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# General description and benefits ATM-(G)ATM

## JACIR

With more than 60 years of experience, our company:

- ∞ Has invested in detailed research and development to offer technical solutions in line with environmental protection through unparalleled achievements and numerous patents.
- ∞ Is today the European market leader thanks to its technology ahead of market requirements.

## The strengths of the ATM and ATIM series

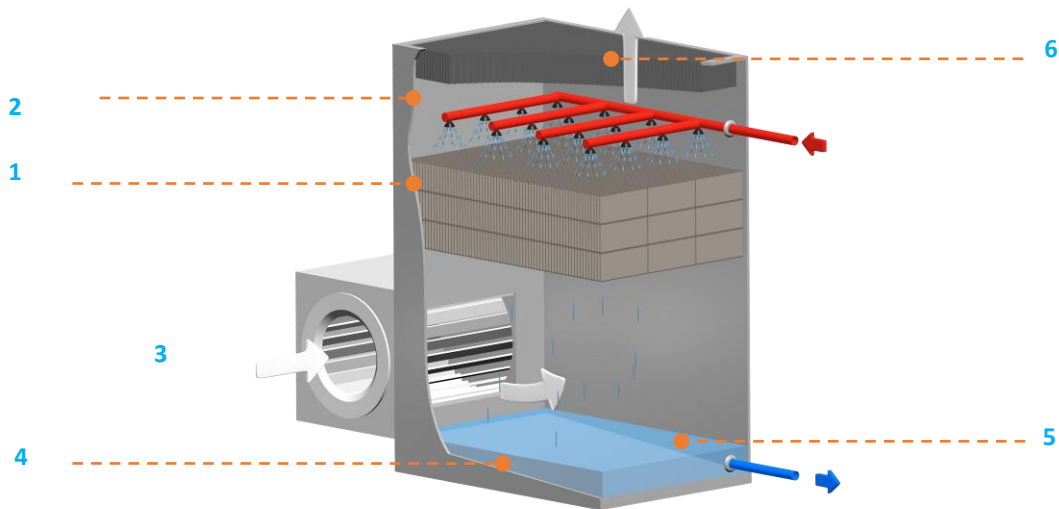
- ∞ **SAFETY AND HYGIENE** Towers design compliant with December 2020 NF E 38-424 standard.
- ∞ **TIGHTNESS** Thanks to our assembling technology, we guaranty no leak equipment.
- ∞ **SILENCE** Very quiet towers in standard version that can reach exceptionally low sound levels and be adapted to match further requirements.
- ∞ **EXCHANGE SURFACE** Highly efficient and easy to maintain, its excellent temperature resistance (75 ° C continuously) also allows use up to 95 ° C as an option.
- ∞ **ANTICORROSION COATING** The tower casing assembled without any welding in galvanized steel is also proposed in **X-STEEL stainless-steel** (corrosion resistance higher than that of the 316L).
- ∞ **EASY MAINTENANCE** Large visit hatches, fan out of the tower and at man's height, sloped basin for a total emptying and hygienic maintenance.
- ∞ **EVOLUTIVE TOWER** Possibility of easily increasing the discharged power by adding a plate exchanger to isolate the primary network (refer to **ATIM** or **CRIM** series),  
Possibility to decrease the sound level using silencers without necessarily increasing the installed electrical power.
- ∞ **MODULAR CONSTRUCTION** One-piece construction providing easy handling and transport.  
For a larger capacity of the basin, the **ATM** range can be declined in **(G)ATM**.

# Open cooling tower principle ATM

## Principle of operation:

A cooling tower is a heat exchanger that allows water to be cooled by direct contact with air. The transfer of heat from water to air is carried out partly by transfer of sensible heat, but above all by latent heat (evaporation of part of the water in the air), which makes it possible to achieve cooling temperatures lower than those of ambient air.

## Operation of an open cooler:



The hot water to be cooled is pumped to the top of the device 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 up and saturated, by passing through the wetted heat exchange surface.

As a result of surface tension caused by the exchange surface mesh, the water spreads evenly, and falls down over the whole cooler height. The exchange surface is thus increased.

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

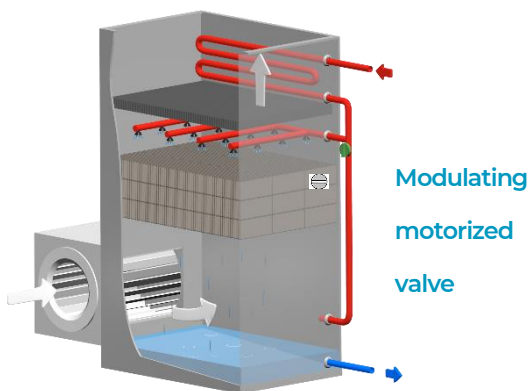
## Hybrid open circuit cooling tower principle – ATIM Series

Standard **ATM series** 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.

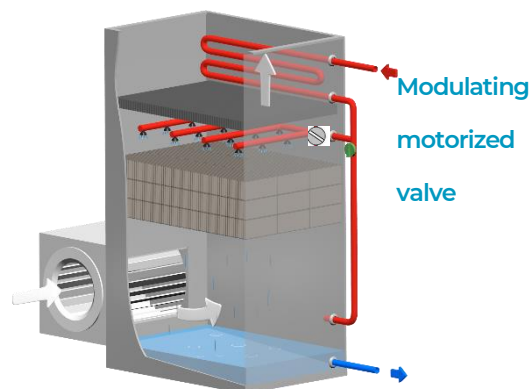
This technology proposed by JACIR has been deeply researched in partnership with the CETIAT for over 50 years, and has offered the opportunity to file innovating patents.

### Operation of a hybrid open tower:



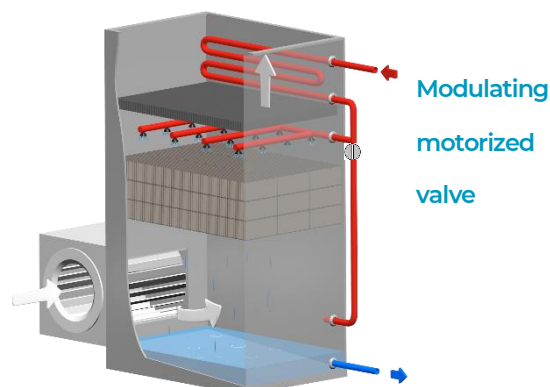
#### Dry operation: WINTER

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 is first sent to the plume removal battery, and then can be dispersed in its entirety on the runoff surface by distribution nozzles. This water is cooled first via the battery by transfer of sensible heat and then by latent heat transfer (evaporation on the runoff surface). In wet operation, 5 to 10% of the power will be evacuated dry thanks to the pre-cooling of the water in the battery.

# Manufacturing details - ATM-ATIM

## 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 for the parts in contact with water; a high covering seal ensures the close fit between the panels.

Hydraulic connections are made of the same material as the cooling tower casing

As standard model, the panels are in galvanised steel mm2 thick ZENDZIMIR process 275 gr / m<sup>2</sup> (galvanised plates are protected by the zinc oxidation on the surface).



**X-STEEL stainless steel** is proposed as an option (corrosion resistance higher than AISI 316).

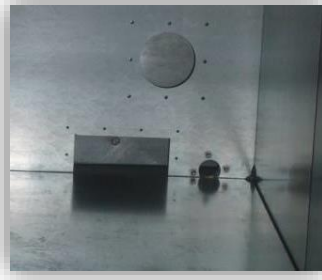
## Inclined bottom basin

Large capacity basin to account for installation response time.

The bottom of the basin is flat and inclined for an **easy and total emptying** and the assembly of the panels is carried out without any e-welding to avoid any area of attachment (source of corrosion).

On the utilities panels of the basin are located:

- ∞ An overflow and PP flange,
- ∞ Drain below the lower level of the basin and Power-flow access enabling to quickly and completely evacuate all sludge and other accumulated parts in the bottom of the casing using simple water spray
- ∞ Make up water by float valve or electro valve as an option,
- ∞ Water outlet through a removable strainer (stainless steel or PEHD according DN) with a flange oversized to eliminate cavitation, with a perforated steel plate,
- ∞ Large access door(s) to the basin (990 x 540 mm)
- ∞ Option: electrical heater of V 230 or V 400 and waterproof thermostat with separate bulb. For automatic resistance control, suitable contactors must be provided.



## Exchange surface : EFFI-PACK

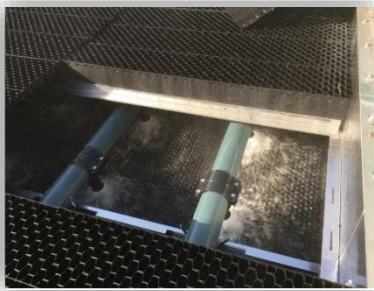
Consisting of thermoformed and welded polypropylene sheets, the **EFFI-PACK exchange surface** is shock resistant and offers a maximum surface. Its excellent thermal efficiency also promotes energy savings.

- ∞ Good temperature resistance (75°C continuously),
- ∞ Extensive area of high efficiency,
- ∞ Ease of maintenance,
- ∞ High resistance to chemical agents,
- ∞ Range of use up to 95°C on request (option).



## Water distribution

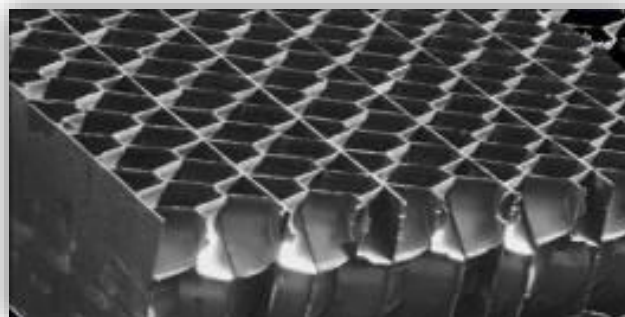
Water distribution is ensured by PVC ramps through highly efficient water distributors. These polypropylene nozzles distribute water in the form of a full jet cone. Screwed to the distribution pipes, for easy maintenance and strong mechanical resistance. An internal turbulator distributes the water in order to obtain a uniform distribution over the entire 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 motors

- ∞ IE3 asynchronous three-phases motor, compatible with a frequency drive,
- ∞ 1500 rpm,
- ∞ 400/690 V - 5.5 kW,
- ∞ Hz 50,
- ∞ IP 55 (outdoor operation possible),
- ∞ Class F / B,
- ∞ Direct connection to terminal box



## Fans

Centrifugal fans studied and manufactured by JACIR. The turbine is of the double-bearing type. The removable suction pavilions for the disassembly of the turbine, are designed in polyester. Their calciform shape significantly improves the performance of the fan.

