

ATM OPEN COOLING TOWER

ATIM HYBRID OPEN CIRCUIT COOLING TOWER

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Modular Open circuit Cooling tower **ATM – ATIM** series

JACIR

With more than 60 years of experience, our company:

- Has invested in detailed research and development in order to propose technical solutions according to the environmental protection through unsurpassed achievements and many patents.
- Is, today, the European leader thanks to its technology beyond market requirements.

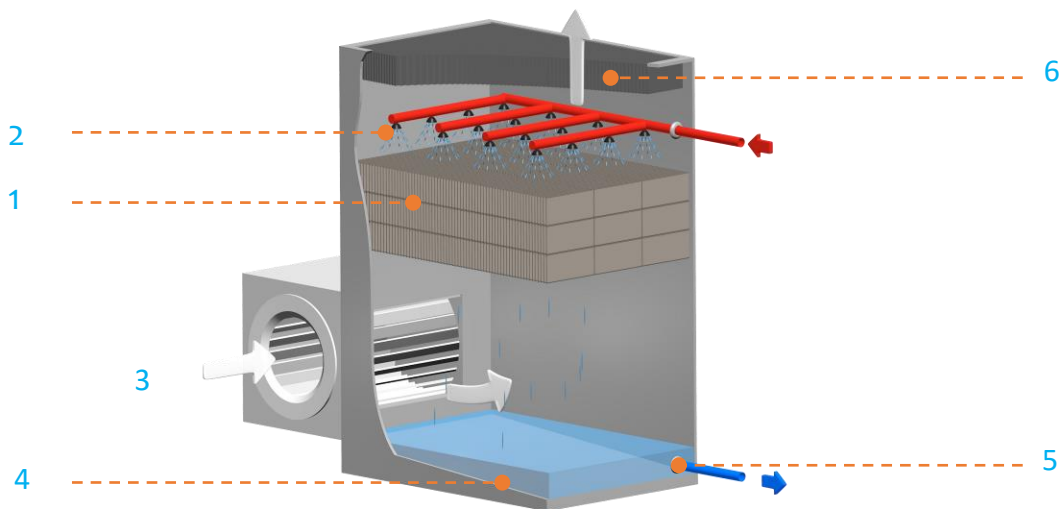
STRONG ADVANTAGES OF MODULAR **ATM- ATIM** SERIES

- **SAFE and HYGIENIC** Tower design compliant with NF E 38-424 and VDI 2047-2 standards relating to hygienic risks.
- **TIGHTNESS** Thanks to our assembling technology, we guarantee no leak equipment.
- **SILENCE** Very silent cooling towers in standard version, can be adapted according to requirements.
- **EXCHANGE SURFACE** Resistant up to 75°C as standard, its excellent thermal efficiency promotes energy savings.
- **ANTICORROSION COATING** Casing of the tower is assembled without any welding, also proposed in **X-STEEL** stainless steel.
- **EASY MAINTENANCE** Large access doors, fan outside the tower and at man height, inclined and plane basin for a complete drain.
- **LOW PROFILE** m 2,37 for the whole range without option.
- **ELECTRICAL POWER** Fully optimized.
- **EVOLUTIVE TOWER** Possibility to increase the exchanged power by addition of plates (CRF range). Possibility to add a plume suppression coil further on (ATIM or CRIM ranges). Possibility to lower the sound level without increasing the motor power.
- **MODULAR CONSTRUCTION** Easy handling and transport.

Open circuit Cooling Tower Principle: ATM series

A cooling tower is a heat exchanger, which enables water to be cooled through direct contact with air. The heat transfer from the water to the air is carried out partly by sensible heat transfer, but mainly by latent heat transfer (evaporation of part of the water into the air), which makes it possible to reach cooling temperatures lower than ambient temperatures.

Operation:



To be cooled, the hot water is pumped to the top of the tower through pipes. This water is divided and distributed over the heat exchange surface (1) by low pressure water distribution nozzles (2).

Blown by the fan (3), the fresh air enters into the lower section of the unit and escapes through the upper section after being heated and saturated by passing through the wetted heat exchange surface.

As a result of surface tension, due to the exchange surface mesh, the water spreads in uniform way, falls down the whole height. The exchange surface is then increased.

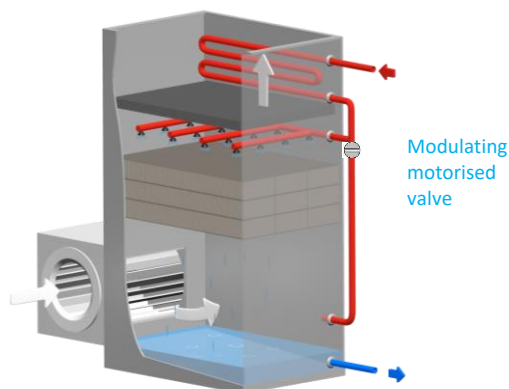
Cooled thanks to forced ventilation, the water falls into the inclined basin (4) at the bottom of the tower. It is then, suck in through the strainer (5). Droplet separators (6) are placed in the air outlet to limit bladder training.

Hybrid Open circuit Cooling Tower Principle: ATIM series

Standard ATM open circuit cooling tower ranges have originally been designed to receive the plume abatement coil option; these ATM ranges are then referred to as ATIM open hybrid Cooler range. Their efficiency is ensured by a finned tube coil combined with a valve for adjusting the water spray on the exchange surface (packing). This water flow regulation over the exchange surface is a market exclusivity, JACIR patent. Therefore, the combination of the air desaturation by air outlet warming up, and the reduction of the water spray on the packing, ensures the complete plume suppression. Beyond the plume suppression itself, this system can provide significant water savings and is an ultimate obstacle to the drifts. This technology proposed by JACIR has been deeply researched in partnership with the CETIAT for over 50 years, and has offered the opportunity to file innovating patents. Their design makes access and cleaning very easy and ensures performance durability.

Operation:

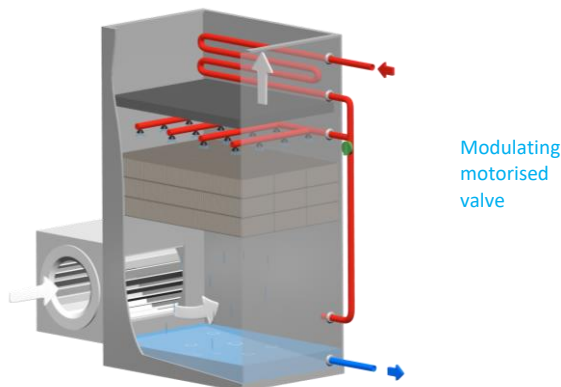
Dry operation: WINTER



The by-pass valve is totally open, so the whole water flow leaves directly the tube coil to the basin: there is no water spray on the packing, no water evaporation, so no water consumption.

The whole power can be dissipated through the plume suppression coil.

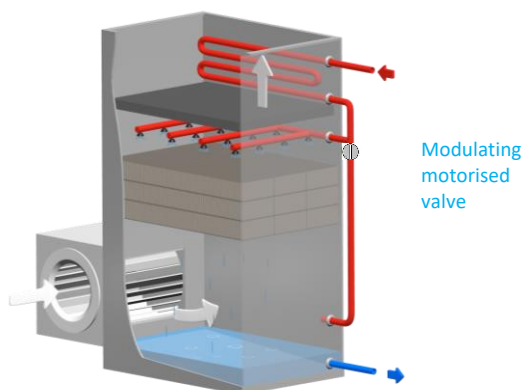
Dry/wet operation: MID-SEASON



When the dry cooling is not powerful enough part of the water flow goes to the spraying system thanks to the by-pass valve. A temperature probe (option) located in the water outlet send the information to the regulator monitoring the valve. So only the minimum water quantity is sprayed on the packing. This cooling mode lowers the water / air exchange and optimize the power evacuated in the dry coil.

According to the ambient conditions, 30 to 70% of the power can be dissipated in dry mode.

Wet operation: SUMMER



If necessary, the bypass valve is totally closed: the water leaves the tube coil, and can be totally sprayed over the packing.

This water is first cooled by sensitive heat, then by latent heat (evaporation on the exchange surface).

In wet operation, 5 to 10 % of the power is dissipated by the finned tube coil.

Manufacturing details: ATM – ATIM series

Tower casing:

Self-supporting rigid panels, with 2 or 4 folds on the four sides, (**JACIR design**) allowing sound attenuation casing addition if required. Thanks to this technology, we can offer cooling towers with an extremely low sound level. Towers are assembled with waterproof stainless-steel rivets (uniform, high-capacity locking). There is no welding on assembled panels

There is no welding on assembled panels for the parts in contact with water; a high covering seal ensures the close fit between the panels. Folds and cutting plan are all outside oriented.

Single unit delivery (m 2,37 high) up to 5 modules.

As standard model, the panels are in galvanised steel mm2 thick ZENDZIMIR process 275 gr / m² (galvanised plates are protected by the zinc oxidation on the surface).

X-STEEL stainless steel is optional (corrosion resistance higher than 316L).



Inclined and plane basin:

It has a high capacity to take into account the needs and inertia of the installation, and contains 700 litres / module for **ATM** version, 800 litres / module for **GATM** version, (Ex: **GATM** 5 modules - large inertia for the circuit because the basin contains 3 000 litres).

The inclined basin allows an **easy and complete drain**.

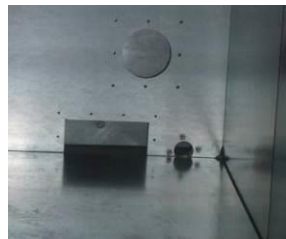
No welding on surfaces in contact with the water.

On the utility panel of the basin are installed:

- An overflow connection,
- A drain connection and a **Power-Flow** hatch below the low level of the basin to boost a quick evacuation of any impurities during the cleaning with a water jet (mm 260 x 110 mm),
- A float valve or electrical solenoid water make up system as an option,
- Water return through a removable strainer (in stainless steel or PEHD) with a flange, oversized to eliminate cavitation, with a perforated steel plate,
- Large access door(s) for nozzles: (mm 540 x mm 390),
- Options: V 230 or V 400 antifreeze resistance and sealed thermostat with separate bulb, and automatic cleaning generated by opening the purge circuit (with DAI option).

For automatic control of resistance, suitable contactors must be provided.

The water circuit stay clean and reduce the proliferation of legionella.



Exchange surface: EFFI-PACK

The **EFFI-PACK** exchange surface, also called *packing or film*, manufactured by **Jacir**, is based on a welded high-density polyethylene material. Its design offers an important free surface within the exchange surface, which is limiting risks of clogging.



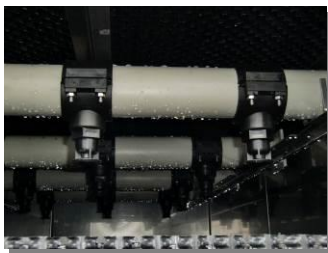
The **EFFI-PACK** packing also has the following advantages:

- Good temperature resistance (°C 75 continuing),
- Large area of high efficiency,
- Easy to maintain,
- High resistance to chemicals,
- Installation range up to °C 95 optional.

Water distribution:

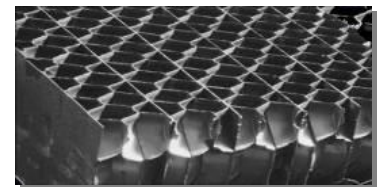
Water distribution is made of PVC pipes through highly efficient water distributors. The nozzles made of polypropylene distribute water in the form of a full jet cone. They are screwed to the distribution pipes, for easy maintenance and strong mechanical resistance.

An internal turbulator distributes the water so that a uniform water distribution reaches the exchange surface.



Drift eliminators:

Highly efficient, drift eliminators are made of PP sheets and prevent the water from being sprayed out of the tower: the drift is 0.01 % maximum of the re-circulating water flow. This value has been certified by independent third part (Eurovent). Ultraviolet resistant, they are easy to remove from the top in order to access to the distributors and to the exchange surface.



Standard motor:

- Asynchronous three-phases motor, compliant with frequency controller
- rpm 1500,
- V 230 / 400 up to kW 5,5,
- V 400 / 690 above kW 5,5,
- Hz 50,
- IP55 (possible open sky operating),
- F/B class,
- Direct connection to terminal box.



Fans:

The centrifugal fans are specially designed and manufactured by **Jacir**. The impeller is a double side air inlet type. The air inlet ducts are removable to access to the impeller, and are made of polyester. Their shape noticeably improves the performances of the fans.

