

FCI

Closed circuit cooling towers



Key benefits

- Long and reliable service life
- Low energy consumption
- Easy maintenance

Configuration

Counter flow

Fans system

Axial fan, induced draft

Capacity range

Single cell capacity up to 1043 kW.

Water distribution

Pressurised

Maximum entering fluid temperature

82°C

Typical applications

- Small to medium HVAC and industrial applications



Long and reliable service life

- Standard [Baltiplus 800™ corrosion protection construction](#) with **corrossion resistant [fibreglass](#)** side panels will provide a long service life.
- **Direct drive fans** for most models, reducing regularity of service and component replacement.

Low energy consumption

- [Evaporative cooling](#) for system-wide energy saving at lower operating temperatures.
- **Axial fan** uses **half the energy** of similar centrifugal fan units.
- Factory tested **high efficiency coil**.
- **High efficiency/VFD duty fan motors**

Easy maintenance

- **Full cold water basin access** when removing the combined inlet shields.
- Easy no-tool **removal of casing side panels** gives access to heat transfer coil for easy inspection and cleaning.
- **Easy removable** spray branch arms, eliminators and combined inlet shields.
- Easy **access to motor and drives** from above the cooling tower.
- Upgrade the unit with **motor removal davit arm** for quick and safe service of motors and fans.
- **Removable suction strainer** with anti-vortex hood.

Operational safety

- Closed loop or circuit tower, **no airborne contaminants** enter and foul the system
- Easy-to-clean and easy-to-inspect FCI towers **reduce hygiene risks** from bacteria (e.g. Legionella) or biofilm inside
- **Dry operation** possible in winter time.
- **Combined inlet shields** block sunlight to prevent biological growth in the tower, to filter the air and to stop water splashing outside.

Low installation cost

- Reduce rigging time with the **fan plenum section self-aligning** with the coil casing section. Motors and drives are factory installed and aligned.
- All models can **mount directly** on parallel I-beams.
- **Use smaller, less costly** cranes by shipping in multiple sections to minimize the size and weight of the heaviest lift.

Interested in the FCI cooling tower for cooling your process water? Contact your local [BAC representative](#) for more information.



Downloads

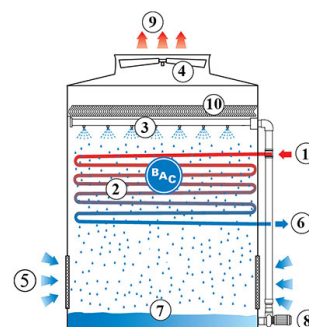
- [FCI closed circuit cooling tower](#)
- [Operating and maintenance ECI-FCI](#)
- [Rigging and Installation ECI - FCI](#)

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Principle of operation

Warm process **fluid (1)** enters through a **heat exchange coil (2)** and gets water sprayed on by the **spray system (3)** at the top of the cooling tower. At the same time the **axial fan (4)** draws ambient **air (5)** upwards through the tower. During operation, heat is transferred to the water, and then to the atmosphere as a portion of the water that evaporates. The cooled process fluid then **exits** the unit **(6)**. The **sump (7)** or basin collects the remaining water. The spray water **pump (8)** recirculates the water back up to the water spray system. The warm saturated **air (9)** leaves the tower through the **drift eliminators (10)**, which remove water droplets from the air.



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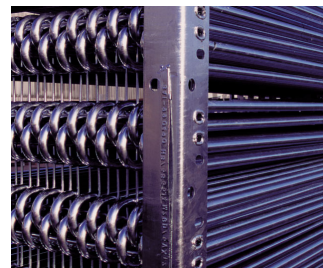
Construction details

1. Material options

- Heavy guage steel is used for the external steel panels and structural elements, featuring the [Baltiplus 800™ material option](#).
- The casing sides panels are made of [FRP \(Fibreglass Reinforced Polyester\)](#) are light and can be easily slid upwards to access the heat exchange coil.
- **Optional** [stainless steel](#) panels and structural elements with type 304L or 316L construction is available for additional corrosion resistance.
- Or the economical alternative: a **water-contact stainless steel cold water basin**. Its key components and the basin itself are stainless steel.

2. Heat transfer media

- Our heat transfer media is a [cooling coil](#). In comprehensive [lab thermal performance tests](#), it showed proved thermal cooler performance and offers you unrivalled system efficiency.
- The coil is constructed of continuous length of prime surface steel, hot-dip galvanized after fabrication. Designed for maximum 10 bar operating pressure according to PER.
- **Sloped tubes** for free drainage of the coil.
- **Optional stainless steel coils** are in type 304L or 316L.