The bearings are self-aligned, greased in factory and re-greaseable using a remote copper lubrication line for simple and fast maintenance, without disassembly.

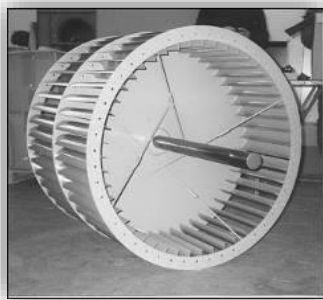
One fan per module and a single motor driving a maximum of two fans. In the event that the motor drives three fans, the connection would be ensured by a flexible coupling between the shaft carrying two fans and the shaft carrying the third fan.

The flanges of the volute are used to fix the engine support. This design of the motor-fan avoids the whip effect of the belts.

Belt and trapezoidal pulley transmissions and belt tension by tilting the motor chair for easy adjustment.

The turbine is protected by an EPOXY coating baked in the oven.  
The volute is made of X-STEEL stainless steel.

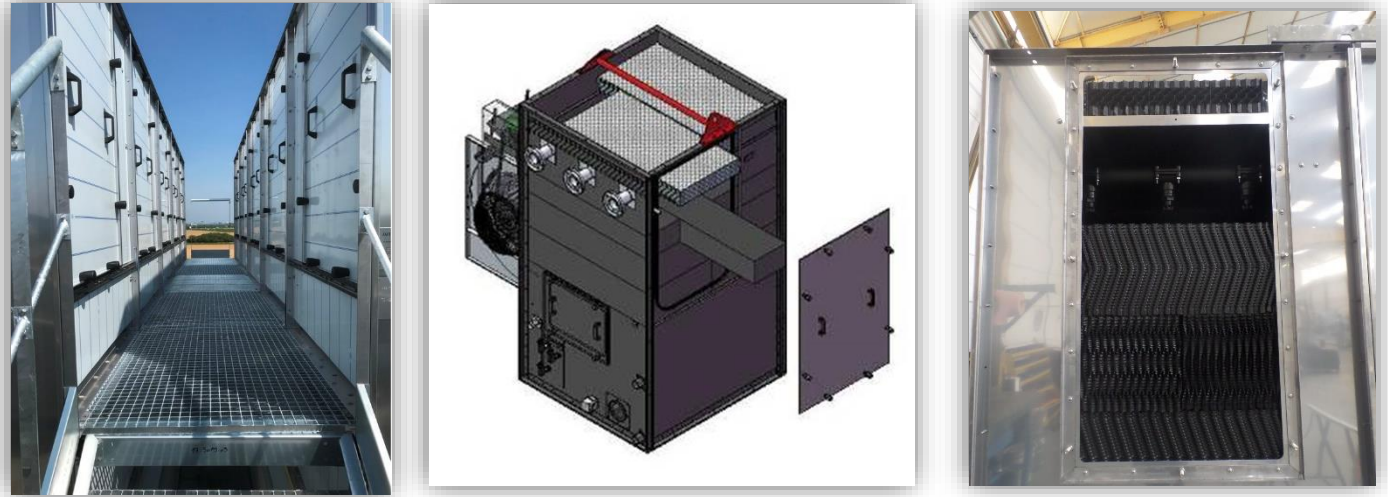
As an option, possibility of construction of the stainless-steel turbine.



## Accessibility

As standard model, the basin is equipped with a large access door mm 390 x 540 mm, and a **Power Flow** access mm 260x110: located under the bottom level of the basin, it allows a fast complete drain and an easy cleaning of sludge or other accumulated parts of the bottom casing using simple water jet.

Also as standard, a large access door per module (ventilation section) of the same material as the 1350 x 900mm tower is also planned: they allow the rapid disassembly of drop eliminators, dispersers, exchange body and water distribution ramps along the entire length of the tower.



## Plume suppression coil and modulating valve Jacir Patent

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.





## Sound attenuations (OPTION)

### IB 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 proofing

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

- ∞ 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

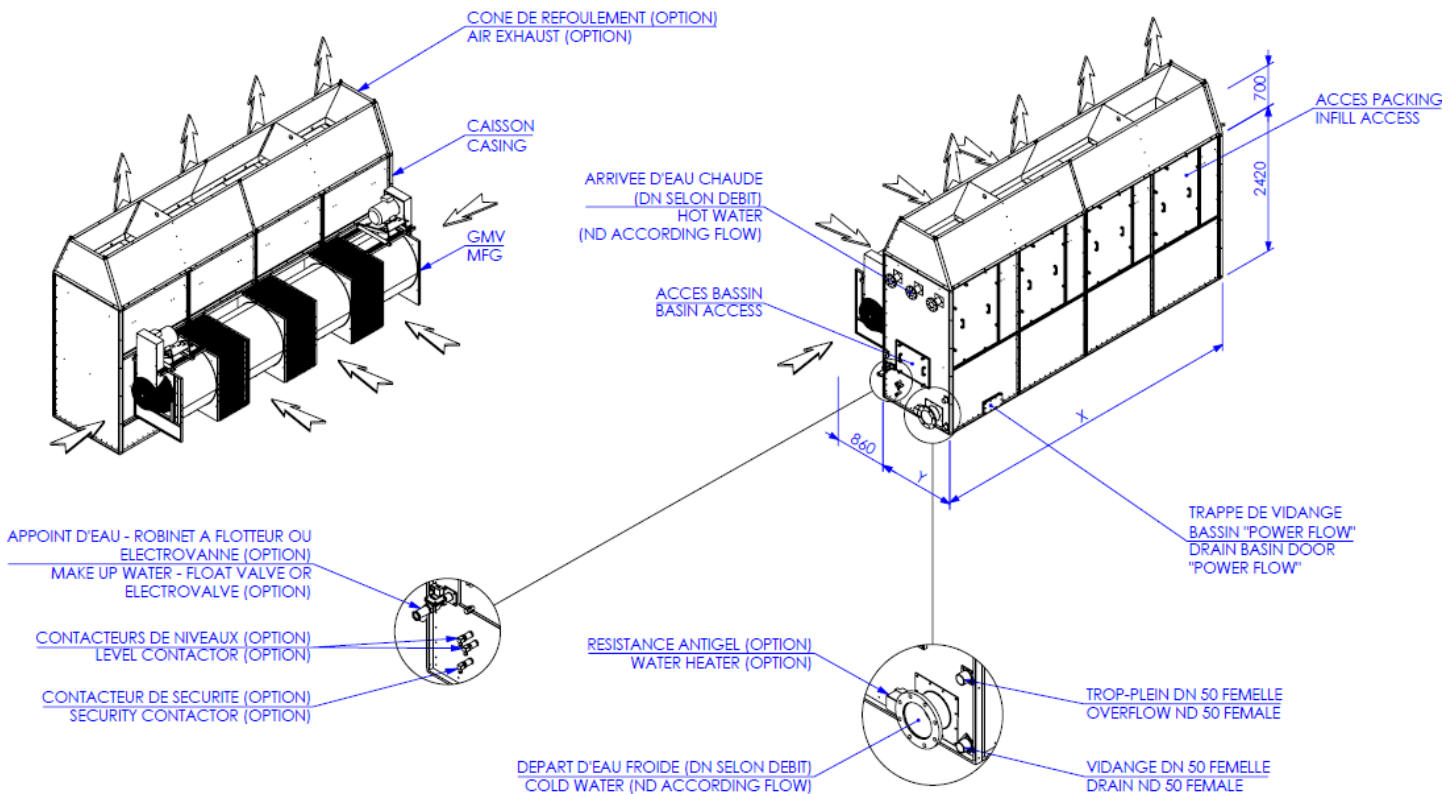
## ATM serie

		ATM 4M	GATM 4M	ATM 5M	GATM 5M
Overall height including air exhaust option	mm	3120	3120	3120	3120
Length	mm	5300	5300	6600	6600
Width	mm	2160	2460	2160	2460
Heat power average ref. (1)	Kw	900	1090	1120	1370
NDKL fan	Qty	4	4	5	5
Total engine power	Kw	18	30	24	37
Sound level at 20m (2)	[dBA]	54	55	54	55
Empty weight (without beams)	Kkg	1770	1860	2100	2350
Full weight (without beams)	Kg	4820	5680	5920	7110
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	2115	2115	2115	2115
Cold water outlet	Dn	Depending on the flow			
Drain basin <b>POWER FLOW</b>	mm	260 x 110			
Electric heater with thermostat (optional)	Kw	3	3	3	6
Float valve (male) or optional electro valve		option			
Low level		option			
High level		option			
Safety lack of water		option			

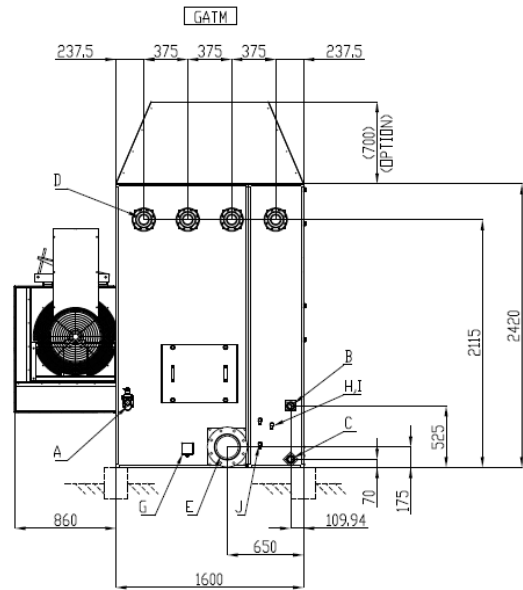
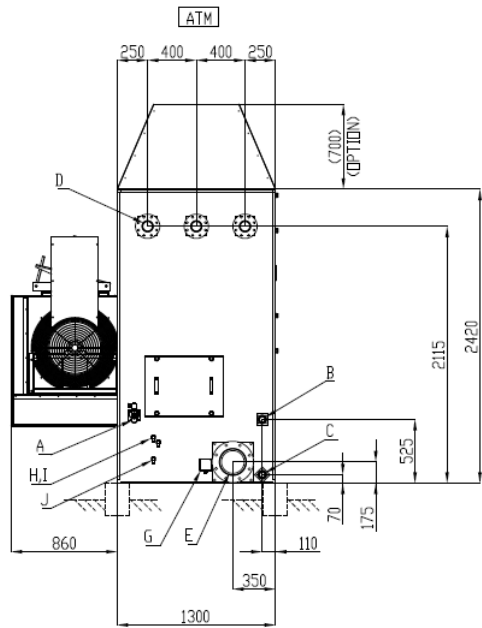
(1) : average reference cooling capacities calculated for thermal conditions of 32 / 27 / 21 ° C.