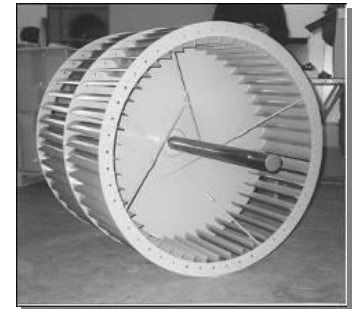
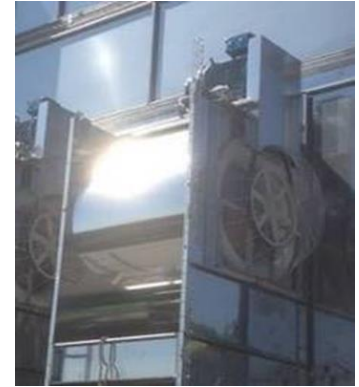
The bearings are self-aligning, lubricated in our factory and to be regularly lubricated by a copper deposed lubrication line for an ease of maintenance without any disassembled. Each shaft is supported by two bearings and there is a maximum of two fans per shaft. There is one fan per module and only one motor driving a maximum two fans.

The volutes side-plates are used to fix the motor support.
This design prevents the belts from producing a slapping effect.

Trapezoidal pulleys and V-belts transmission are used. Tension is applied to the belts by tipping the motor seat, for easy adjustment. The motor is located above the fan casing.

The fan is protected from corrosion by an ELASTAIR coating (thickness: μm 350-400) ultra-violet proof.

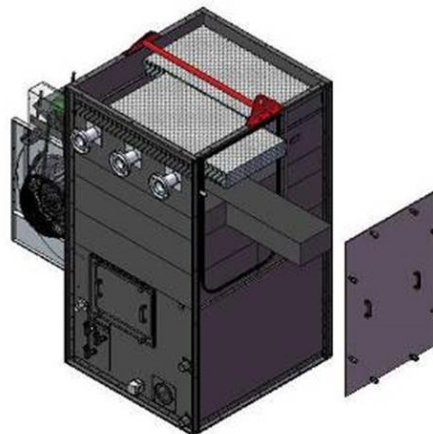
The impeller is treated and protected by a baked EPOXY coating.
A completely stainless-steel volute and impeller design can be selected as an option.



Accessibility:

In standard, the basin has an access hatch (mm 390 x 540) and a **POWER FLOW** hatch (mm 260 x 110) allowing the sludge and others materials accumulated at the bottom of the basin to be removed quickly and completely, with a water jet.

Also, in standard, a large access door (mm 1 290 x 640) in the same materials as the tower is installed. This access is used to remove easily the drift eliminators, nozzles, exchange surface and water distribution pipes.



Plume suppression coil (ATIM option):

As a standard model, the tubes are assembled in a triangular pitch, in copper (Stainless steel option), outside diameter 16 mm, and 0.5 mm thick. The fins are in copper.

The fin pitch is 3 mm in standard. A monitored valve adjusting the water flow sprays over the infill, associated to the plume coil.

As soon as ambient conditions are met, this system makes it possible to operate significant water saving by cooling the water in the dry mode, rather than spraying and evaporating it. In standard, the header coil is in carbon steel, primer and epoxy coated. Two air valves secure the freezing matters. The tubes are assembled in a triangular pitch, in copper (outside diameter 16 mm, 0.5 mm thick). In option, they can be in stainless-steel. The fins are in aluminium epoxy coated in standard, optionally in copper or in stainless steel. The fin pitch is 3 mm in standard. A monitored valve to adjust the water spray on the infill is associated to the plume coil.

As soon as ambient conditions are met, this system makes it possible to operate significant water savings by cooling the water in the dry mode, rather than spraying and evaporating it.



Sound attenuations (options):

IB standard sound attenuation

Additional casing of the air inlet fan(s), made of self-supporting rigid steel panels covering, double folding on the 4 internal sides of the panels. Internal lagging is made of absorbent sound material.

Complete access door is provided for a total accessibility maintenance in front door with 4 lockers, activated by key.

At the air outlet, an exhaust cone reduces the acoustic emission surface.

ICV complete sound attenuation

Additional casing of the air inlet fan(s), made of self-supporting rigid steel panels covering, double folding on the 4 internal sides of the panels. Internal lagging is made of absorbent sound material and contains sound acoustics baffles. These galvanized steel sound baffles, made of high-density rock wool panels, are easily removable.

At the air inlet, the rock wool is coated by a fibre glass layer.

At the air outlet, baffles receive a reinforced protection by a stainless-steel grid.

ICVK complete sound attenuation with double casing

The entire casing of ICV cooling tower is fitted with a double casing: high density rock wool covered by an additional steel sheet - ICVK.

NR 30 special sound attenuation

ICVK solution is adapted to reach required sound level, up to NR 30 at 10m.

Options ATM - ATIM

- Plume suppression coil system (see **ATIM** series),
- **X-STEEL** stainless-steel (corrosion resistant above 316L (1.4404)),
- **EFFI-SILENT** basin sound abatement,
- Electric heater with thermostat,
- Two - speed motor (separate wiring or PAM – rpm 1500/1000),
- Frequency controller,
- Water level control with solenoid valve (with electric-valve and input filter),
- Automated Inductive blow down,
- All stainless-steel fittings (fan casing, wheel, plumeless battery, etc.),
- Discharge cone (increase of air outlet speed with the reduction of acoustic radiation and recycling),
- Air pressure available for connection to the duct,
- Equipment delivered in parts, ready to be assembled,
- Assembly on site by experimented technicians from our factory,
- **IB, ICV, ICVK** or special sound-attenuation.

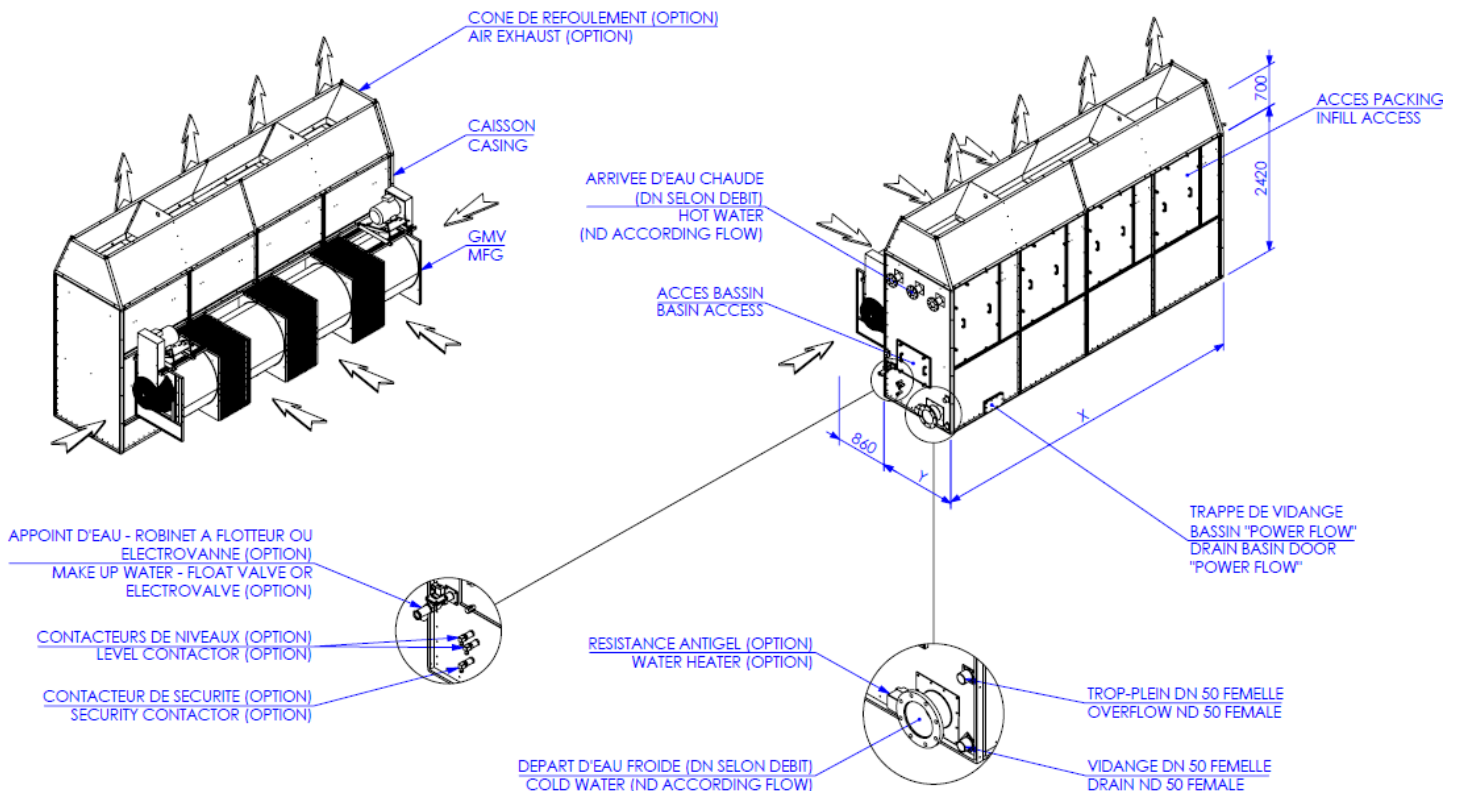
Technical Characteristics: ATM-(G)ATM series

		ATM 4M	GATM 4M	ATM 5M	GATM 5M
Overall height including air exhaust option	mm	3 120	3 120	3 120	3 120
Length	mm	5 300	5 300	6 600	6 600
Width	mm	2 160	2 460	2 160	2 460
Heat power Reference average (1)	kW	900	1 090	1 120	1 370
NDKL fans	Qty	4	4	5	5
Heat power	kW	18	30	24	37
Sound level (2) at m 20	[dB(A)]	54	55	54	55
Empty weight (without beams)	[kg]	1 770	1 860	2 100	2 350
Full weight (without beams)	[kg]	4 820	5 680	5 920	7 110
Overflow (female)	DN	50			
Drain (female)	DN	50			
Hot water inlet	DN	Depending on the flow			
Connection flange	Qty	3	3	4	4
Height	mm	2 115	2 115	2 115	2 115
Cold water outlet	DN	Depending on the flow			
Drain basin Power Flow	mm	260 x 110			
Electric heater with thermostat (in option)	kW	3	3	3	6
Float valve (male) or optional electro valve		Optional			
Low level		Optional			
High level		Optional			
Water Makeup level switch		Optional			

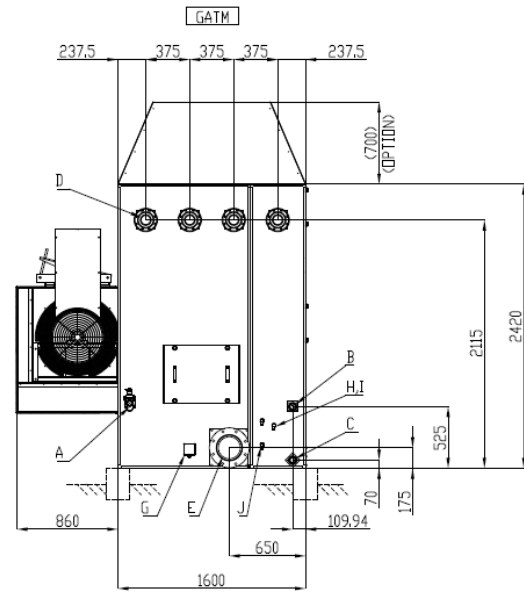
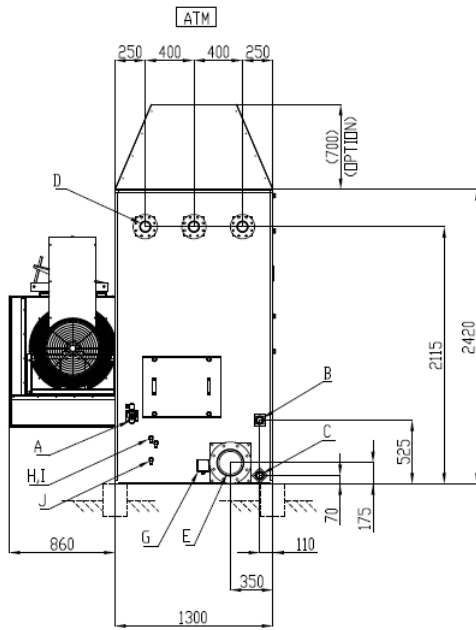
(1): Reference cooling capacities calculated for thermal conditions of °C 32/27/21.