3. Air movement system

- **FCI fan system** features **low kW and noise axial fan(s)** in corrosion resistant aluminum, with polypropylene blades encased within the fan cylinder with removable fan guard.
- Models FCI 18-0 to FCI 180-4 use **multiple independantly driven fans**, providing the user with additional capacity control.
- Larger units use optimally selected **V-belt drives**, furnished with a steel fan shaft and heavy duty ball bearings and extended lubrication lines, this guarantees optimal and year-round operational efficiency. This drive system is encased in a steel with a large access door.
- **Our drift eliminators** come in UV-resistant plastic, which will not rot, decay or decompose. They are assembled in **easily handled and removable sections**, for optimal internal access.
- Easy removable UV-resistant plastic **combined inlet shields** at air inlet, block sunlight to prevent biological growth in tower, filter air and stop water splash-out.

4. Water distribution system

These consist of:

- **Spray branches** with non-clog plastic **nozzles** secured by rubber grommets.
- Easy accessible **sloped cold water basin**, including anti-vortexing steel strainer, make up and overflow connection.
- Close coupled, bronze fitted centrifugal **spray pump** with totally enclosed fan cooled (TEFC) motor.
- Bleed line with metering valve is installed from pump discharge to overflow.

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Options and accessories

Below is a listing of the main FCI options and accessories. If your required option or accessory is not listed, look no further than your [local BAC representative](#).



Platforms, ladders, safety cage and handrail

To inspect and maintain from the top of the unit more **easily and safely**, platforms, a ladder, safety cage and handrails can be installed.



Motor removal davit

Thanks to our factory-installed heaters, the water stays at 4°C and **never freezes**, even during equipments downtime and however cold it gets outside.



Electric water level control package

For perfectly precise water level control, replace the standard mechanical valve with our electrical water level controller.



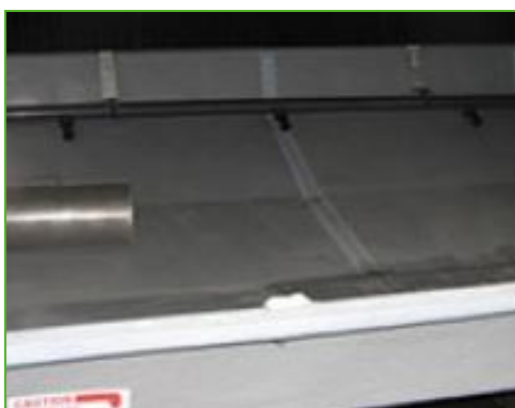
Nitrogen filling of coil

Charge the cooling coil with nitrogen for **anti-corrosion protection** during long shipment periods (ocean freight) or on-site storage.



Standby pump

Install a standby **reserve spray pump** as failure backup!



Sump sweeper piping

Sump sweeper piping **prevents sediment collecting in the cold water basin** of the unit. A complete piping system, including nozzles, is installed in the basin of the condenser **for connection to side stream filtration** equipment.



Filter

Separators and media filters efficiently **remove suspended solids** in the recirculating water, reducing system cleaning costs and optimizing water treatment results. Filtration helps you keep the recirculating water clean.



Motor removal davit

For **easy removal or lifting** of fan motor.



Vibration cut out switch

The switch **detects excessive fan drive vibration** caused by or any mechanical fault.



Water treatment equipment

Devices to control water treatment are needed to ensure proper **cooling tower water care**. Not only does this help protect the components and fill pack, controlling corrosion, scaling and fouling, it also avoids the proliferation of harmful bacteria, including **legionella**, in the recirculating water.



Flanges

Flanges facilitate **piping connections** on-site.



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Engineering data

REMARK: Do not use for construction. Refer to factory certified dimensions & weights. This page includes data current at time of publication, which should be reconfirmed at the time of purchase. In the interest of product improvement, specifications, weights and dimensions are subject to change without notice.