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

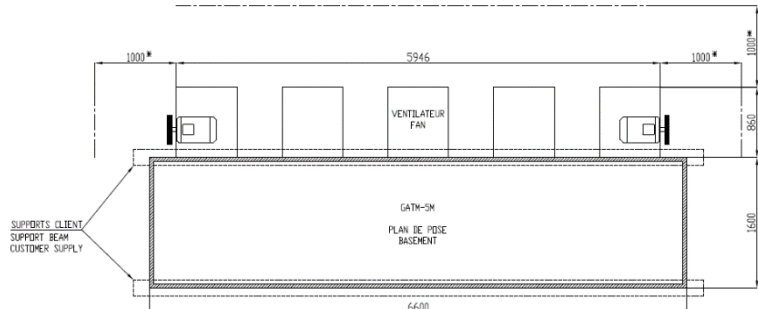
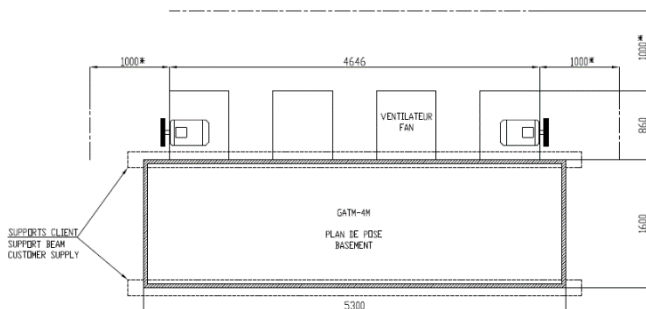
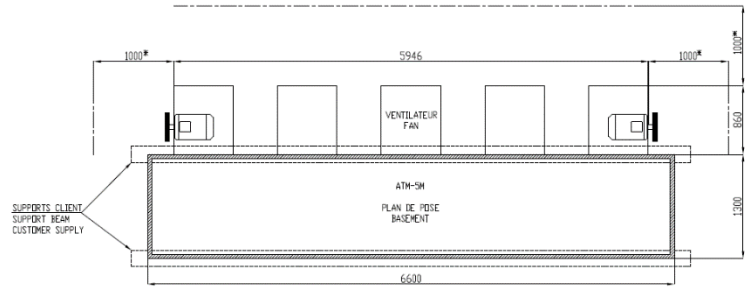
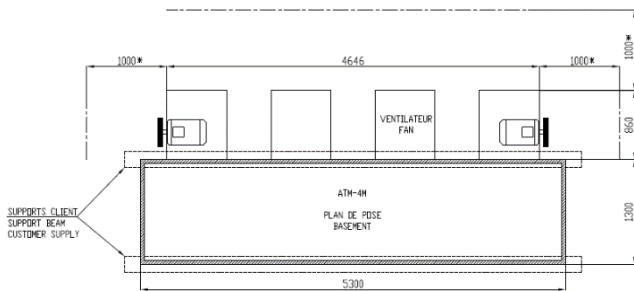
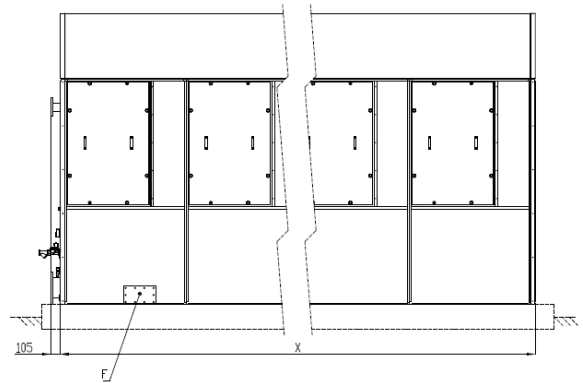
Note: For greater powers, towers may be juxtaposed.



# Drawings and dimensions ATM-(G)ATM series



- 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 ATM-(G)ATM with IB sound attenuation

## ATM serie

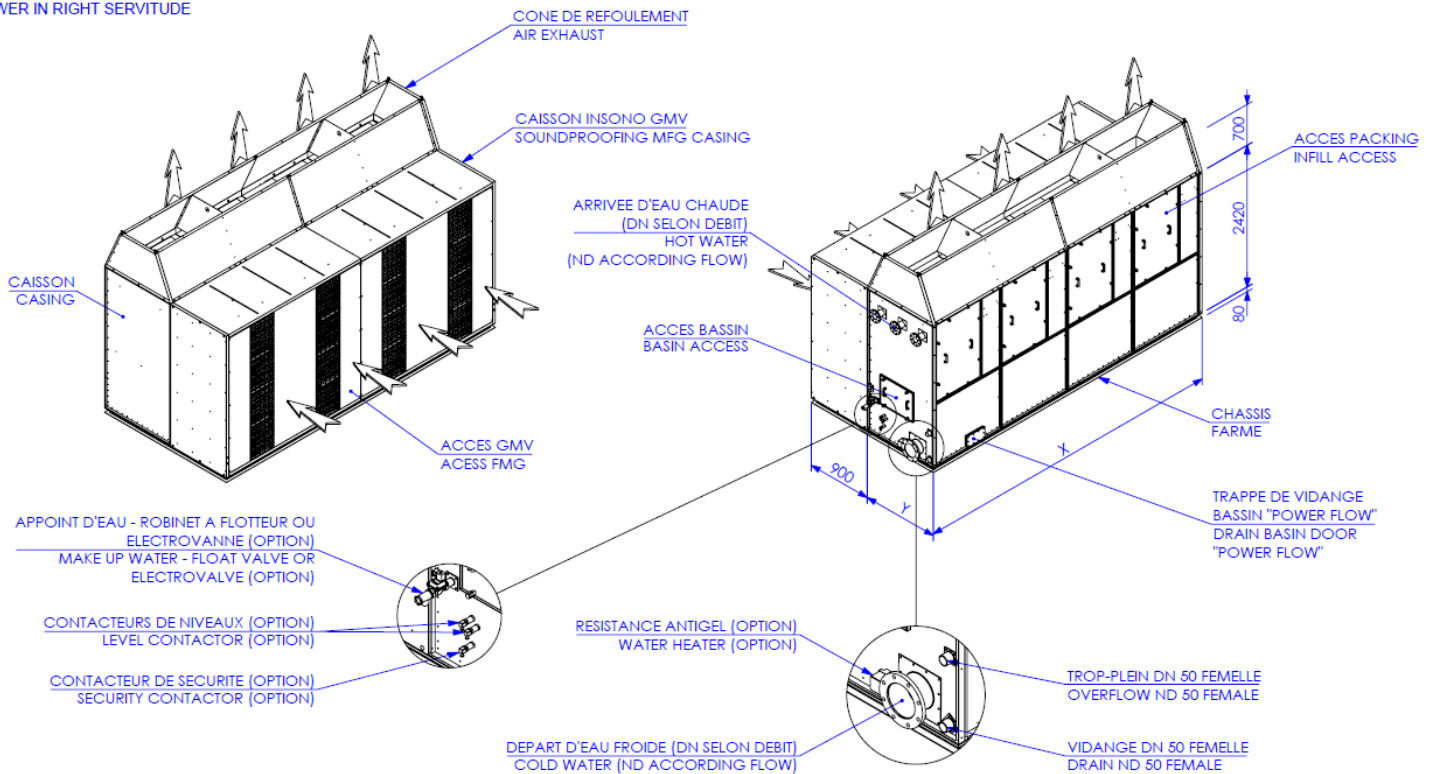
		ATM 4M IB	GATM 4M IB	ATM 5M IB	GATM 5M IB
Overall height including air exhaust option	mm	3 120	3 120	3 120	3 120
Length	mm	5 300	5 300	6 600	6 600
Width	mm	2 400	2 700	2 400	2 700
Heat power average ref. (1)	Kw	880	1070	1100	1340
NDKL fan	Qty	4	4	5	5
Total engine power	Kw	18	30	24	37
Sound level at 20m (2)	[dBA]	46	47	46	47
Empty weight (without beams)	Kkg	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 <b>POWER FLOW</b>	mm	260 x 110			
Electric heater with thermostat (optional)	Kw	3	3	3	6
Float valve (male) or optional electro valve		option			
Low level		option			
High level		option			
Safety lack of water		option			