(2): Sound level: pressure level (Lp) average in free field in 4 directions at m 1.5 from the ground.

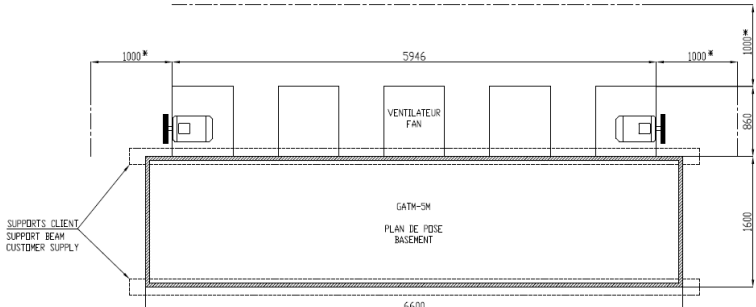
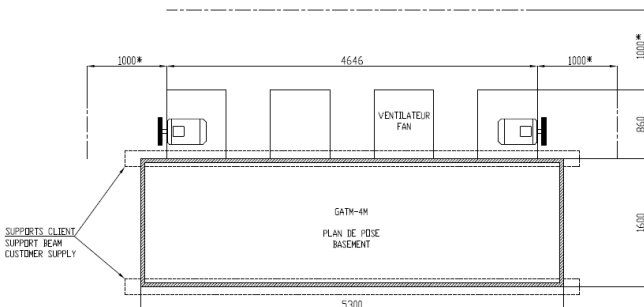
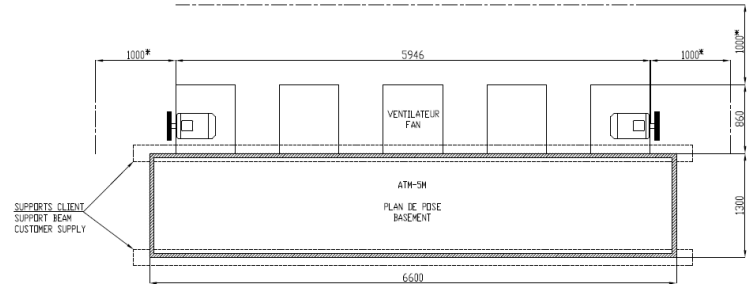
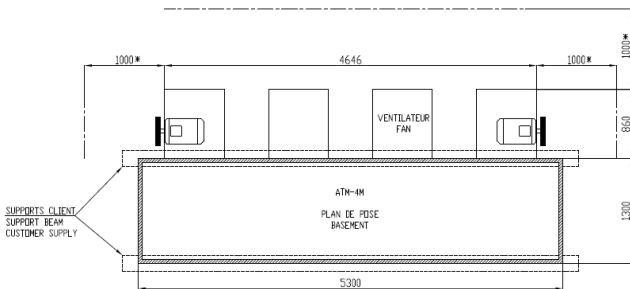
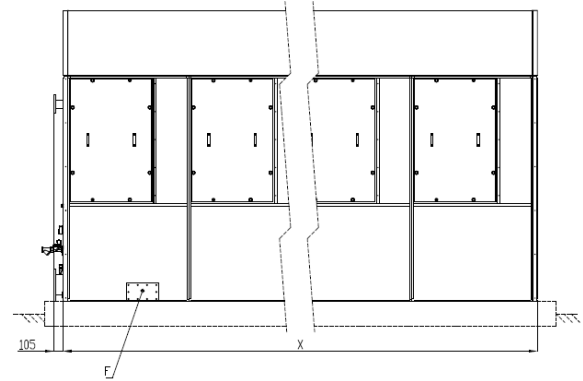
Note: Tower may be juxtaposed to obtain greater power.



Drawings and Dimensions ATM-(G)ATM without sound attenuation



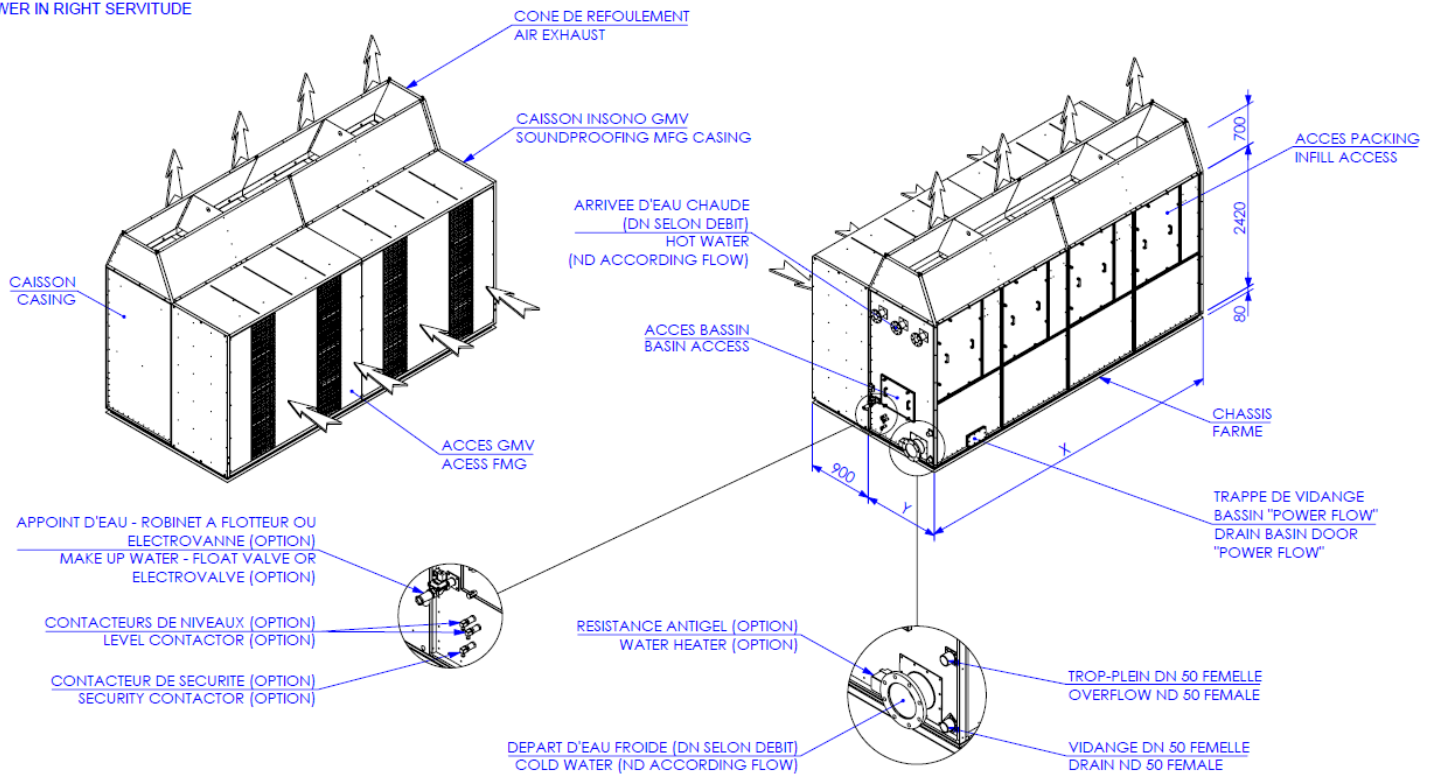
- A APPOINT D'EAU - ROBINET A FLOTTEUR OU ELECTROVANNE (OPTION)
MAKE UP WATER - FLDAT VALVE OR ELECTROVALVE (OPTION)
- B TROP-PLEIN - G 2" FEMELLE
OVERFLOW - G2" FEMALE
- C VIDANGE - G 2" FEMELLE
DRAIN - G2" FEMALE
- D ENTREE EAU CHAUDE
HOT INLET WATER
- E SORTIE EAU FROIDE
COLD OUTLET WATER
- F TRAPPE DE VIDANGE BASSIN "POWER FLOW"
DRAIN BASIN DOOR "POWER FLOW"
- G RESISTANCE ANTI-GEL AVEC THERMOSTAT
WATER HEATER WITH THERMOSTAT
- H, I 2 CONTACTEURS (NIVEAU HAUT / BAS) (OPTION)
2 SWITCHS (HIGH / LOW LEVEL) (OPTION)
- J 1 CONTACTEUR (SECURITE MANQUE D'EAU) (OPTION)
1 SWITCH (WATER LEVEL SECURITY) (OPTION)



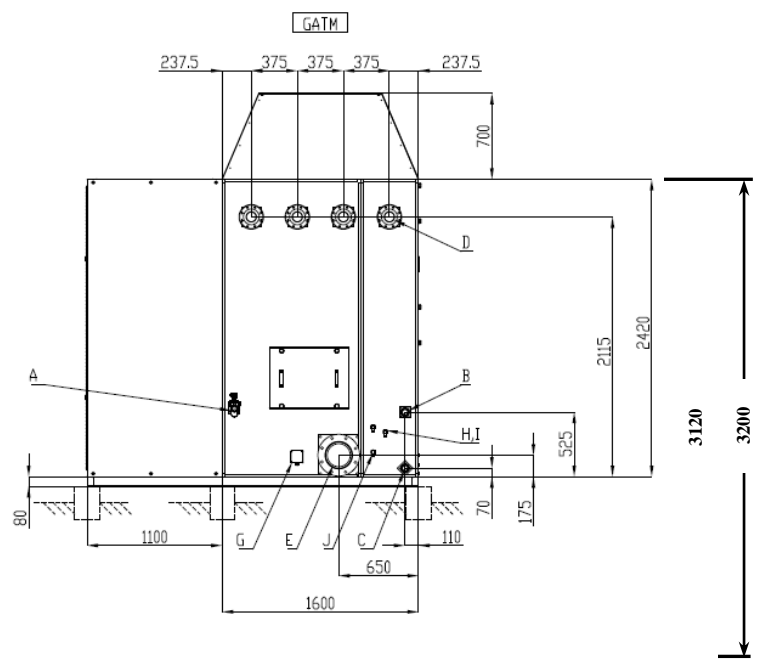
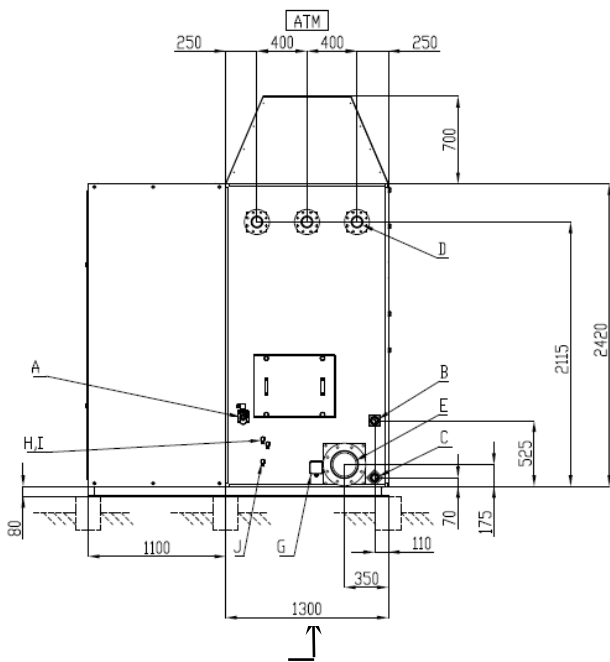
Technical Characteristics ATM-(G)ATM sound-attenuation IB

		ATM 4M IB	GATM 4M IB	ATM 5M IB	GATM 5M IB
Overall height including air exhaust option	mm	3 120	3 120	3 120	3 120
Length	mm	5 300	5 300	6 600	6 600
Width	mm	2 400	2 700	2 400	2 700
Heat power Reference average (1)	kW	880	1 070	1 100	1 340
NDKL fans	Qty	4	4	5	5
Heat power	kW	18	30	24	37
Sound level (2) at m 20	[dB(A)]	46	47	46	47
Empty weight (without beams)	[kg]	2 570	2 690	3 100	3 350
Full weight (without beams)	[kg]	5 630	6 500	6 910	8 120
Overflow (female)	DN	50			
Drain (female)	DN	50			
Hot water inlet	DN	Depending on the flow			
Connection flange	Qty	3	3	4	4
Height	mm	2 115	2 115	2 115	2 115
Cold water outlet	DN	Depending on the flow			
Drain basin Power Flow	mm	260 x 110			
Electric heater with thermostat (in option)	kW	3	3	3	6
Float valve (male) or optional electro valve		Optional			
Low level		Optional			
High level		Optional			
Water Makeup level switch		Optional			