Last update: 23/07/2019

FCI 18-215

| Model | Weights (kg) | | | Dimensions (mm) | | | Air Flow (m³/s) | Fan Motor (kW) | Water Flow (l/s) | Pump Motor (kW) | Coil Volume (L) |
|-------------------|-------------------------|-------------------------|-----------------------------|-----------------|------|------|--------------------|-------------------|---------------------|-----------------------|-----------------------|
| | Oper. Weight (kg) | Ship. Weight(kg) | Heaviest Section (kg) | L | W | H | | | | | |
| FCI 18-0 | 1270 | 720 | 540 | 1890 | 1090 | 2470 | 4.6 | (2x) 1.1 | 4.7 | (1x) 0.37 | (1x) 98 |
| FCI 18-1 | 1450 | 900 | 720 | 1890 | 1090 | 2715 | 5.0 | (2x) 1.1 | 4.7 | (1x) 0.37 | (1x) 140 |
| FCI 18-2 | 1600 | 1080 | 900 | 1890 | 1090 | 2855 | 4.8 | (2x) 1.1 | 4.7 | (1x) 0.37 | (1x) 182 |
| FCI 18-3 | 1700 | 1220 | 1040 | 1890 | 1090 | 3075 | 5.5 | (2x) 1.1 | 4.7 | (1x) 0.37 | (1x) 224 |
| FCI 27-1 | 2380 | 1600 | 1385 | 2880 | 1090 | 2800 | 7.6 | (2x) 2.2 | 7.1 | (1x) 0.55 | (1x) 205 |
| FCI 27-2 | 2400 | 1620 | 1385 | 2880 | 1090 | 3035 | 6.8 | (2x) 2.2 | 7.1 | (1x) 0.55 | (1x) 269 |
| FCI 27-3 | 2630 | 1840 | 1605 | 2880 | 1090 | 3280 | 7.1 | (2x) 2.2 | 7.1 | (1x) 0.55 | (1x) 333 |
| FCI 36-2 | 2400 | 1620 | 1385 | 3800 | 1090 | 3035 | 10.4 | (3x) 2.2 | 9.6 | (1x) 0.75 | (1x) 356 |
| FCI 36-3 | 2630 | 1840 | 1605 | 3800 | 1090 | 3280 | 10.9 | (3x) 3.0 | 9.6 | (1x) 0.75 | (1x) 442 |
| FCI 36-3 CE | 2630 | 1840 | 1605 | 3800 | 1090 | 3280 | 9.9 | (3x) 2.2 | 9.6 | (1x) 0.75 | (1x) 442 |
| FCI 50-1 | 4490 | 2440 | 2110 | 3800 | 1474 | 3095 | 15.6 | (3x) 3.0 | 13.9 | (1x) 1.5 | (1x) 402 |
| FCI 50-2 | 4880 | 2810 | 2450 | 3800 | 1474 | 3330 | 14.6 | (3x) 3.0 | 13.9 | (1x) 1.5 | (1x) 515 |
| FCI 50-3 | 5270 | 3180 | 2790 | 3800 | 1474 | 3575 | 15.7 | (3x) 3.0 | 13.9 | (1x) 1.5 | (1x) 638 |
| FCI 50-4 | 5660 | 3550 | 3130 | 3800 | 1474 | 3815 | 16.9 | (3x) 3.0 | 13.9 | (1x) 1.5 | (1x) 762 |
| FCI 70-1 | 5800 | 3600 | 2900 | 3800 | 2020 | 3160 | 17.9 | (3x) 3.0 | 19.2 | (1x) 2.2 | (2x) 278 |
| FCI 70-2 | 6350 | 4150 | 3400 | 3800 | 2020 | 3400 | 20.8 | (3x) 3.0 | 19.2 | (1x) 2.2 | (2x) 356 |
| FCI 70-3 | 7000 | 4800 | 4100 | 3800 | 2020 | 3640 | 22.9 | (3x) 3.0 | 19.2 | (1x) 2.2 | (2x) 442 |
| FCI 70-4 | 7600 | 5400 | 4700 | 3800 | 2020 | 3880 | 22.2 | (3x) 4.0 | 19.2 | (1x) 2.2 | (2x) 527 |
| FCI 105-1 | 8670 | 5370 | 4440 | 5640 | 2020 | 3330 | 34.0 | (4x) 4.0 | 29.0 | (1x) 4.0 | (2x) 410 |
| FCI 105-2 | 9500 | 6200 | 5270 | 5640 | 2020 | 3565 | 33.5 | (4x) 4.0 | 29.0 | (1x) 4.0 | (2x) 532 |
| FCI 105-3 | 10460 | 7160 | 6100 | 5640 | 2020 | 3745 | 32.1 | (4x) 4.0 | 29.0 | (1x) 4.0 | (2x) 661 |
| FCI 105-4 | 11420 | 8120 | 6930 | 5640 | 2020 | 3990 | 30.8 | (4x) 4.0 | 29.0 | (1x) 4.0 | (2x) 790 |
| FCI 95-2 | 8330 | 5170 | 4080 | 3800 | 2470 | 3845 | 27.6 | (2x) 11.0 | 25.2 | (1x) 2.2 | (2x) 448 |
| FCI 95-3 | 9000 | 5840 | 4750 | 3800 | 2470 | 4080 | 26.7 | (2x) 11.0 | 25.2 | (1x) 2.2 | (2x) 556 |
| FCI 95-4 | 9670 | 6510 | 5420 | 3800 | 2470 | 4315 | 26.2 | (2x) 11.0 | 25.2 | (1x) 2.2 | (2x) 664 |
| FCI 145-1 | 11530 | 5130 | 6780 | 5640 | 2470 | 3610 | 32.7 | (3x) 7.5 | 38.5 | (1x) 4.0 | (2x) 506 |
| FCI 145-2 | 12530 | 7780 | 6130 | 5640 | 2470 | 3845 | 31.7 | (3x) 7.5 | 38.5 | (1x) 4.0 | (2x) 669 |