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

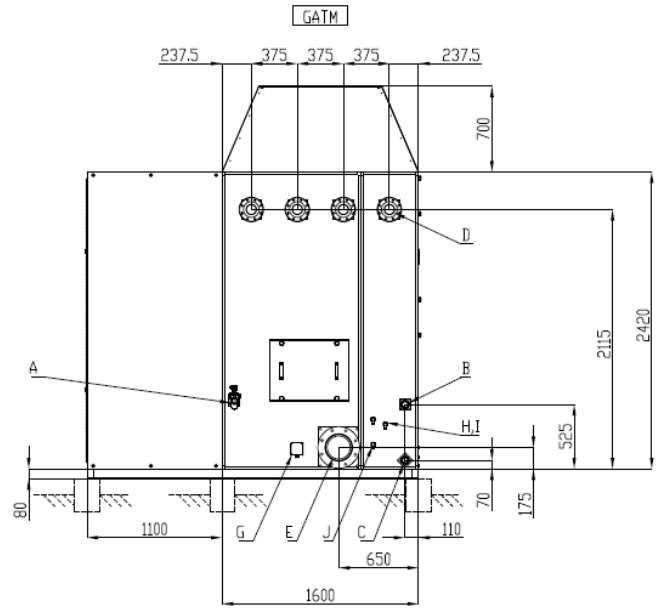
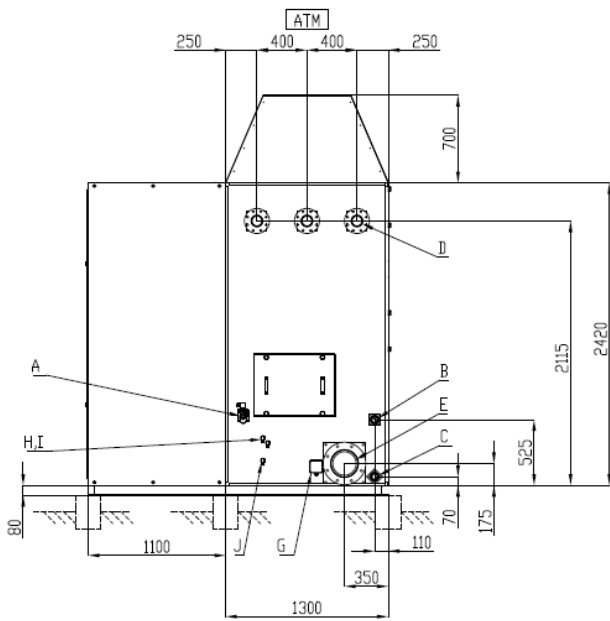
(2) : Sound level: Average pressure level (Lp) in the free field in the 4 directions at 1.5 m from the ground.

Note: For greater powers, towers may be juxtaposed.

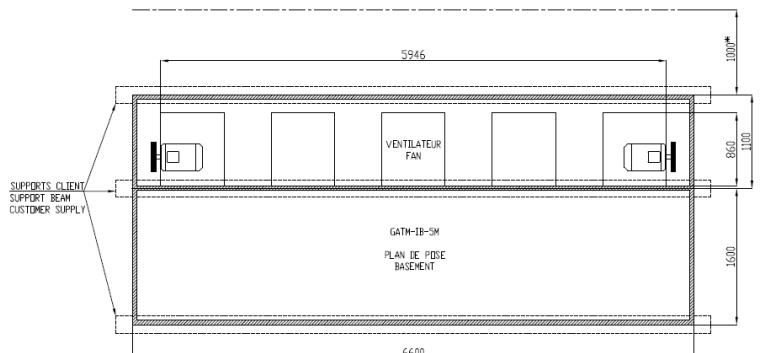
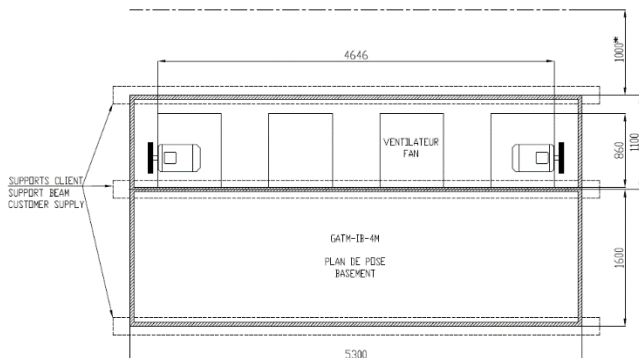
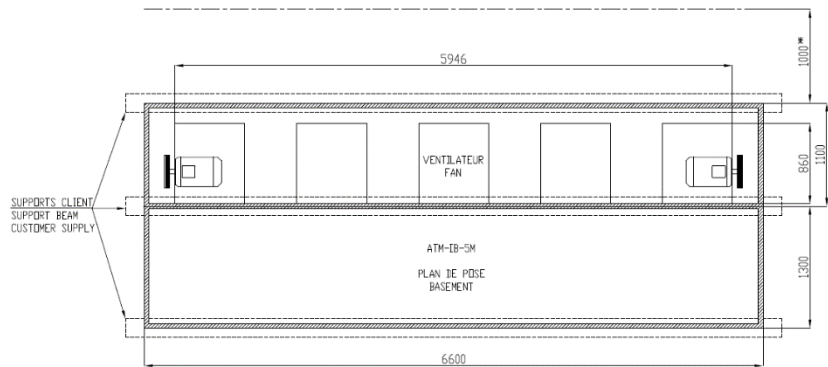
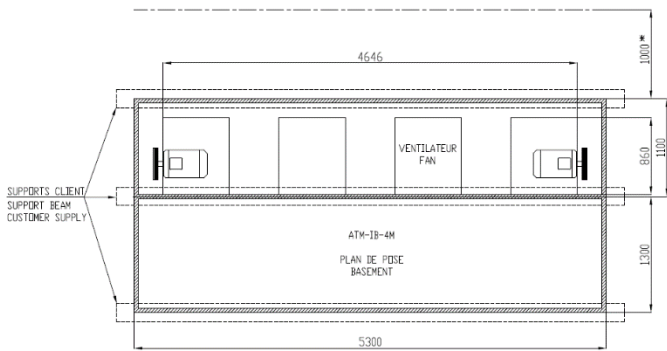
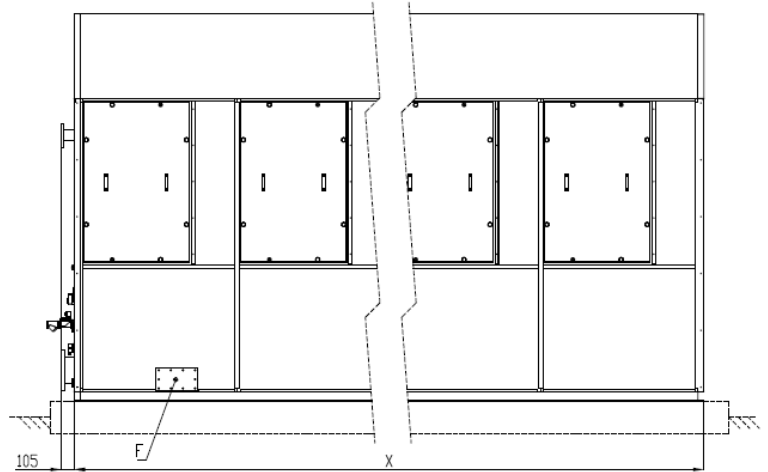
TOURS REPRESENTEES SERVITUDE DROITE  
TOWER IN RIGHT SERVITUDE



# Drawings and dimensions ATM-(G)ATM with IB 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
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1 SWITCH (WATER LEVEL SECURITY) (OPTION)



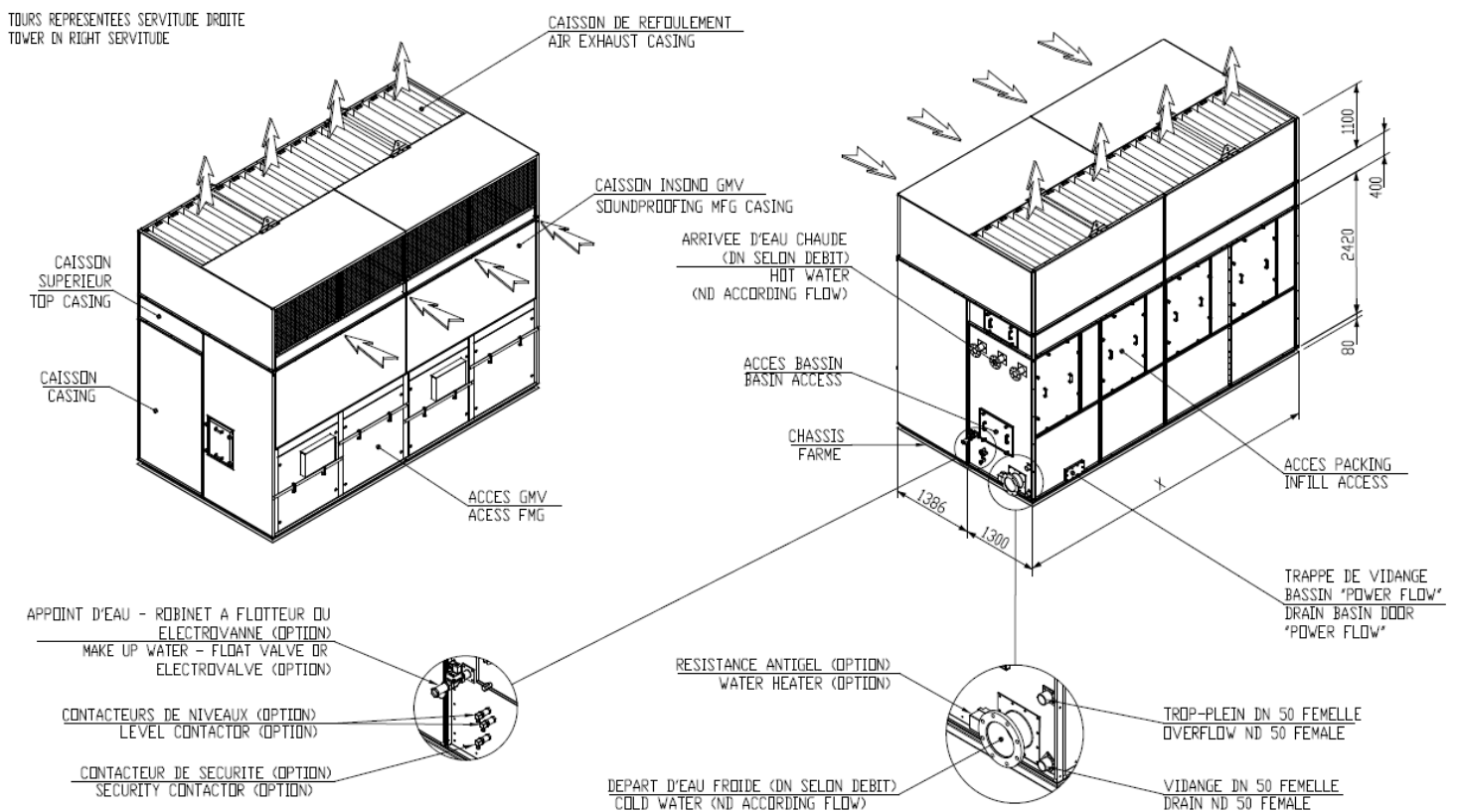
# Technical characteristics ATM-(G)ATM with ICV/ICVK sound attenuation