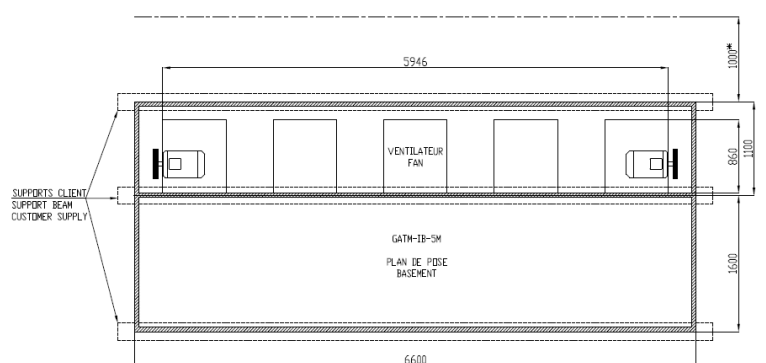
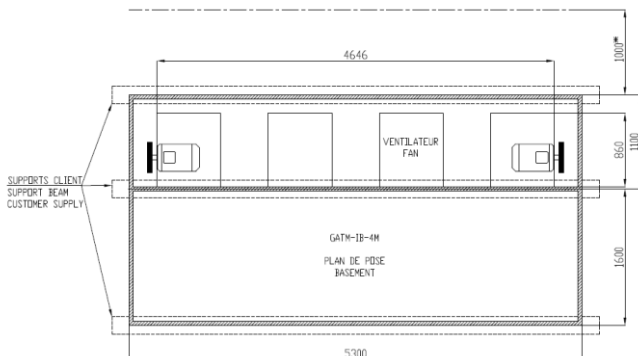
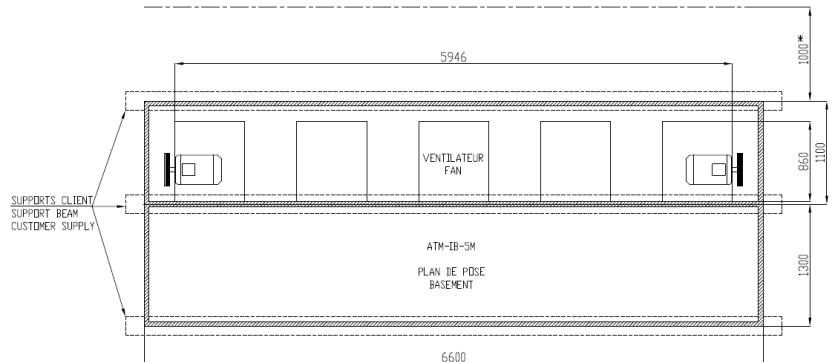
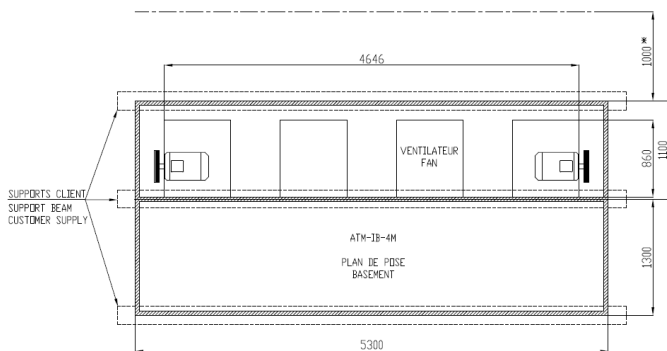
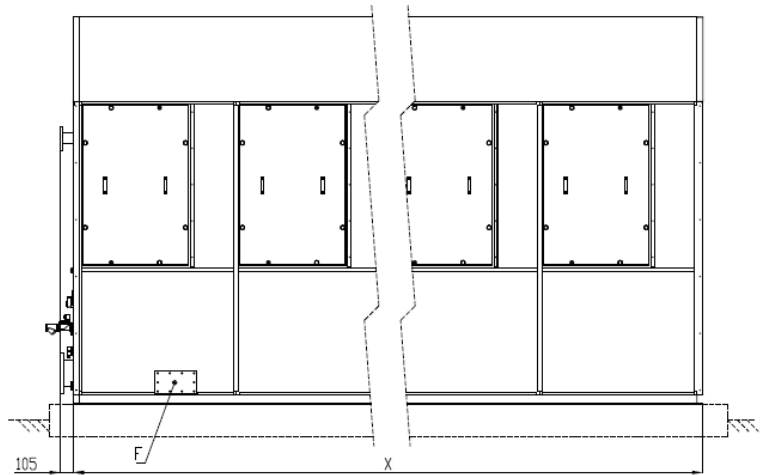
TOURS REPRESENTEES SERVITUDE DROITE
TOWER IN RIGHT SERVITUDE



Drawings and Dimensions ATM-(G)ATM sound attenuation IB



- A APPOINT D'EAU - ROBINET A FLOTTEUR OU ELECTROVANNE (OPTION)
MAKE UP WATER - FLOAT VALVE OR ELECTROVALVE (OPTION)
- B TROP-PLEIN - G 2" FEMELLE
OVERFLOW - G2" FEMALE
- C VIDANGE - G 2" FEMELLE
DRAIN - G2" FEMALE
- D ENTREE EAU CHAUDE
HOT INLET WATER
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1 SWITCH (WATER LEVEL SECURITY) (OPTION)



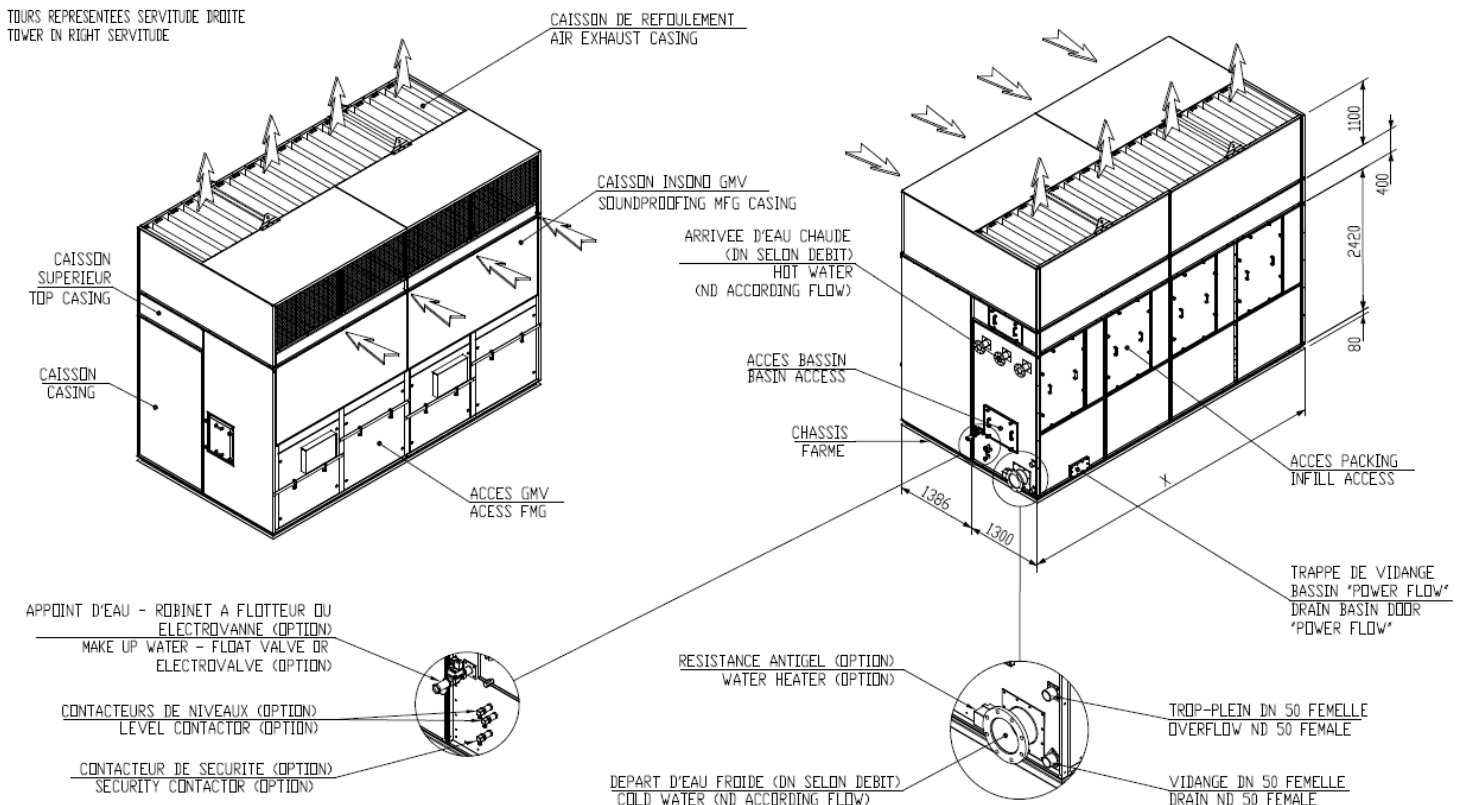
Technical Characteristics ATM-(G)ATM sound-attenuation ICV/ICVK

		ATM 4M ICV	ATM 4M ICVK	ATM 5M ICV	ATM 5M ICVK
Overall height including air exhaust option	mm	4 000	4 000	4 000	4 000
Length	mm	5 300	5 300	6 600	6 600
Width	mm	2 686	2 986	2 686	2 986
Heat power Reference average (1)	kW	840	840	1 050	1 050
NDKL fans	Qty	4	4	5	5
Heat power	kW	18	18	30	30
Sound level (2) at m 20	[dB(A)]	43	40	44	41
Empty weight (without beams)	[kg]	3 780	4 170	4 610	5 100
Full weight (without beams)	[kg]	6 840	7 220	8 430	8 910
Overflow (female)	DN	50			
Drain (female)	DN	50			
Hot water inlet	DN	Depending on the flow			
Connection flange	Qty	3	3	4	4
Height	mm	2 115	2 115	2 115	2 115
Cold water outlet	DN	Depending on the flow			
Drain basin Power Flow	mm	260 x 110			
Electric heater with thermostat (in option)	kW	3	3	3	6
Float valve (male) or optional electro valve		Optional			
Low level		Optional			
High level		Optional			
Water Makeup level switch		Optional			

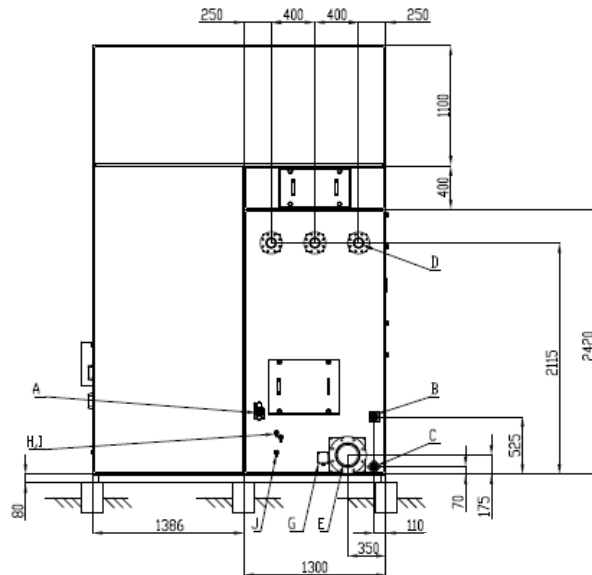
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(2): Sound level: pressure level (Lp) average in free field in 4 directions at m 1.5 from the ground.

