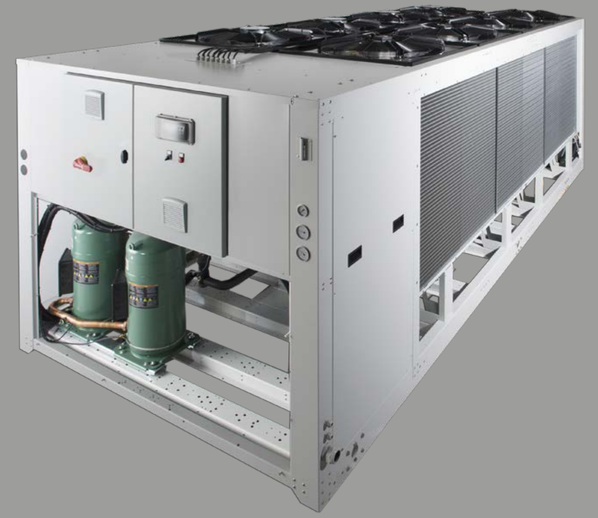
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Тверь (4822)63-31-35
Томск (3822)98-41-53
Тула (4872)74-02-29
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Ярославль (4852)69-52-93

Киргизия (996)312-96-26-47
Россия (495)268-04-70
Казахстан (772)734-952-31

https://friulair.nt-rt.ru/ || fur@nt-rt.ru

FRIULAIR Chillers



CWB FC

AIR-COOLED CHILLERS from 80 to 240 kW

with integrated freecooling

CWB FC

DESCRIPTION

The new CWB FC series is designed specifically for industrial processes. Energy saving and reduced cooling costs are the key benefits of a free cooling integrated chiller. Chiller and free cooling hydraulic sections are completely separated; this allows to maximize the regulation of the two working modes. The range includes 8 models with cooling capacity from 80 kW to 240 kW and it is designed to be installed outdoor.

TECHNICAL DETAILS

REFRIGERATION CIRCUIT

- Manufactured conforming to PED directive 2014/68/EU
- Electronic expansion valve
- Refrigerant solenoid valve
- Sight glass flow indicator
- High and low pressure switch
- High and low pressure gauges and plugs

COMPRESSORS

- Scroll hermetic compressors
- Quiet operation with high efficiency
- Mounted on rubber anti-vibration blocks
- Crankcase heaters as standard
- Phase sequence protection device

CONDENSERS

- Microchannel aluminium coils
- Low refrigerant charge
- Free from risk of galvanic corrosion

FANS (CONDENSER SECTION)

- Axial fans with electronic speed regulation
- Equipped with protection grid and class F insulation

EVAPORATOR

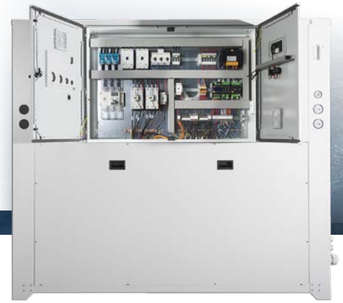
- Copper brazed stainless steel plates heat exchanger
- Compact size with high efficiency
- Antifreeze protection managed by the electronic controller
- Equipped with differential pressure switch

HYDRAULIC CIRCUIT

- Standard models are equipped with a stainless steel brazed plates evaporator without tank and pump
- Three way valve and actuator for free cooling working optimization
- Low and medium head pressure pumps are available as options
- Temperature probes for setpoint control
- Suitable to work with mixtures up to 50% of ethylene glycol

FREE COOLING SECTION

- Copper tubes and aluminium fins water coils
- ON/OFF axial fans



FREE COOLING SYSTEM

The free cooling equipment allows to supply completely or partially the cooling capacity normally performed by the refrigerant cycle. When the external ambient temperature is at least 5K less the water returning from the plant, the free cooling coils can pre-cool or fully cool the water flow. The free cooling operation provides an energy saving which improves as the difference between the water to be cooled and the external ambient temperature increases.

SUMMER MODE - FREE COOLING OFF

During the summer months and when the ambient temperature is higher than the temperature of the water returning from the plant, the CWB FC unit works like a traditional chiller.

INTERMEDIATE MODE - FREE COOLING + CHILLER

When the ambient temperature is lower than the temperature of the water returning from the system, the CWB-FC unit will operate in partial free cooling mode. The water returning from the system passes first through the exchangers dedicated to free cooling and then through the evaporator. If the cooling capacity provided by free cooling is not sufficient, the electronic controller will switch on the compressors.

WINTER MODE - 100% FREE COOLING

During the cold seasons and when the ambient temperature is lower than the temperature of the water returning from the plant, the CWB FC can work in free cooling mode up to 100%.