ATM serie		ATM 4M ICV	GATM 4M ICVK	ATM 5M ICV	GATM 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 average ref. (1)	Kw	840	840	1050	1050
NDKL fan	Qty	4	4	5	5
Total engine power	Kw	18	18	30	30
Sound level at 20m (2)	[dBA]	43	40	44	41
Empty weight (without beams)	Kkg	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 <b>POWER FLOW</b>	mm	260 x 110			
Electric heater with thermostat (optional)	Kw	3	3	3	6
Float valve (male) or optional electro valve		option			
Low level		option			
High level		option			
Safety lack of water		option			

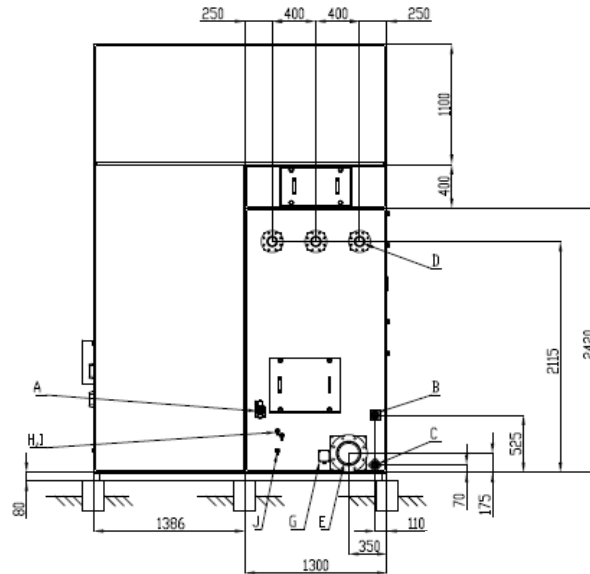
(1) : average reference cooling capacities calculated for thermal conditions of 32 / 27 / 21 ° C.

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

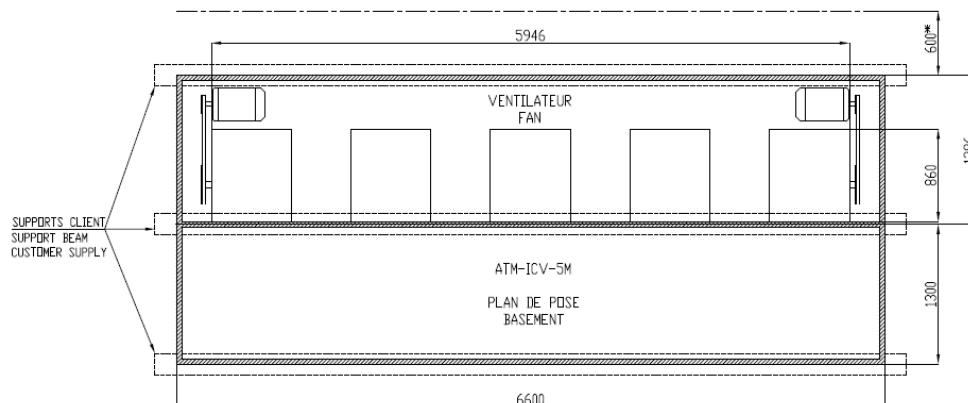
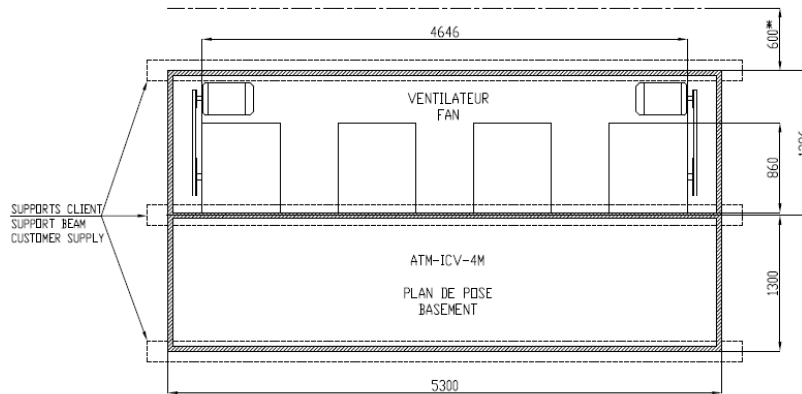
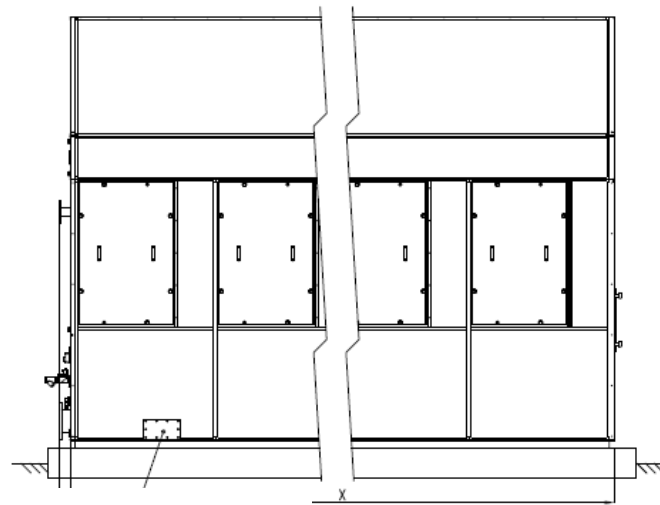
Note: For greater powers, towers may be juxtaposed.



# Drawings and dimensions ATM-(G) ATM with ICV/ICVK 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)



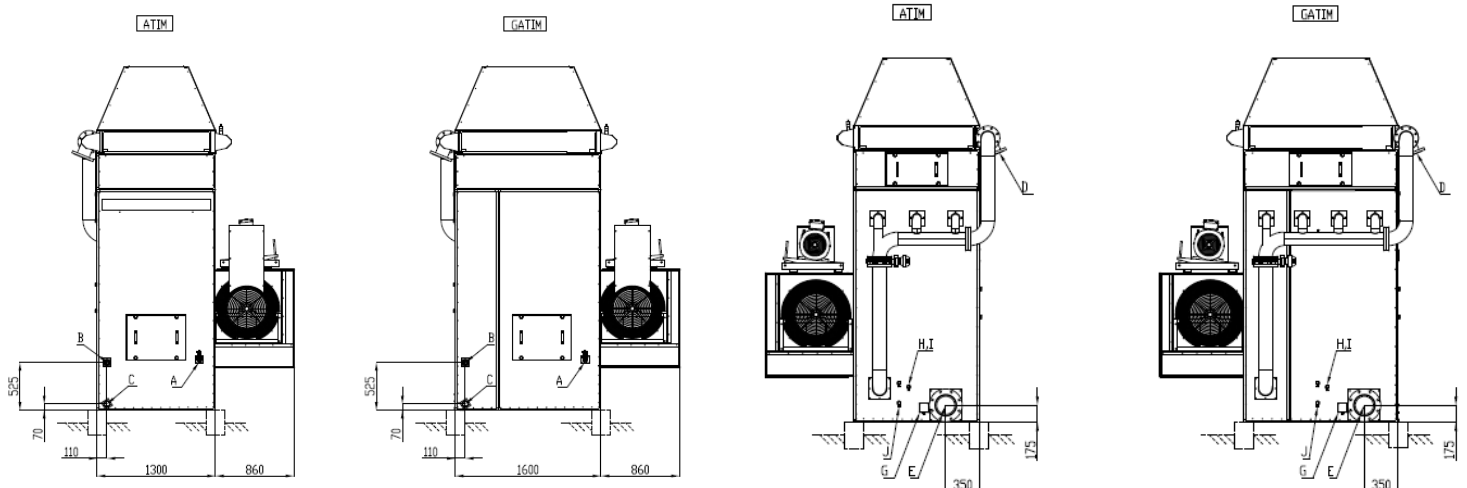
# Technical Characteristics ATIM-(G)ATIM series

ATIM serie		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 average ref. (1)	Kw	900	1090	1120	1370
NDKL fan	Qty	4	4	5	5
Total engine power	Kw	18	30	24	37
Sound level at 20m (2)	[dBA]	54	55	54	55
Empty weight (without beams)	Kkg	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	According to throughput			
Connection flange	Qty	1	1	1	1
Height	mm	2 800	2 800	2 800	2 800
Cold water outlet	Dn	According to throughput			
Drain basin <b>POWER FLOW</b>	mm	260 x 110			
Electric heater with thermostat (optional)	Kw	3	3	3	6
Float valve (male) or optional electro valve		option			
Low level		option			
High level		option			
Safety lack of water		option			