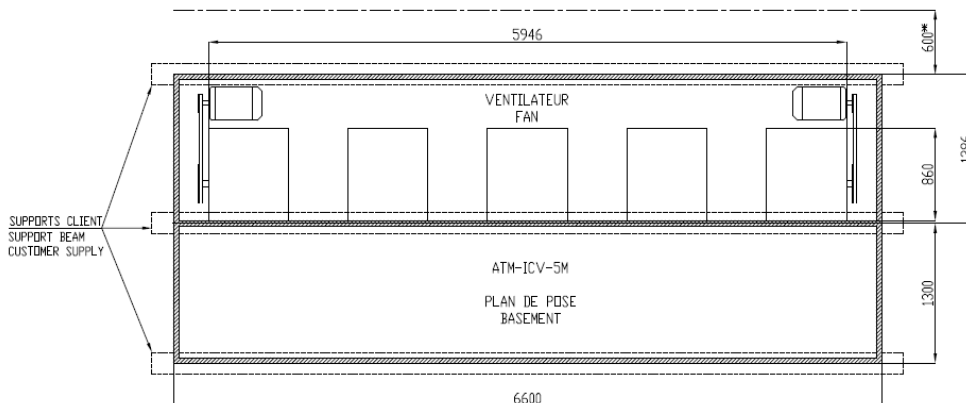
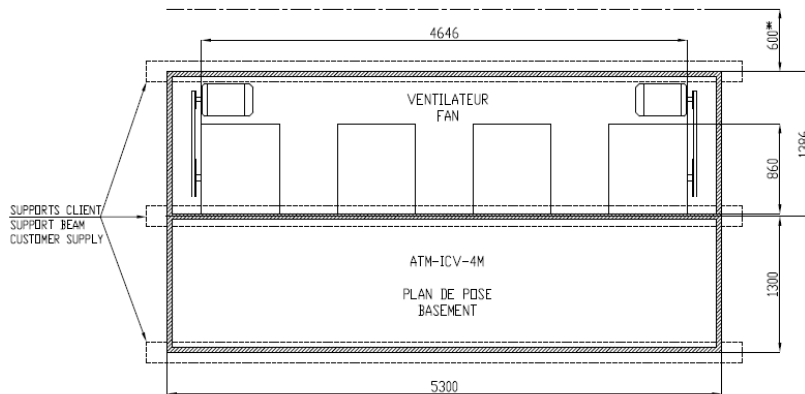
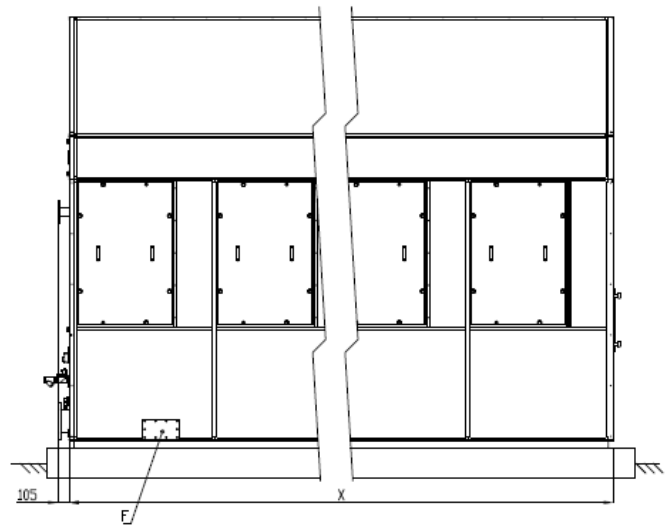
Note: Tower may be juxtaposed to obtain greater power.



Drawings and Dimensions ATM – (G)ATM ICV/ICVK sound attenuation



- A APPONT D'EAU - ROBINET A FLOTTEUR OU ELECTROVANNE (OPTION)
MAKE UP WATER - FLOAT VALVE OR ELECTROVALVE (OPTION)
- B TROP-PLEIN - G 2" FEMELLE
OVERFLOW - G2" FEMALE
- C VIDANGE - G 2" FEMELLE
DRAIN - G2" FEMALE
- D ENTREE EAU CHAUDE
HOT INLET WATER
- E SORTIE EAU FROIDE
COLD OUTLET WATER
- F TRAPPE DE VIDANGE BASSIN "POWER FLOW"
DRAIN BASIN DOOR "POWER FLOW"
- G RESISTANCE ANTI-GEL AVEC THERMOSTAT
WATER HEATER WITH THERMOSTAT
- H, I 2 CONTACTEURS (NIVEAU HAUT / BAS) (OPTION)
2 SWITCHS (HIGH / LOW LEVEL) (OPTION)
- J 1 CONTACTEUR (SECURITE MANQUE D'EAU) (OPTION)
1 SWITCH (WATER LEVEL SECURITY) (OPTION)



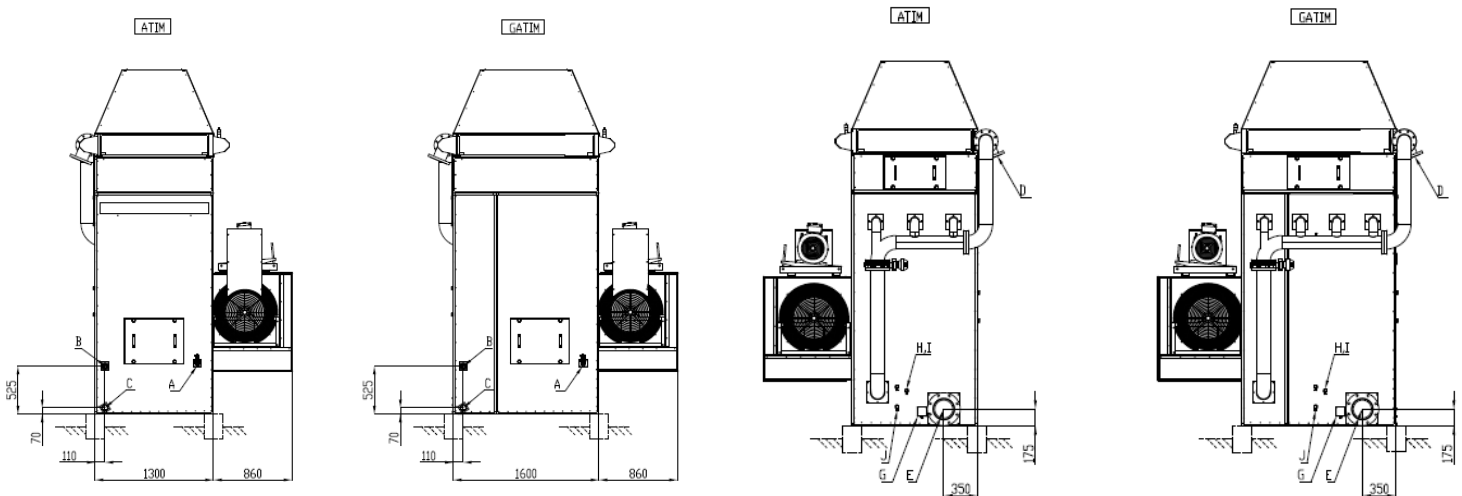
Technical Characteristics: **ATIM-(G)ATIM** series

		ATIM 4M	GATIM 4M	ATIM 5M	GATIM 5M
Overall height including air exhaust option	mm	3 770	3 770	3 770	3 770
Length	mm	5 300	5 300	6 600	6 600
Width	mm	2 160	2 460	2 160	2 460
Heat power Reference average (1)	kW	900	1 090	1 120	1 370
NDKL fans	Qty	4	4	5	5
Heat power	kW	18	30	24	37
Sound level (2) at m 20	[dB(A)]	54	55	54	55
Empty weight (without beams)	[kg]	2 420	2 580	2 870	3 170
Full weight (without beams)	[kg]	5 720	6 690	6 980	8 310
Overflow (female)	DN	50			
Drain (female)	DN	50			
Hot water inlet	DN	Depending on the flow			
Connection flange	Qty	1	1	1	1
Height	mm	2 800	2 800	2 800	2 800
Cold water outlet	DN	Depending on the flow			
Drain basin Power Flow	mm	260 x 110			
Electric heater with thermostat (in option)	kW	3	3	3	6
Float valve (male) or optional electro valve		Optional			
Low level		Optional			
High level		Optional			
Water Makeup level switch		Optional			

(1): Reference cooling capacities calculated for thermal conditions of °C 32/27/21.

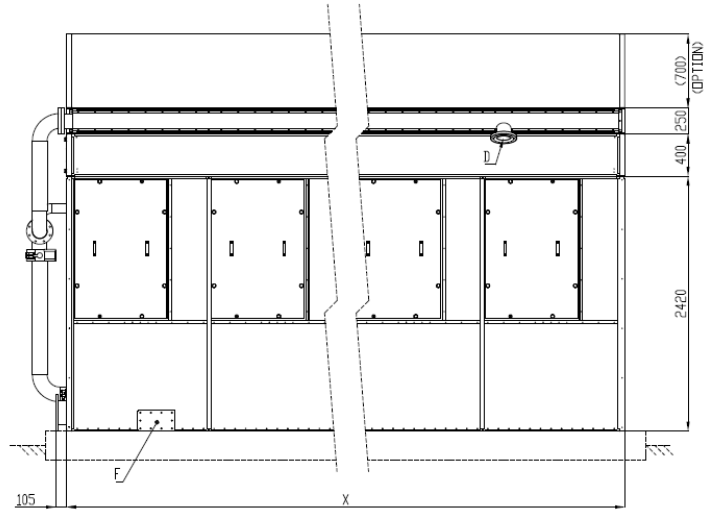
(2): Sound level: pressure level (Lp) average in free field in 4 directions at m 1.5 from the ground.

Note: Tower may be juxtaposed to obtain greater power.

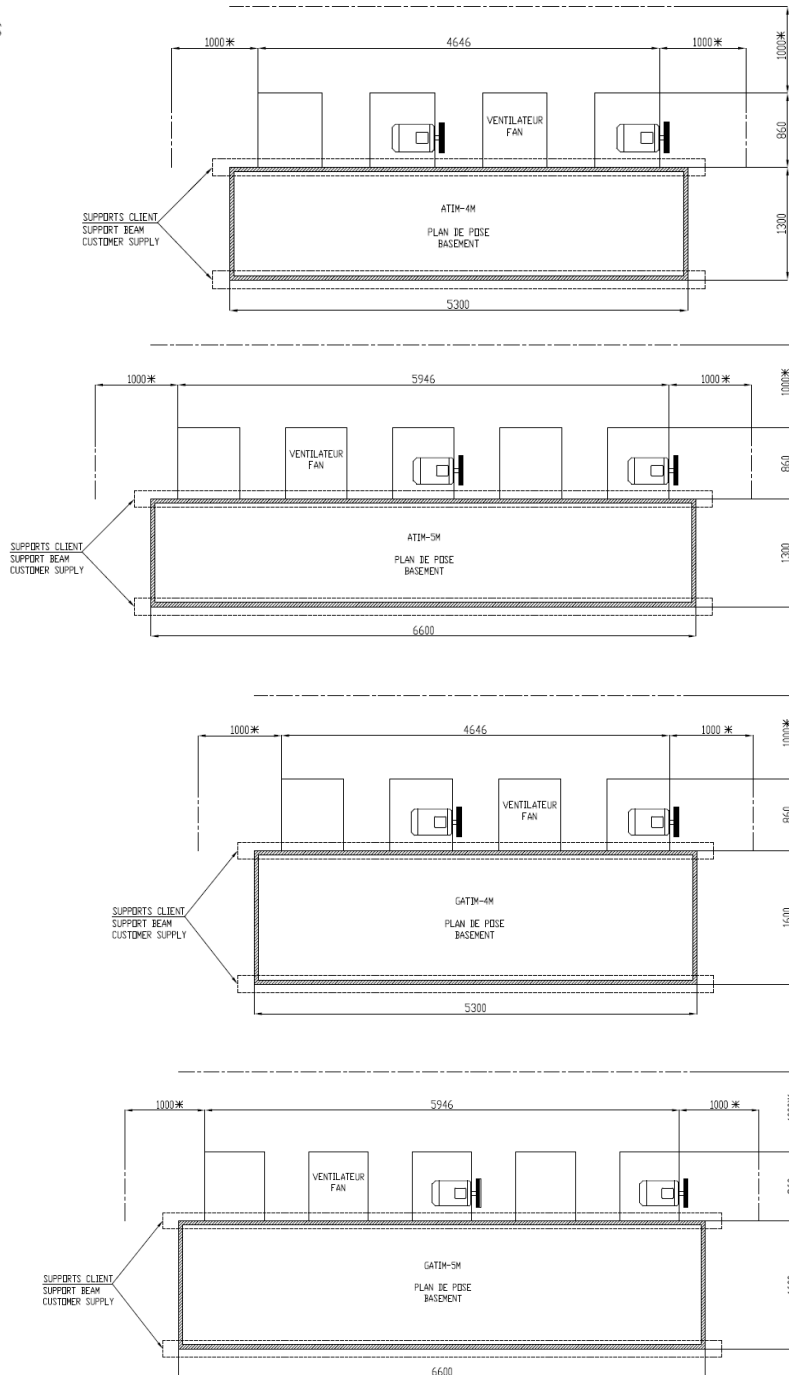


Drawings and Dimensions **ATIM – (G)ATIM without sound attenuation**

- A APPOINT D'EAU – ROBINET A FLOTTEUR OU ELECTROVANNE (OPTION)
MAKE UP WATER – FLOAT VALVE OR ELECTROVALVE (OPTION)
- B TROP-PLEIN – G 2" FEMELLE
OVERFLOW – G2" FEMALE
- C VIDANGE – G 2" FEMELLE
DRAIN – G2" FEMALE
- D ENTREE EAU CHAUDE
HOT INLET WATER
- E SORTIE EAU FROIDE
COLD OUTLET WATER
- F TRAPPE DE VIDANGE BASSIN "POWER FLOW"
DRAIN BASIN DOOR "POWER FLOW"
- G RESISTANCE ANTI-GEL AVEC THERMOSTAT
WATER HEATER WITH THERMOSTAT
- H, I 2 CONTACTEURS (NIVEAU HAUT / BAS) (OPTION)
2 SWITCHS (HIGH / LOW LEVEL) (OPTION)
- J 1 CONTACTEUR (SECURITE MANQUE D'EAU) (OPTION)
1 SWITCH (WATER LEVEL SECURITY) (OPTION)