		CWB FC	100	135	150	160	190	225	255	285
PERFORMANCES 15/10@30	[1]									
Cooling capacity		[kW]	86.06	109.26	119.67	134.71	158.66	194.13	228.94	244.54
PERFORMANCES 12/7@35	[2][3]									
Cooling capacity		[kW]	76.83	97.60	106.85	119.98	141.24	173.23	203.43	217.52
Compressors power input		[kW]	17.79	26.84	31.50	40.02	38.94	55.52	56.48	69.14
Total power input		[kW]	21.69	30.74	35.40	43.92	44.79	61.37	64.28	76.94
Total absorbed current		[A]	35.72	51.02	58.01	70.35	71.90	99.04	109.10	125.95
Energy efficiency		EER	3.54	3.17	3.02	2.73	3.15	2.82	3.16	2.83
Seasonal energy performance ratio	[*]	SEPR HT	5.00	5.04	5.01	5.43	5.23	5.27	5.44	5.44
Water flow		[l/h]	13 214	16 788	18 378	20 637	24 294	29 795	34 990	37 414
Evaporator pressure drop		[kPa]	18	28	33	21	29	42	32	36
ELECTRICAL DATA	[3][4]									
Maximum power input (total)		[kW]	32.57	42.69	48.26	58.47	64.71	81.46	89.93	100.50
Maximum absorbed current (total)		[A]	51.86	68.38	76.93	92.70	101.87	130.43	147.22	163.49
Starting current		[A]	174.09	248.35	252.62	259.51	265.67	356.96	346.93	386.07
Fan power (chiller side)		[kW]	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95
Fan current (chiller side)		[A]	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.16
Number of fans (chiller side)		[#]	2	2	2	2	3	3	4	4
Fan power (free cooling side)		[kW]	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90
Fan current (free cooling side)		[A]	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90
Number of fans (free cooling side)		[#]	2	2	2	2	3	3	4	4
Power supply		[V/Ph/Hz]	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
IP protection degree		---	IP54	IP54	IP54	IP54	IP54	IP54	IP54	IP54
TECHNICAL DATA										
N° of compressors		[#]	2	2	2	2	2	2	2	2
N° of refrigerant circuits		[#]	1	1	1	1	1	1	1	1
Air flow (chiller side)		[m³/h]	44 000	44 000	44.000	44.000	66.000	66.000	88.000	88.000
Air flow (Free cooling side)		[m³/h]	44 000	44 000	44.000	44.000	66.000	66.000	88.000	88.000
Sound pressure level	[5]	[dbA]	60.5	60.5	59.5	61.5	61.5	61.5	61.5	61.5
Water connections diameter (Grooved)		[pollici]	3"	3"	3"	3"	3"	3"	3"	3"
Width		[mm]	2 204	2 204	2 204	2 204	2 204	2 204	2 204	2 204
Depth		[mm]	3 004	3 004	3 004	3 004	4 004	4 004	5 004	5 004
Height		[mm]	1 982	1 982	1 982	1 982	1 982	1 982	1 982	1 982
Net weight - standard version		[kg]	1 755	1 755	1 775	1 775	2 225	2 245	2 635	2 635
FREE COOLING PERFORMANCES AT REQUESTED CONDITIONS										
Cooling capacity	[6]	[kW]	79.06	85.90	115.70	119.92	154.78	167.38	225.16	230.06
% of nominal cooling capacity	[1]	---	92	79	97	89	97	86	98	94
FREE COOLING ON 100%										
Cooling capacity	[7]	[kW]	86.06	109.26	119.67	134.71	158.66	194.13	228.94	244.54
Total power input		[kW]	3.80	3.80	3.80	3.80	5.70	5.70	7.60	7.60
% reduction of total power input	[1]	---	-82	-87	-89	-91	-86	-90	-87	-89
Total FC ambient temperature		[°C]	-1.30	-4.00	-0.50	-1.70	-0.30	-2.10	-0.10	-0.70

- [*] Data in accordance with with European Regulation (EU) 2016/2281 for eco-design requirements. They are considered with free cooling = OFF.
- [1] Data referred to: water temp. in/out: 15/10C - ambient air temp. 30°C - Ethylene Glycol 30%
- [2] Data referred to: water temp. in/out: 12/7°C - ambient air temp. 35°C
- [3] Data referred to the unit without pump
- [4] Data related to most the heaviest condition allowed, without the intervention of the safety devices
- [5] Data referred to 10m and at an height of 1,5 m in open field
- [6] Performance at: 0°C ambient temperature, 15°C inlet water temperature and 30% ethylene glycol
- [7] Performance at: 15°C inlet water temperature and 30% ethylene glycol

FREE-COOLING REFERENCE CONDITIONS

- Ambient temperature: 0°C
- Inlet water temperature: 15°C
- Ethylene glycol: 30%

WORKING LIMITS

- Ambient temperature: -10°C / +45°C (min/max)
- Outlet water temperature: -10°C / +25°C (min/max)