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

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

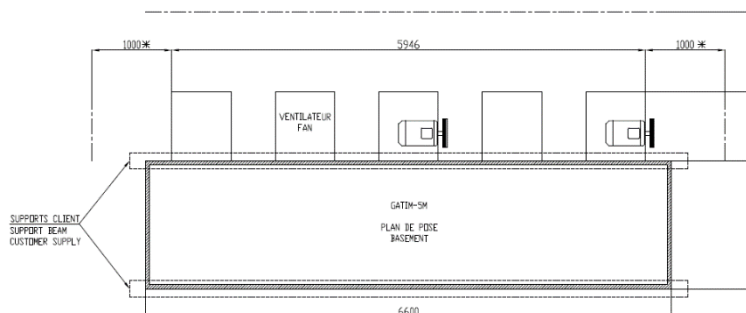
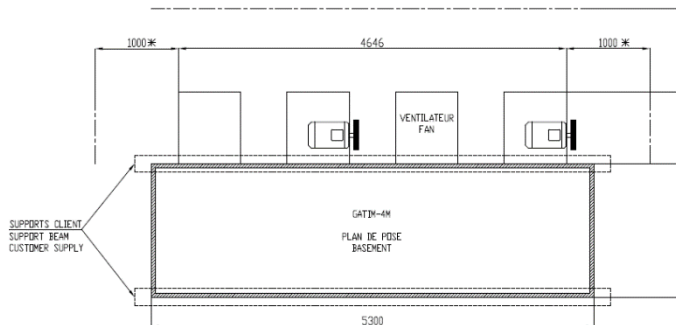
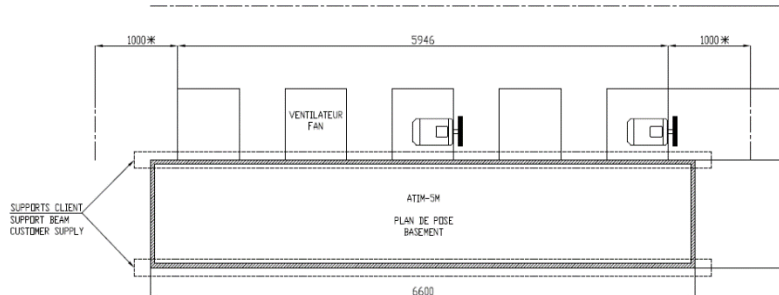
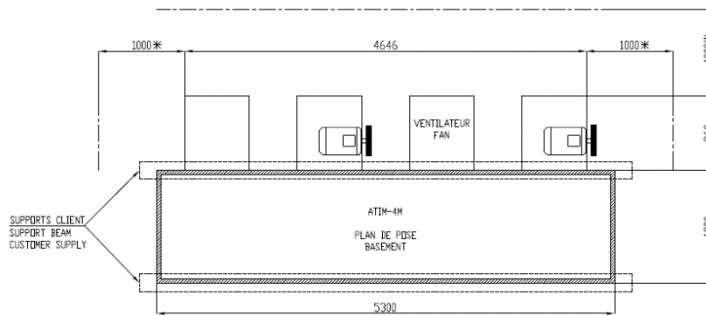
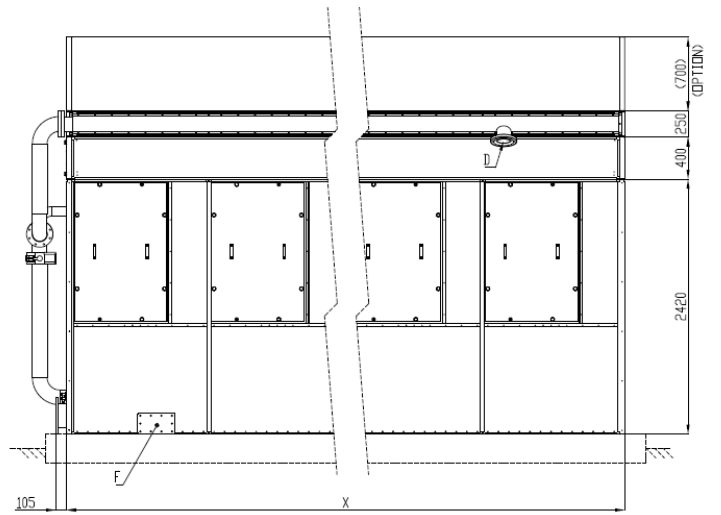
Note: For greater powers, towers may be juxtaposed.





# Drawings and dimensions ATIM-(G)ATIM

- A APPOINT 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)



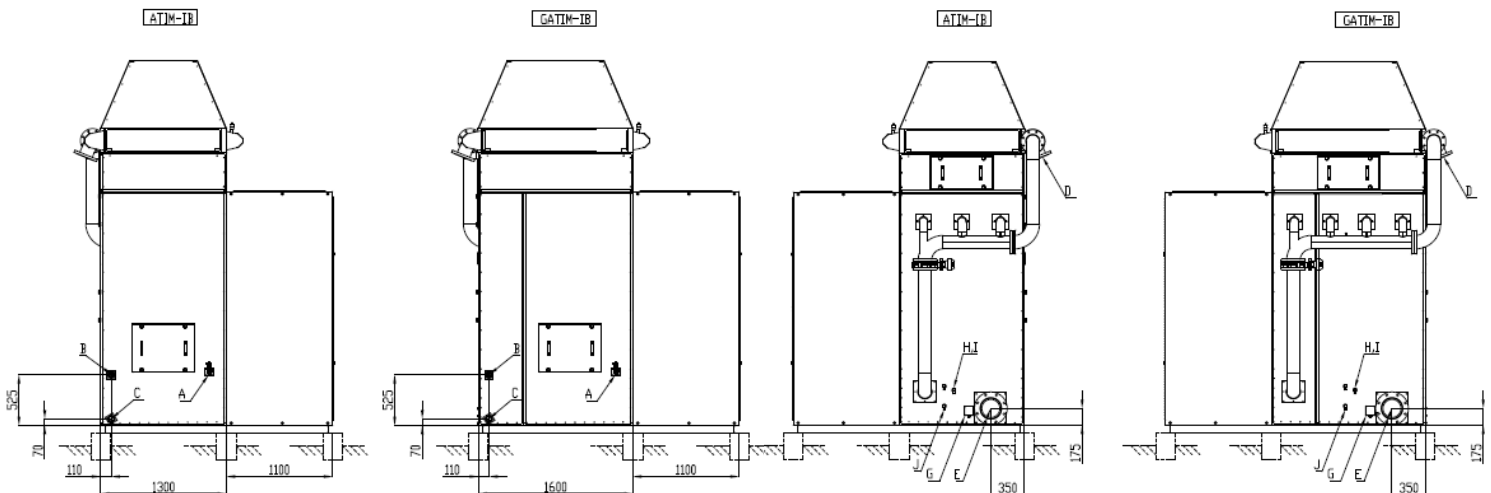
# Technical characteristics ATIM-(G)ATIM with IB sound attenuation

ATIM serie		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 average ref. (1)	Kw	880	1070	1100	1340
NDKL fan	Qty	4	4	5	5
Total engine power	Kw	18	30	24	37
Sound level at 20m (2)	[dBA]	46	47	46	47
Empty weight (without beams)	Kkg	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 <b>POWER FLOW</b>	mm	260 x 110			
Electric heater with thermostat (optional)	Kw	3	3	3	6
Float valve (male) or optional electro valve		option			
Low level		option			
High level		option			
Safety lack of water		option			

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

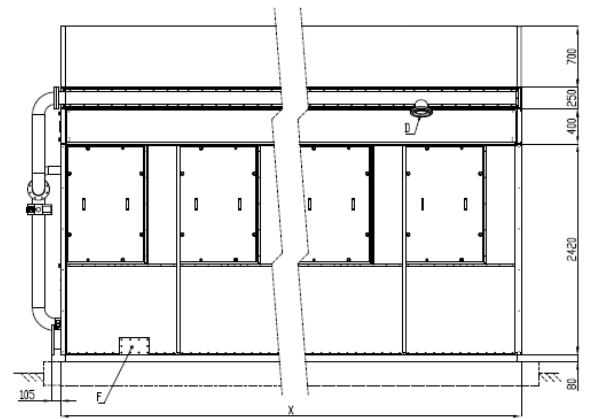
(2) : Sound level: Average pressure level (Lp) in the free field in the 4 directions at 1.5 m from the ground.

Note: For greater powers, towers may be juxtaposed.

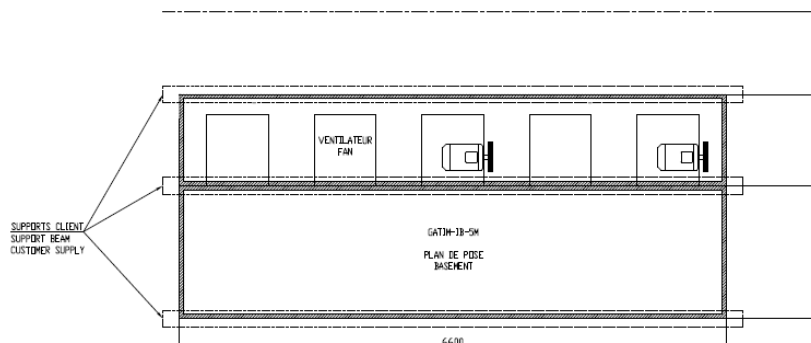
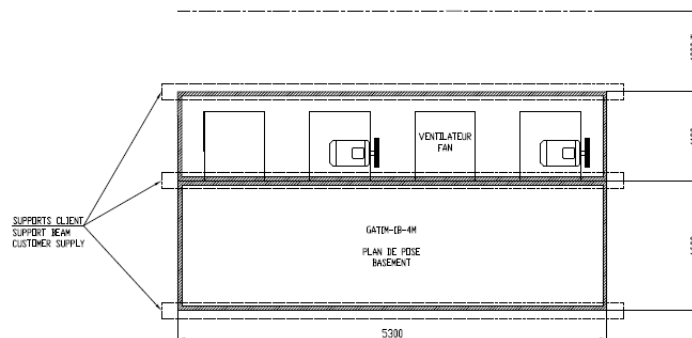
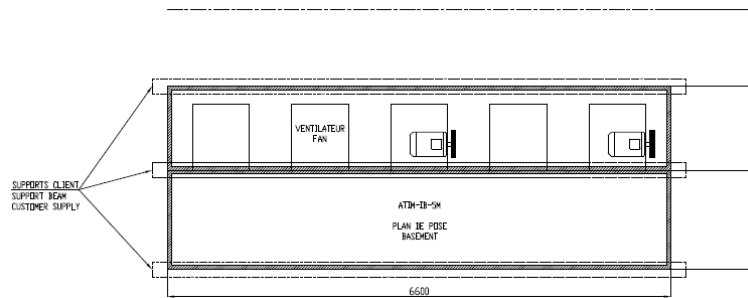
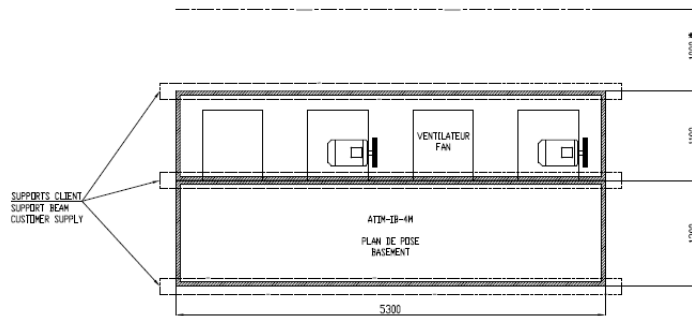


# Drawings and dimensions ATM –(G)ATM with IB sound attenuation

- 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
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1 SWITCH (WATER LEVEL SECURITY) (OPTION)