(*) ESPACES LIBRES RECOMMANDES



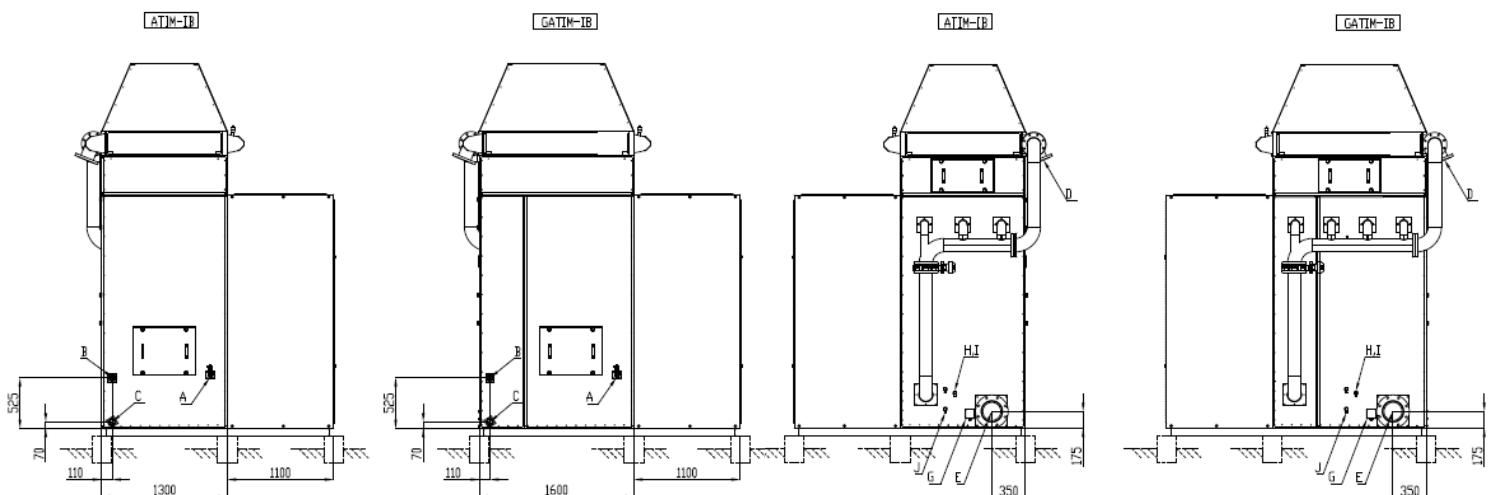
Technical Characteristics ATIM-(G)ATIM sound attenuation IB

		ATIM 4M IB	GATIM 4M IB	ATIM 5M IB	GATIM 5M IB
Overall height including air exhaust option	mm	3 770	3 770	3 770	3 770
Length	mm	5 300	5 300	6 600	6 600
Width	mm	2 400	2 700	2 400	2 700
Heat power Reference average (1)	kW	880	1 070	1 100	1 340
NDKL fans	Qty	4	4	5	5
Heat power	kW	18	30	24	37
Sound level (2) at m 20	[dB(A)]	46	47	46	47
Empty weight (without beams)	[kg]	3 230	3 410	3 860	4 180
Full weight (without beams)	[kg]	6 520	7 520	7 970	9 310
Overflow (female)	DN	50			
Drain (female)	DN	50			
Hot water inlet	DN	Depending on the flow			
Connection flange	Qty	1	1	1	1
Height	mm	2 800	2 800	2 800	2 800
Cold water outlet	DN	Depending on the flow			
Drain basin Power Flow	mm	260 x 110			
Electric heater with thermostat (in option)	kW	3	3	3	6
Float valve (male) or optional electro valve		Optional			
Low level		Optional			
High level		Optional			
Water Makeup level switch		Optional			

(1): Reference cooling capacities calculated for thermal conditions of °C 32/27/21.

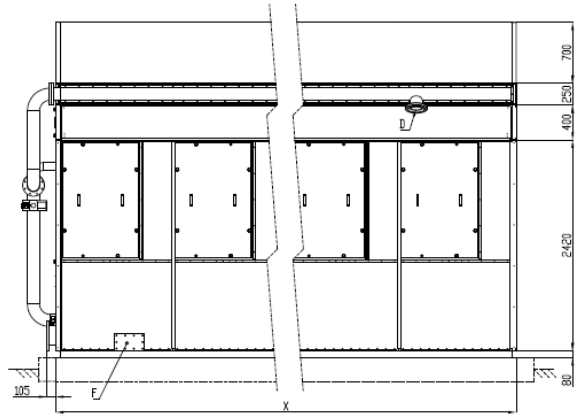
(2): Sound level: pressure level (Lp) average in free field in 4 directions at m 1.5 from the ground.

Note: Tower may be juxtaposed to obtain greater power.

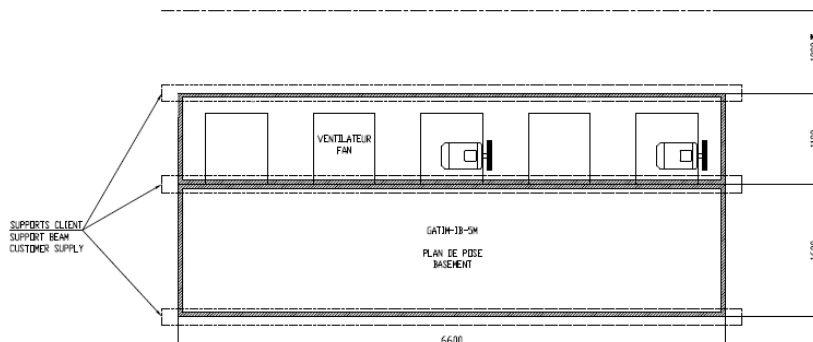
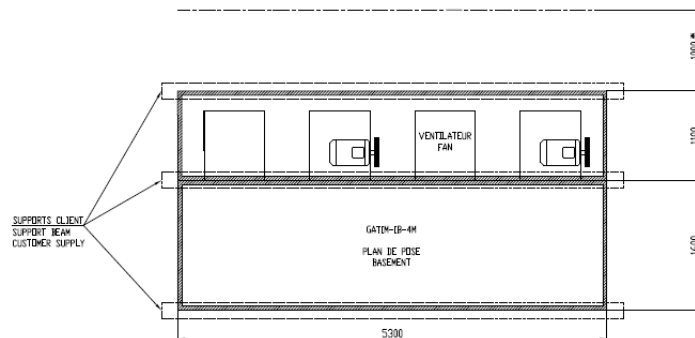
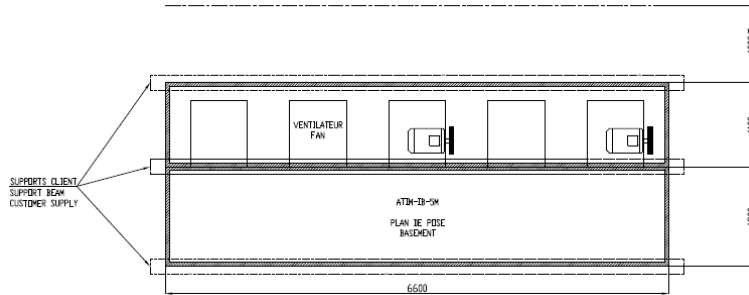
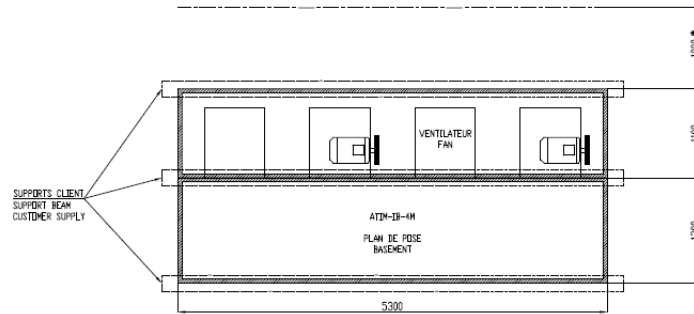


Drawings and Dimensions ATIM – (G)ATIM sound attenuation IB

- A APPOINT D'EAU - ROBINET A FLOTTEUR OU ELECTROVANNE (OPTION)
MAKE UP WATER - FLDAT VALVE OR ELECTROVALVE (OPTION)
- B TROP-PLEIN - G 2" FEMELLE
OVERFLOW - G2" FEMALE
- C VIDANGE - G 2" FEMELLE
DRAIN - G2" FEMALE
- D ENTREE EAU CHAUDE
HOT INLET WATER
- E SORTIE EAU FROIDE
COLD OUTLET WATER
- F TRAPPE DE VIDANGE BASSIN "POWER FLOW"
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WATER HEATER WITH THERMOSTAT
- H, I 2 CONTACTEURS (NIVEAU HAUT / BAS) (OPTION)
2 SWITCHS (HIGH / LOW LEVEL) (OPTION)
- J 1 CONTACTEUR (SECURITE MANQUE D'EAU) (OPTION)
1 SWITCH (WATER LEVEL SECURITY) (OPTION)