| | | | | | | | | | | | |
|--------------|-------|-------|-------|------|------|------|------|--------------|------|-------------|--------------|
| FCI 145-3 | 13600 | 8780 | 7130 | 5640 | 2470 | 4080 | 35.2 | (3x) 11.0 | 38.5 | (1x) 4.0 | (2x) 832 |
| FCI 145-4 | 14600 | 9730 | 8130 | 5640 | 2470 | 4315 | 34.1 | (3x) 11.0 | 38.5 | (1x) 4.0 | (2x) 995 |
| FCI 120-1 | 10750 | 5550 | 4200 | 3800 | 3040 | 3585 | 30.1 | (2x) 5.5 | 30.8 | (1x) 4.0 | (2x) 440 |
| FCI 120-2 | 11650 | 6450 | 5100 | 3800 | 3040 | 3820 | 32.4 | (2x) 7.5 | 30.8 | (1x) 4.0 | (2x) 567 |
| FCI 120-3 | 12550 | 7350 | 6000 | 3800 | 3040 | 4080 | 27.7 | (2x) 7.5 | 30.8 | (1x) 4.0 | (2x) 704 |
| FCI 120-4 | 13450 | 8200 | 6850 | 3800 | 3040 | 4340 | 31.0 | (2x) 7.5 | 30.8 | (1x) 4.0 | (2x) 840 |
| FCI 180-1 | 16250 | 8450 | 6450 | 5640 | 3040 | 3585 | 44.4 | (3x) 5.5 | 30.8 | (1x) 4.0 | (2x) 651 |
| FCI 180-2 | 17450 | 9650 | 7650 | 5640 | 3040 | 3820 | 50.0 | (3x) 7.5 | 30.8 | (1x) 4.0 | (2x) 847 |
| FCI 180-3 | 18750 | 10850 | 8850 | 5640 | 3040 | 4080 | 49.1 | (3x) 7.5 | 30.8 | (1x) 4.0 | (2x) 1052 |
| FCI 180-4 | 19950 | 12050 | 10050 | 5640 | 3040 | 4340 | 52.0 | (3x) 11.0 | 30.8 | (1x) 4.0 | (2x) 1258 |
| FCI 144-2 | 18600 | 9580 | 7050 | 3800 | 3625 | 3935 | 38.6 | (1x) 18.5 | 39.1 | (1x) 4.0 | (2x) 686 |
| FCI 144-3 | 19830 | 10470 | 7960 | 3800 | 3625 | 4170 | 40.2 | (1x) 22.0 | 39.1 | (1x) 4.0 | (2x) 851 |
| FCI 144-4 | 21050 | 11090 | 8860 | 3800 | 3625 | 4405 | 39.4 | (1x) 22.0 | 39.1 | (1x) 4.0 | (2x) 1015 |
| FCI 215-1 | 20160 | 9760 | 7790 | 5640 | 3625 | 4245 | 59.4 | (1x) 22.0 | 56.8 | (1x) 4.0 | (2x) 774 |
| FCI 215-2 | 22200 | 11290 | 8820 | 5640 | 3625 | 4480 | 57.9 | (1x) 30.0 | 56.8 | (1x) 4.0 | (2x) 1024 |
| FCI 215-3 | 23800 | 12380 | 9850 | 5640 | 3625 | 4715 | 62.3 | (1x) 30.0 | 56.8 | (1x) 4.0 | (2x) 1272 |
| FCI 215-4 | 25390 | 13460 | 10880 | 5640 | 3625 | 4950 | 60.4 | (1x) 37.0 | 56.8 | (1x) 4.0 | (2x) 1521 |