(\*) ESPACES LIBRES RECOMMANDES



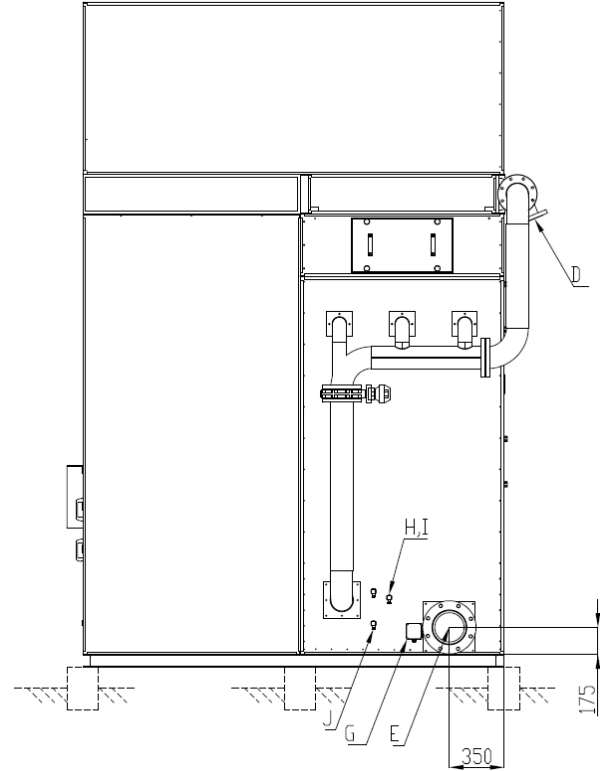
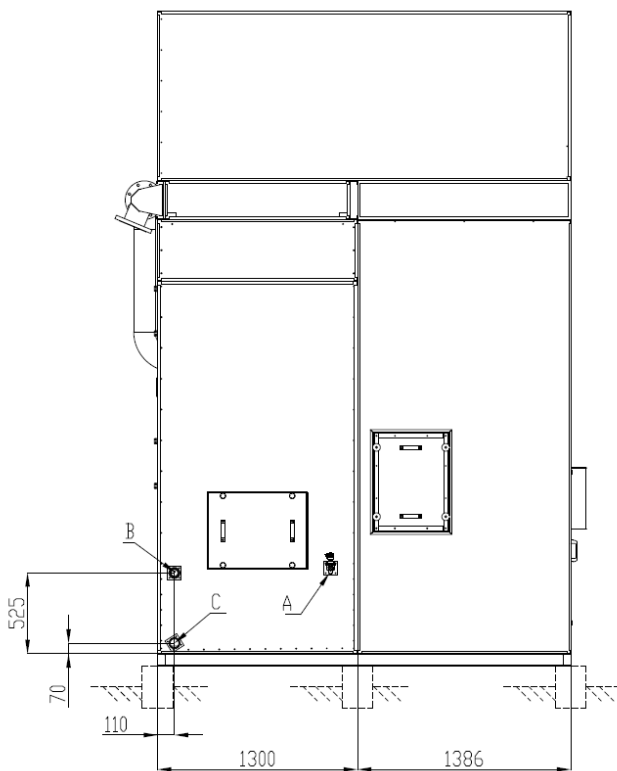
# Technical Characteristics ATIM -(G)ATIM with ICV/ICVK sound attenuation

ATIM serie		ATIM 4M ICV	GATIM 4M ICVK	ATIM 5M ICV	GATIM 5M ICVK
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 average ref. (1)	Kw	840	840	1050	1050
NDKL fan	Qty	4	4	5	5
Total engine power	Kw	18	18	30	30
Sound level at 20m (2)	[dBA]	43	40	44	41
Empty weight (without beams)	Kkg	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 <b>POWER FLOW</b>	mm	260 x 110			
Electric heater with thermostat (optional)	Kw	3	3	3	6
Float valve (male) or optional electro valve		option			
Low level		option			
High level		option			
Safety lack of water		option			

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

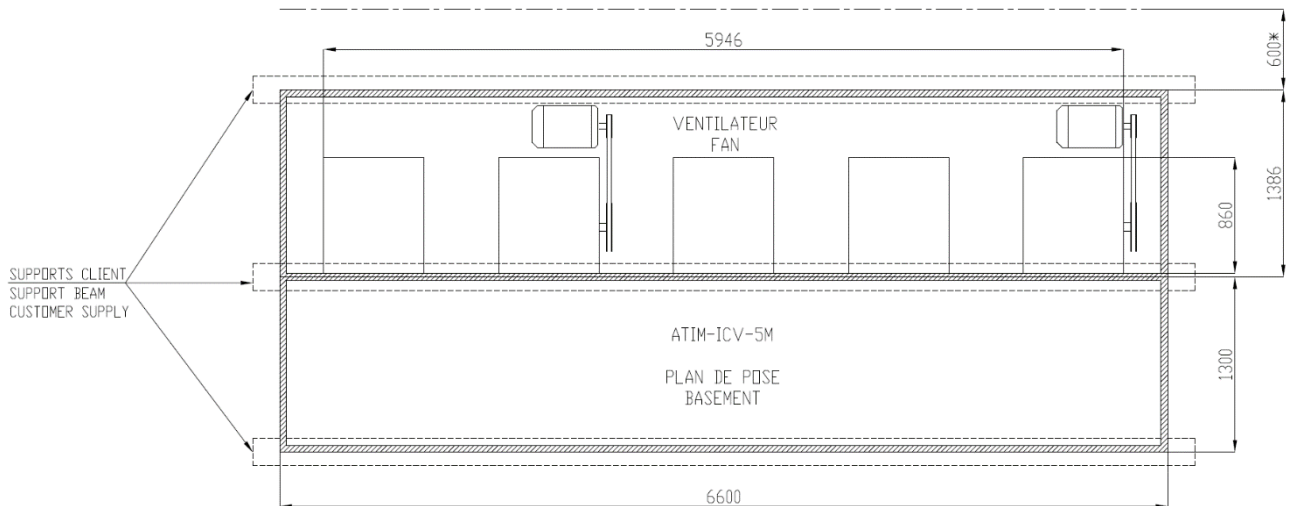
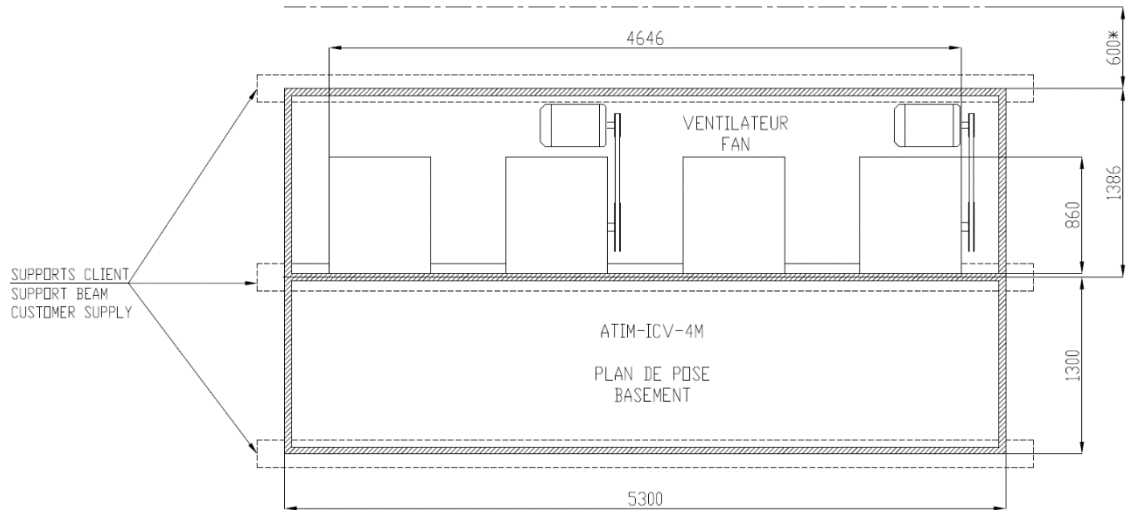
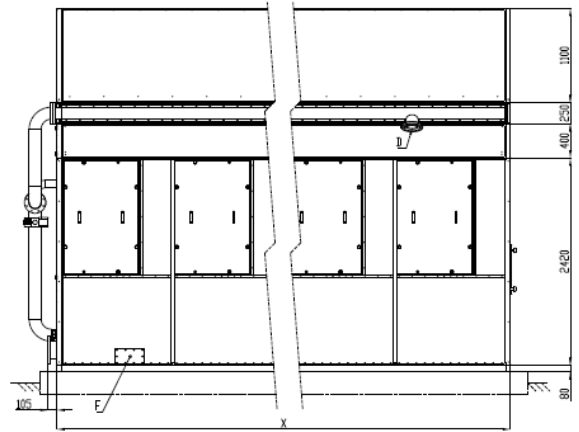
(2) : Sound level: Average pressure level (Lp) in the free field in the 4 directions at 1.5 m from the ground.

Note: For greater powers, towers may be juxtaposed.



# Drawings and dimensions ATIM-(G)ATIM with ICV/ICVK sound attenuation

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1 SWITCH (WATER LEVEL SECURITY) (OPTION)



## Support ATM-(G)ATM 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

## Choice of location ATM-(G)ATM

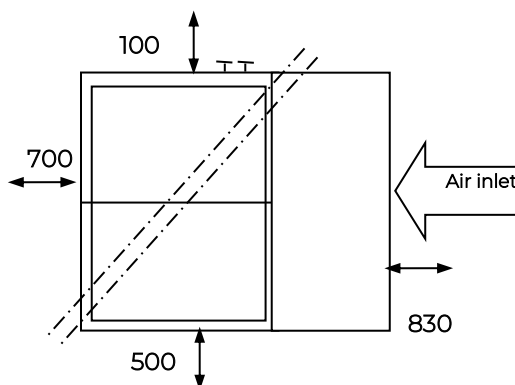
The cooling tower should not be surrounded on all sides by walls greater than or equal to its height, and moreover without opening, since a risk of "short circuit" could occur.

The air discharged at the exit of the tower (hot air saturated with moisture) could be recycled into the unit and consequently reduce the thermal efficiency of the tower.