(*) ESPACES LIBRES RECOMMANDES



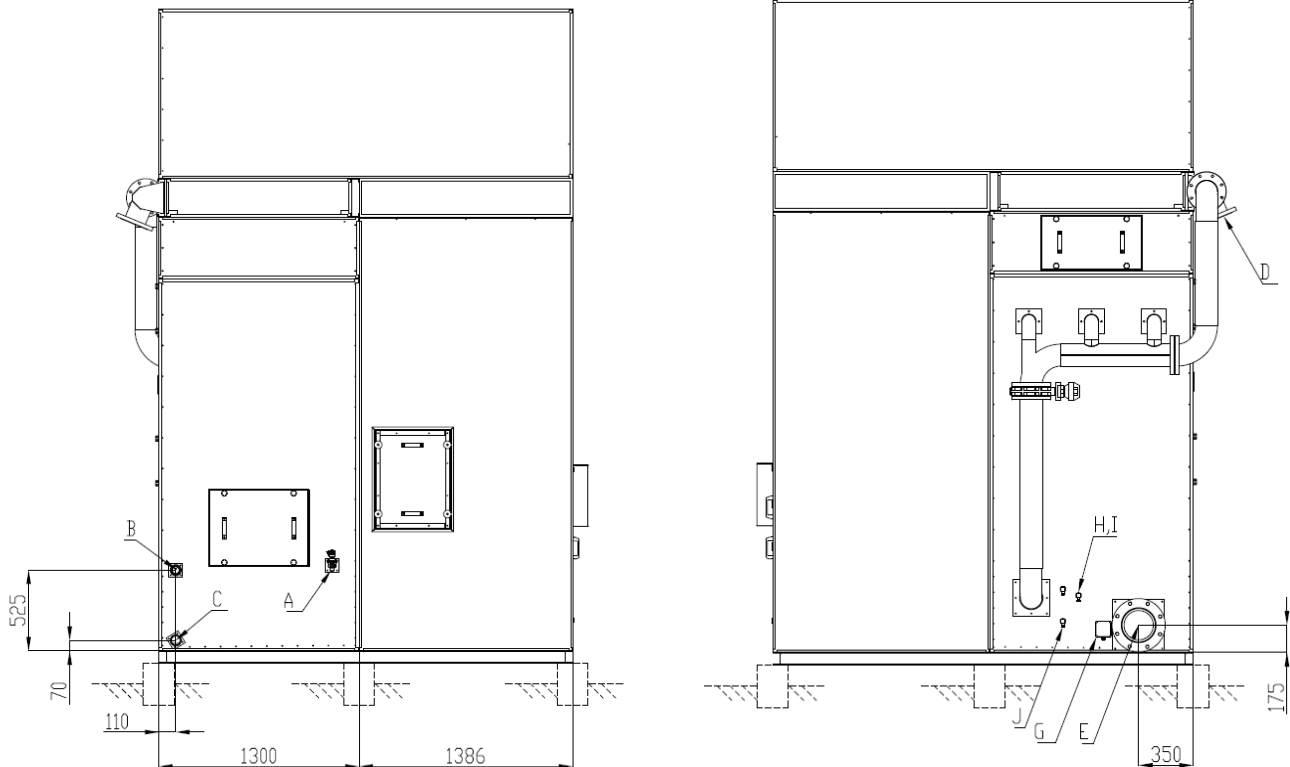
Technical Characteristics ATIM-(G)ATIM sound-attenuation ICV/ICVK

		ATIM 4M IB	GATIM 4M IB	ATIM 5M IB	GATIM 5M IB
Overall height including air exhaust option	mm	4 170	4 170	4 170	4 170
Length	mm	5 300	5 300	6 600	6 600
Width	mm	2 686	2 686	2 686	2 686
Heat power Reference average (1)	kW	840	840	1 050	1 050
NDKL fans	Qty	4	4	5	5
Heat power	kW	18	18	30	30
Sound level (2) at m 20	[dB(A)]	43	40	44	41
Empty weight (without beams)	[kg]	4 410	4 790	5 360	5 840
Full weight (without beams)	[kg]	7 700	8 090	9 480	9 960
Overflow (female)	DN	50			
Drain (female)	DN	50			
Hot water inlet	DN	Depending on the flow			
Connection flange	Qty	1	1	1	1
Height	mm	2 800	2 800	2 800	2 800
Cold water outlet	DN	Depending on the flow			
Drain basin Power Flow	mm	260 x 110			
Electric heater with thermostat (in option)	kW	3	3	3	6
Float valve (male) or optional electro valve		Optional			
Low level		Optional			
High level		Optional			
Water Makeup level switch		Optional			

(1): Reference cooling capacities calculated for thermal conditions of °C 32/27/21.

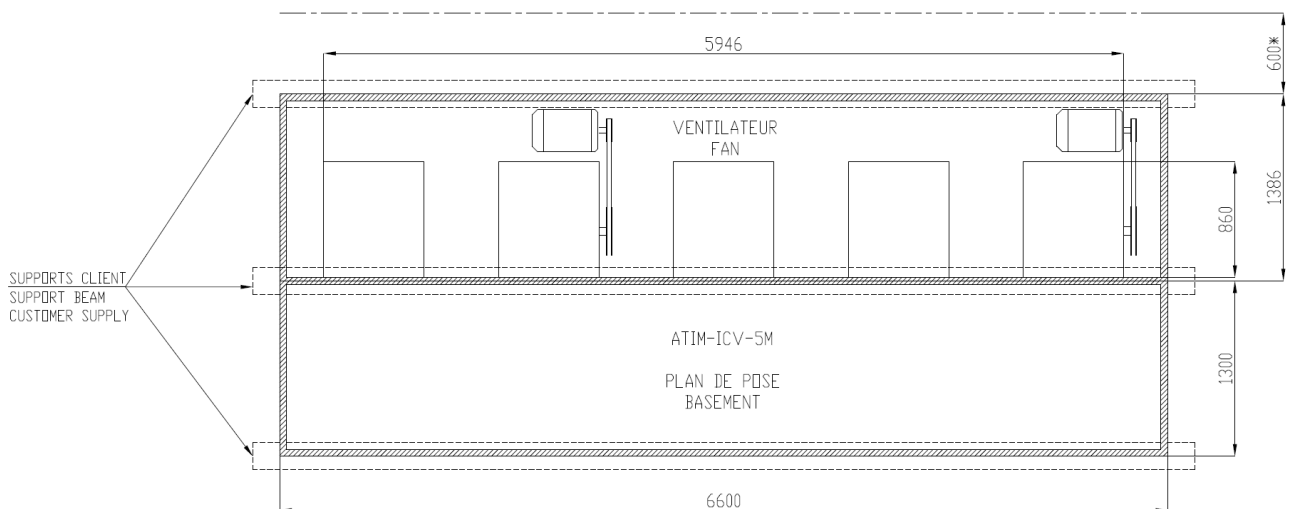
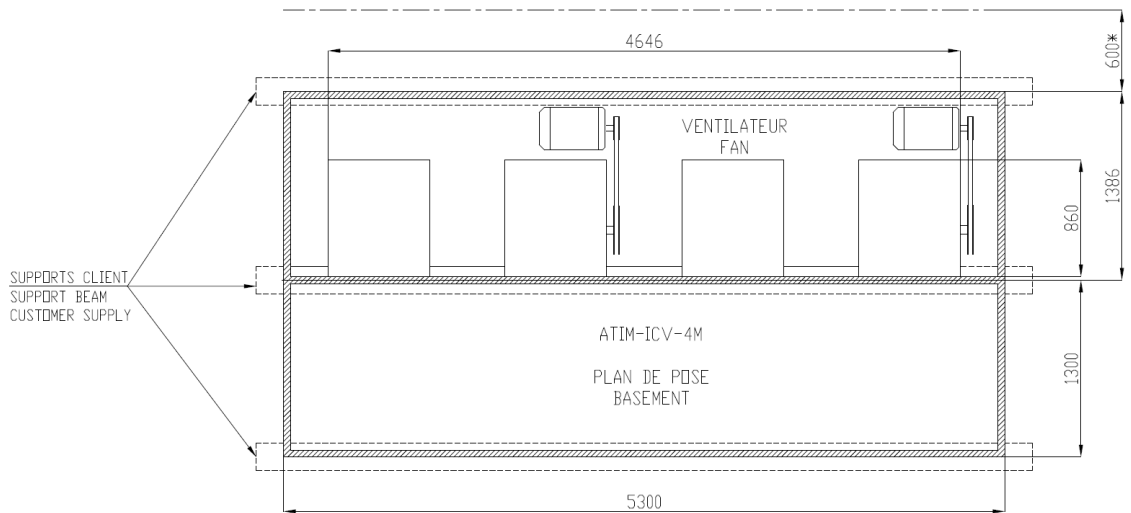
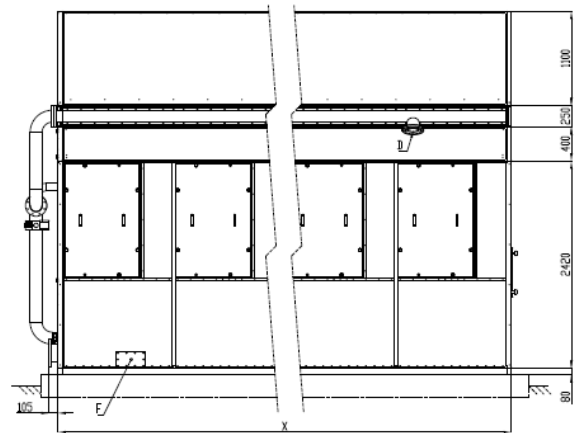
(2): Sound level: pressure level (Lp) average in free field in 4 directions at m 1.5 from the ground.

Note: Tower may be juxtaposed to obtain greater power.



Drawings and Dimensions ATIM – (G)ATIM sound attenuation ICV/ICVK

- A APPONT D'EAU - ROBINET A FLOTTEUR OU ELECTROVANNE (OPTION)
MAKE UP WATER - FLOAT VALVE OR ELECTROVALVE (OPTION)
- B TROP-PLEIN - G 2" FEMELLE
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1 SWITCH (WATER LEVEL SECURITY) (OPTION)



Support: ATM – GATM series

Our cooling towers can stand on the ground or on a concrete ground, but we recommend installing them on a concrete longitudinal beam or on a steel frame.

Check that the ground can stand the operating load, and that the surface or supports are flat.

Lay out: ATM – GATM series

Walls, higher or equal to the tower must not surround on all sides a cooling tower, furthermore without any openings.

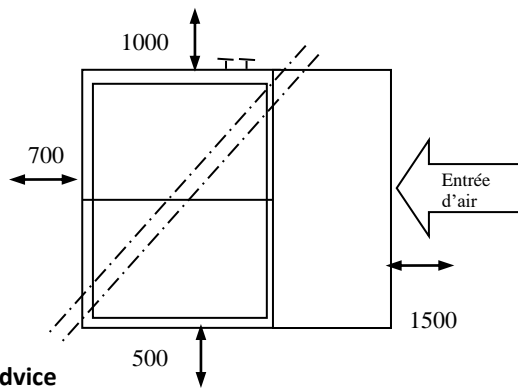
This could create a risk of a “re-circulation”; the air discharged (hot and saturated) may be recycled into the unit and significantly reduces the thermal efficiency of the tower.

In any case, the free access on the four sides of the tower must be secured to ensure that the fans are supplied correctly with air and that there is proper access for installation and maintenance.

If these rules are not applied, it is inevitable that the cooling tower will not operate properly.

Recommended minimum free access (mm) for standard cooling towers: Top view

Tower without sound attenuation



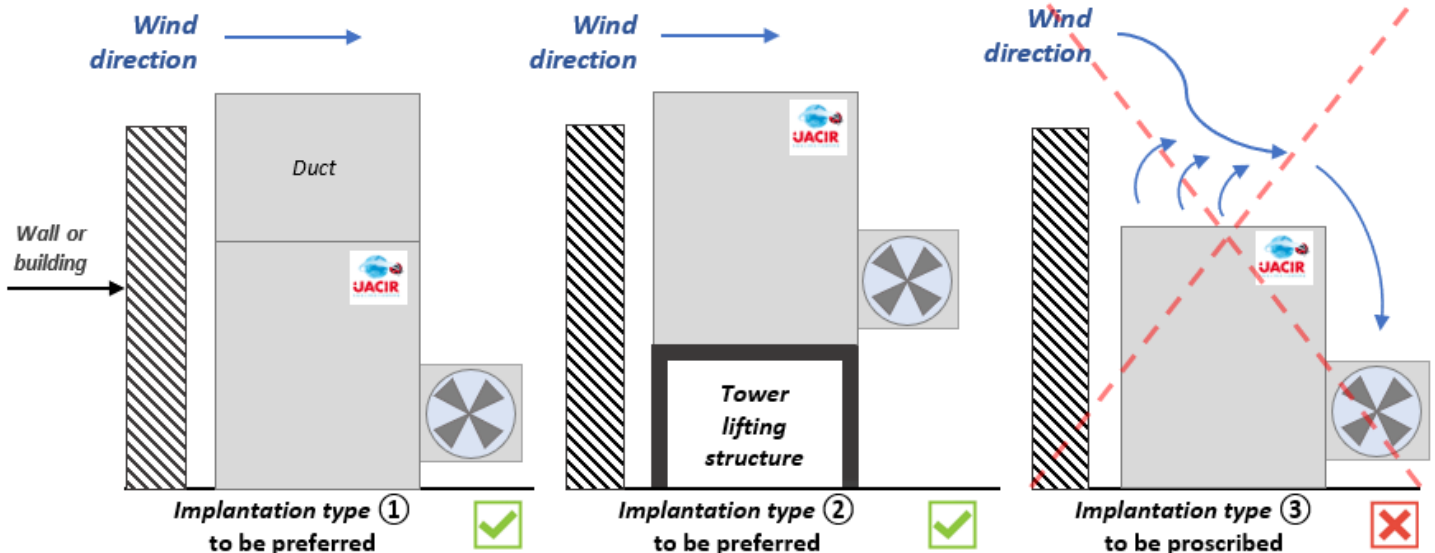
Do not hesitate to contact us for any advice

Layout examples:

The tower lay out must be achieved respecting the following recommendations:

- The aspiration area has to stay obstacle-free
- ⇒ **The obstacle-free distance to be kept around each air inlet indicated on the above drawings is approximately m 1 (unless otherwise stated)**
- The air backflow must not be disturbed by direct obstacles.
- ⇒ The installation of potential acoustic baffles or sleeve have to be approved by the Technical Service of Jacir.
- The risk of hot air backflow (at outlet of towers) to the air intake area area must be prevented.
- ⇒ The side of the prevailing wind and the proximity of a building are element to take into account. Indeed, a building near a cooling tower can generate backflows.