In any case, it is necessary to respect minimum spaces on all four sides of the tower to ensure proper supply to the fans and sufficient access for assembly and maintenance.

Failure to comply with these few rules would inevitably lead to a malfunction of the cooling tower.

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

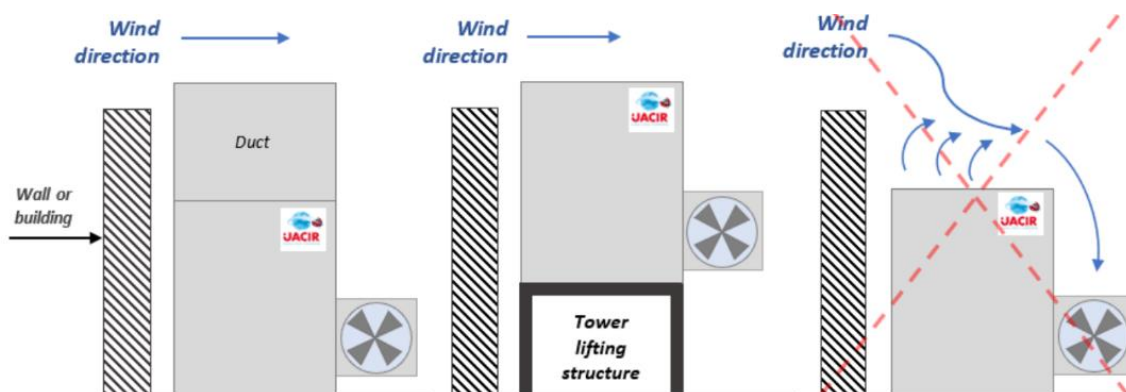


Do not hesitate to consult JACIR for advice.

## Layout example:

The location choice for tower installation must follow these recommendations:

- ∞ The air intake area must always be kept free of any major obstruction.  
=> The obstacle-free distance to be kept around each air inlet is shown on the overall plan and is approximately 1 metre (unless otherwise stated).
- ∞ The air discharge must not be disturbed either by direct obstacles.  
=>The installation of acoustic baffles or ducts must be approved by JACIR's Technical Department.
- ∞ The risk of hot air being blown back (at tower outlet) to the air intake area must be prevented.  
=> The direction of the prevailing wind and the proximity of surrounding buildings (possibly generating risks of back-flow) are elements to be considered.



# Water treatment ATM and ATIM

## WATER EVAPORATION

Consumption by evaporation is approximately 1.7 kg/h per 1 000 kcal/h.

## 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 installation requirements, consider drain value 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 available solutions 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 20°

Maximum acceptable salinity = HT 40°

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

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

Once water conductivity level has been reached, a motorised valve can be activated to drain the required quantity of water to maintain the right concentration level. See separate documentation. (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 number 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, algae, moss, fungus or permanent shells can tend to grow in cooling towers. There are products that can be added periodically to the water circuit to prevent these organisms from developing.

**Water treatment should be undertaken by a specialized Company.**

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

# Technical prescription ATM and GATM

High performance open circuit evaporative water cooling tower, centrifugal fan(s), JACIR type (G)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 unit shall not exceed ..... dB (A) to ..... free field meters in all 4 directions; to do this, the tower will be equipped with one of the following sound attenuations if necessary:

- 1 – **type IB**: Sound trap without suction cabinets and a discharge cone lined with acoustic foam,
- 2 – **type ICV / ICVK** or **special**: soundproofing by adding acoustic boxes to suction and discharge, possibly supplemented by a doubling of the tower body with high density rock wool, up to NR30 to 10m.

## Tower casing and inclined bottom basin

The cooling tower casing will be made of self-supporting steel panels, twice or 4 times folded on the 4 sides. Side panels will be designed to receive, if necessary, a double casing later on. Stainless steel rivets with uniform and high-capacity locking will be used for assembly.

The cooling tower casing will be assembled without any bolting or welding for the parts in contact with water; a special designed high covering seal ensure waterproofing between the panels.

The basin will be equipped with a rectangular access hatch (390 x 540 mm), with a floating valve that can easily be adjusted, a drain, an overflow and an anti-cavitation strainer.

The sloped bottom of the basin will allow a complete and easy drain thanks to the POWER FLOW drain hole located under the lowest part of the basin in order to ease the cleaning. The size of this opening will be 260x110 mm.

## Casing

The cooling tower panels casing will be made of:

- ∞ As a standard, galvanized steel 2 mm thick ZENDZIMIR process 275 gr/m<sup>2</sup> (galvanized plates are protected by the zinc oxidation on the surface) or,
- ∞ Option, X-STEEL stainless steel for its long-lasting properties, water saving and easy cleaning.

## Accessibility

As standard, a large access door (1350 x 900 mm) per module (ventilation section) and made of the same material as the tower will be provided to allow quick and easy disassembly of drop eliminators, dispersers, exchange surface and water distribution ramps along the entire length of the tower.

## Fans

The low-pressure centrifugal fan(s) with forward-tilted, double-voiced blade(s) will be external to the basin, placed in the dry air stream, at man-height for easy access for disassembly and maintenance. The polyester pavilion(s) will be profiled to optimize air suction and removable to simplify maintenance.

The turbine is protected by an EPOXY coating baked in the oven. The volute is made of X-STEEL stainless steel. As an option, possibility of stainless-steel turbine.

One fan per module and a single motor driving a maximum of two fans. If a motor drives three fans, the connection shall be ensured by a flexible coupling between the shaft carrying two fans and the shaft carrying the third fan.



## Electric motor(s) and transmission(s)

The asynchronous three-phase motor(s) IE3 shall be of the closed type with ventilated carcass of maximum power of..... Kw..... rpm, IP55 protection, class F/B. The transmission will be provided by trapezoidal belts sized up to 150% of the rated power.

## Water supply

Water distribution will be ensured from PVC ramps, which will supply polypropylene nozzles with internal turbulator for optimal water distribution, and easy dismantling.

## Exchange surface

The EFFI-PACK exchange surface will be made of PP sheets. Resistant to shocks and offering the maximum exchange surface, the system will thus limit the risks of fouling.

## Drift eliminators

Eurovent certified for high-efficiency the PP sheets drift eliminators will prevent the water from being sprayed out at the tower outlet. Resistant to ultraviolet rays, they will be easily removable from above to access the nozzles and the exchange surface if necessary. The vesicular drive will be a maximum of 0.01% of the recirculating flow.

## Connections

All the connection pipes will be hot dip galvanized or in stainless steel option for optimized inside and outside protection. The servitudes panels will include a high-level switch, a drain hole and a water make up.

## Options

As options will also be available, a plume suppression coil, frequency drives on fans, a water supplement by electrical level control, soundproofing basin EFFI-SILENT, and all stainless steel accessories (turbine, wheel, shaft, etc.). The equipment can be delivered in spare parts to be assembled with on-site assembly by one of our experienced technicians.

## Technical prescription ATIM and (G)ATIM

High performance open circuit evaporative water cooling tower, centrifugal fan(s), JACIR type (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 unit shall not exceed ..... dB (A) to ..... free field meters in all 4 directions; to do this, the tower will be equipped with one of the following sound attenuations if necessary:

- 1 – **type IB**: Sound trap without suction cabinets and a discharge cone lined with acoustic foam,
- 2 – **type ICV / ICVK** or **special**: soundproofing by adding acoustic boxes to suction and discharge, possibly supplemented by a doubling of the tower body with high density rock wool, up to NR30 to 10m.

### Tower casing and inclined bottom basin

The cooling tower casing will be made of self-supporting steel panels, twice or 4 times folded on the 4 sides. Side panels will be designed to receive, if necessary, a double casing later on. Stainless steel rivets with uniform and high-capacity locking will be used for assembly.

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### Casing

The cooling tower panels casing will be made of:

- ∞ As a standard, galvanized steel 2 mm thick ZENDZIMIR process 275 gr/m<sup>2</sup> (galvanized plates are protected by the zinc oxidation on the surface) or,
- ∞ Option, X-STEEL stainless steel for its long-lasting properties, water saving and easy cleaning.

### Accessibility

As standard, a large access door (1350 x 900 mm) per module (ventilation section) and made of the same material as the tower will be provided to allow quick and easy disassembly of drop eliminators, dispersers, exchange surface and water distribution ramps along the entire length of the tower.

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The turbine is protected by an EPOXY coating baked in the oven. The volute is made of X-STEEL stainless steel. As an option, possibility of stainless-steel turbine.

One fan per module and a single motor driving a maximum of two fans. If a motor drives three fans, the connection shall be ensured by a flexible coupling between the shaft carrying two fans and the shaft carrying the third fan.

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## Water supply

Water distribution will be ensured from PVC ramps, which will supply polypropylene nozzles with internal turbulator for optimal water distribution, and easy dismantling.

## Exchange surface

The EFFI-PACK exchange surface will be made of PP sheets. Resistant to shocks and offering the maximum exchange surface, the system will thus limit the risks of fouling.

## Drift eliminators

Eurovent certified for high-efficiency the PP sheets drift eliminators will prevent the water from being sprayed out at the tower outlet. Resistant to ultraviolet rays, they will be easily removable from above to access the nozzles and the exchange surface if necessary. The vesicular drive will be a maximum of 0.01% of the recirculating flow.

## Plume suppression battery and modulating valve (Jacir patent)

As standard, the battery will be made of a steel collector coated with a primary paint + epoxy. Two air vents will ensure frost control. The tubes, arranged in a triangular pitch, will be made of copper. As an option, they can be made of stainless steel. The fins will be made of copper. A motorised valve to regulate the watering of the packing will be associated with the battery. As soon as climatic conditions permit, the installation will generate substantial water savings by evacuating the heat in the dry battery rather than by evaporation.

## Connections

All the connection pipes will be hot dip galvanized or in stainless steel option for optimized inside and outside protection.

The servitudes panels will include a high-level switch, a drain hole and water make up.

## Options

As options will also be available, a plume suppression coil, frequency drives on fans, a water supplement by electrical level control, soundproofing basin EFFI-SILENT, and all stainless-steel accessories (turbine, wheel, shaft, etc.). The equipment can be delivered in spare parts to be assembled with on-site assembly by one of our experienced technicians.