Thus, it is necessary to privilege type ① or ② and to proscribe the type ③



Water Treatment: ATM – (G)ATM

EVAPORATION D'EAU

Consumption by evaporation is approximately kg/h 1,7 per kcal/h 1 000.

DECONCENTRATION

Due to the evaporation and to the water recycling, impurities or salts in the water are concentrated. To make sure that this concentration is not too high, drain must be carried out. If not, concentration rates of 10, 100 or even 1,000 would occur over time.

In order to pre-determine the galvanized stainless-steel installation requirements, the chosen drain value will be equal to twice the evaporation level. In operation, with an efficient water treatment, this figure may decrease, especially in the case of a stainless-steel cooling tower (concentration rate of 3 to 5 possible).

There are three possibilities to choose according to the case:

➤ 1- Continuous blow down

Connection piece to be installed at the pump discharge just before the tower, if possible, at the level of the water distribution pipes so that the purge only takes place when the circulation pump is operating.

The blow down flow rate can be calculated using the formula: $[100 S / (M - S)]$ % of the make-up water in which:

S: Salinity of the make-up water compensating for evaporation.

M: Maximum acceptable salinity level of water in circuits.

Example:

Salinity of make-up water = HT °F 20

Maximum acceptable salinity = HT °F 40

$100 \times 20 / (40 - 20) = 100$ % make-up water flow rate

Therefore, the continuous blow down must be equal to the evaporated make-up water flow rate (rate=2).

Consequently, the real water consumption is twice the theoretical evaporated water flow.

➤ 2- Discontinuous blow down

The conductivity of the water in the circuit is controlled and the device is purged while not exceeding the TH value.

➤ 3- JACIR Automated Inductive Blow down device (DAI)

Once water conductivity level has been reached, a motorized valve can be activated to drain the required quantity of water to maintain the right concentration level.

(See separate documentation).

WATER TREATMENT

It is essential that good quality water is available to ensure that the closed-circuit cooling network operates correctly.

If the water contains a significant amount of impurities, it is recommended that a filtration device to be installed in parallel for 5 to 10 % of the recycled water flow.

If the water contains salts that form deposits, iron or corrosive chemical elements, a make-up water treatment system must be installed to obtain purer water, which is close to being chemically neutral, and which can supply the cooling devices without causing damage.

In some cases, seaweeds, moss, fungus or permanent shells tend to grow in cooling towers. There are products that can be added periodically to the water circuit to stop these organisms from developing.

Water treatment should be undertaken by a specialized Company.

PREVENTS THE RISK OF LEGIONNAIRES' DISEASE (See separate documentation)

Prescription **ATM-(G)ATM** series

High-efficiency open-circuit evaporative cooling tower, with a forced draft centrifugal(s) fan(s), JACIR, **ATM** series...

Thermal characteristics

The dissipated power will be kW, with a temperature range from°C to°C, an ambient air temperature of ...°C, and a wet bulb temperature of..... °C.

Acoustic characteristics

The sound pressure level of the tower will not exceed.... dB (A) at meters in free field over all directions. To ensure this, the tower will have one of the following types of soundproofing devices:

- 1 – **IB**: sound attenuators without baffles at suction and discharge cone upholstered with acoustic foam;
- 2 – **ICV/ICVK**: complete sound attenuation with parallel baffles both at air inlet and outlet fan housing and can also have a double casing of high-density mineral wool.

Tower casing and inclined basin

Casing of cooling tower will be made of single, self-supporting sheet steel panels with double or quadruple folds on the 4 sides. Side panels will be designed to receive a double casing later on, if necessary.

Stainless steel rivets with a high locking capacity will be used for assembly. There will be no welding or screws used for the assembly on parts in contact with the water.

The basin will have a large capacity in order to take into account the response time of the installation. Its capacity will be 700 litres per module for the **ATM** series, and 880 litres per module for the **GATM** series.

The basin will be fitted with an inspection door (mm 390 x 540), floating valve that can easily be adjusted, a drain, an overflow and an anti-cavitation strainer. The basin will be plane and inclined so that all the water can be replaced easily and the cleaning will be simple. The inferior side of the draining hole (**POWER FLOW**) will be located below the low point of the basin (mm 260 x 110).

Steel structure

The tower will be made of:

- a) Zenzimir process galvanized metal (mm 2 thick) at gr/m² 275 or;
- b) X-STEEL Stainless steel metal option for long life, water savings and high-pressure machine cleaning.

Accessibility

In standard, the basin will have an access hatch (mm 390 x 540) and a **POWER FLOW** hatch (mm 260 x 110) allowing the sludge and others materials accumulated at the bottom of the basin to be removed quickly and completely, with a water jet.

Also, in standard, a large access door (mm 1 290 x 640) in the same materials as the tower will be supplied. This access will be used to remove easily the drift eliminators, nozzles, exchange surface and water distribution pipes.

Ventilation

The low-pressure centrifugal fan with forward-inclined blades and double air admission will be placed outside the basin. It will be **placed in dry airflow at man height and is easy to access without disassembly**.

The polyester inlet duct(s) stand out to optimise air suction will be simple to disassemble for easy maintenance.

The impeller(s) will be coated by baked EPOXY, and the volute will be protected by a 350 to 400 µm thick ELASTAIR covering. Each fan will be coupled with its own motor.

Electric motor and coupling

The IE3 asynchronous three-phase motor(s) will be closed type ventilated case(s) with a power of maximum kW....., rpm, IP55 protected, class F/B. Coupling will be made of trapezoidal belts selected for 150 % of nominal power.

Water distribution

Water distribution will be provided by PVC pipes which will supply the nozzles made of polypropylene. They will be screwed to the distribution pipes, for easy **maintenance and strong mechanical resistance**.

Packing (infill)

The **EFFI-PACK** exchange surface will be made of thermoformed and welded PP sheets.

Highly resistant to shocks and chemical agents and offering a maximized exchange surface, its free surface will be important. Resistant up to 75°C as standard, its excellent thermal efficiency will promote energy savings.

Drift eliminator

The **EUROVENT certified high efficiency** PP drop eliminators will allow the maximum elimination of water training at the tower outlet. Resistant to ultraviolet, they can be easily removed from above to access the distributors and the exchange body if necessary. The drift will be 0.01 % maximum of the re-circulating water flow.

Connections

All the connection pipes will be hot dip galvanized or in stainless steel option for optimized inside and outside protection. As standard, a low-level switch will avoid the start of the pump and will protect the water heaters in case of “too low” water level.

Options

An Automatic Inductive blow down can be integrated as an option (see separate technical sheet).

As an option, a plume suppression battery, frequency variators on fans, water make-up by electrical level control, EFFI-SILENT pool soundproofing, and all stainless-steel accessories (volute, wheel, shaft, etc...) will also be available. The equipment can be delivered in spare parts to be assembled, with assembly on site by one of our experienced technicians.

Prescription **ATIM-(G)ATIM** series

High-efficiency open-circuit evaporative hybrid cooling tower, with a forced draft centrifugal(s) fan(s), JACIR, **(G)ATIM** series...

Thermal characteristics

The dissipated power will be..... kW, with a temperature range from°C to°C, an ambient air temperature of ...°C, and a wet bulb temperature of..... °C.

Acoustic characteristics

The sound pressure level of the tower must not exceed.... dB (A) at meters in free field over all directions. To ensure this, the tower has one of the following types of soundproofing devices:

- 1 – **IB**: sound attenuators without baffles at suction and discharge cone upholstered with acoustic foam;
- 2 – **ICV/ICVK**: complete sound attenuation with parallel baffles both at air inlet and outlet fan housing and can also have a double casing of high-density mineral wool. It can reach NR 30 at m 10.

Tower casing and inclined basin

Casing of the cooling tower will be made of single, self-supporting sheet steel panels with double or quadruple folds on the 4 sides. Side panels will be designed to receive a double casing later on if necessary.

Stainless steel rivets with a high locking capacity will be used for assembly. There will be no welding or screws used for the assembly on parts in contact with the water.

The basin will have a large capacity in order to take into account the response time of the installation. Its capacity will be 700 litres per module for the **ATIM** serie, and 880 litres per module for the **(G)ATIM** serie. The basin is fitted with an inspection door (mm 390 x 540), floating valve that can easily be adjusted, a drain, an overflow and an anti-cavitations strainer. The tank is inclined so that all the water can be replaced easily and the cleaning is simple. The inferior side of the draining hole (**POWER FLOW**) will be located below the low point of the basin (mm 260 x 110).

Steel structure

The tower will be made of:

- a) Zendzimir process galvanized metal (mm 2 thick) at gr/m² 275 or;
- b) X-STEEL Stainless steel metal for long life, water savings and high-pressure machine cleaning.

Accessibility

In standard, the basin will offer an access hatch (mm 390 x 540) and a **POWER FLOW** hatch (mm 260 x 110) allowing the sludge and others materials accumulated at the bottom of the basin to be removed quickly and completely, with a water jet.

Also, in standard, a large access door (mm 1 290 x 640) in the same materials as the tower will be supplied. This access will be used to remove easily the drift eliminators, nozzles, exchange surface and water distribution pipes.

Ventilation

The low-pressure centrifugal fan with forward-inclined blades and double air admission will be placed outside the basin. It will be **placed in dry airflow at man height and is easy to access without disassembly**.

The polyester inlet ducts stand out to optimise air suction will be simple to disassembled for easy maintenance.

The impeller will be coated by baked EPOXY, and the volute will be protected by a µm 350 to 400 thick ELASTAIR covering. Each fan will be coupled with its own motor.

Electric motor and coupling

The IE3 asynchronous three-phase motor(s) will be closed type ventilated case(s) with a power of maximum kW....., rpm, IP55 protected, class F/B. Coupling will be made of trapezoidal belts selected for 150 % of nominal power.

Water distribution

Water distribution will be provided by PVC pipes which will supply the nozzles made of polypropylene. They are screwed to the distribution pipes, for easy **maintenance and strong mechanical resistance**.

Packing (infill)

The **Effi-Pack** exchange surface will be made of thermoformed and welded PP sheets.

Highly resistant to shocks and chemical agents and offering a maximized exchange surface, its free surface will be important. Resistant up to 75°C as standard, its excellent thermal efficiency will promote energy savings.

Drift eliminators

Highly efficient Eurovent certified, the PP sheets drift eliminators will prevent the water from being sprayed out at the outlet tower. Ultraviolet resistant, they will be easy to remove from the top in order to access to the distributors and to the exchange surface if needed. The drift will be 0.01 % maximum of the re-circulating water flow.

Plume suppression coil

As a standard model, the tubes will be assembled in a triangular pitch, in copper (Stainless steel option), outside diameter 16 mm, and 0.5 mm thick. The fins will be in copper.

The fin pitch will be 3 mm in standard.

A monitored valve to adjust the water spray on the infill is **associated to the plume coil**.

As soon as ambient conditions are met, this system makes it possible to operate significant water savings by cooling the water in the dry mode, rather than spraying and evaporating it.

Connections

All the connection pipes will be made of hot-dip galvanized steel, or optional stainless steel to optimized internal and external protection.

The easement panels will include: an overflow device, a draining orifice and a make-up water.

Options

An Automatic Inductive bow down can be integrated as an option (see separate technical sheet).

As an option, a plume suppression battery, frequency variators on fans, water make-up by electrical level control, EFFI-SILENT pool soundproofing, and all stainless-steel accessories (volute, wheel, shaft, etc...) will also be available. The equipment can be delivered in spare parts to be assembled, with assembly on site by one of our experienced technicians.