

TOPAZ NEO

Adiabatic cooler

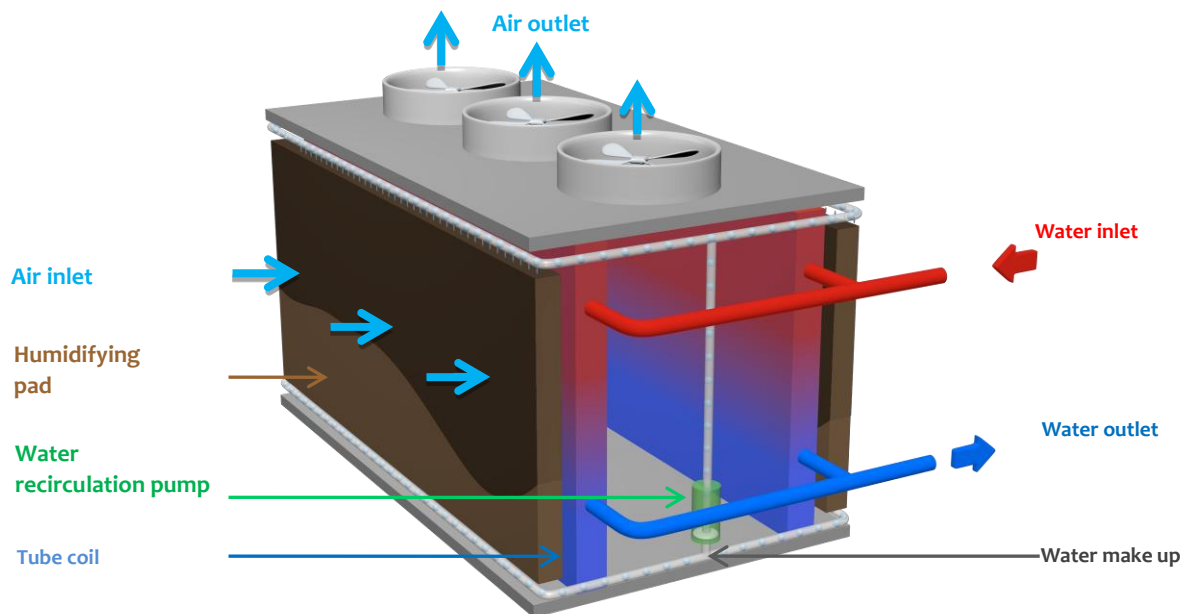
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TOPAZ NEO principle and operation

The TOPAZ NEO adiabatic cooler is a heat exchanger; calories/heat are rejected to atmosphere. An adiabatic cooler is a combination of dry cooler with an adiabatic precooling section.

This precooling section lowers ambient air temperature by evaporating water which is passed over the cooling/humidifying pads especially designed for this purpose.

Adiabatic cooler operation



Dry mode operation:

- ∞ The fluid is cooled in the dry tube coil by ambient air flow. The ambient air is drawn through the coils by fans mounted centrally on the top of the cooler; the humidifying pads located in front of the coils are dry.
- ∞ The fan speed is controlled by an inverter depending on heat load to maintain the fluid outlet temperature.
- ∞ The warm air is then evacuated upwards.

Adiabatic mode:

- ∞ When cooling in dry mode is not effective and the ambient temperature reaches a predetermined set point, the pads are saturated with water from the sump.
- ∞ The ambient air is cooled by evaporation when passing through the pads
- ∞ This pre-cooled air then passes through the tube coils and cools the fluid.
- ∞ The water which has not been evaporated on the pads is collected in a stainless-steel collector and then flows to sump. As an option, it can be recirculated with the make-up water from the sump to be redistributed over the pads. The water saving is then significant and does not require water treatment, it is without risk of Legionella.

TOPAZ NEO general description and benefits

Ranges

TOPAZ NEO is available in a range of 68 different duties composed by:

- ∞ Single motor fan set TM E09S
- ∞ Double row motor fan TM E09D
- ∞ High series double row motor fan set TH E09D
- ∞ Drainable double row motor fan set TMV E09D
- ∞ High drainable with double row of fans set THV E09D

General description

The TOPAZ NEO adiabatic cooler range includes:

- ∞ Two vertical heat exchanger tube coils,
- ∞ Two cooling/humidifying pads for precooling by evaporation,
- ∞ EC motors (Electronically Commutated): electronic Variation Speed Drive integrated to each motor,
- ∞ A low noise axial fan set.

The water distribution system for pre-cooling is follows:

- ∞ Water make-up electro/solenoid valve,
- ∞ Motorized bleed off valve,
- ∞ One or two water recirculation pump(s).

Benefits

- ∞ No drift,
- ∞ No water spray in airflow,
- ∞ Elimination of legionella risk,
- ∞ The coils have been tested (sealing and pressure according to PED), and their thermal performance have been certified Eurovent certified by Friterm or Termokar, both participating to Eurovent Certita Certification COILS program (www.eurovent-certification.com),
- ∞ No external fouling of the tube coils: extended life expectancy,
- ∞ No thermal performance decrease,
- ∞ No water treatment required,
- ∞ Very low water consumption,
- ∞ Easy maintenance due to vertical "H" shape of the tube coils: full access through the central door,
- ∞ Low operating costs,
- ∞ Optimized power consumption 2009/125/CE application (ErP) for minimum efficiency thresholds after 2015,
- ∞ Design for container transport: TM single row,
- ∞ Made in France.

TOPAZ NEO manufacturing details

Tube coils

In standard configuration, the coils are made of copper tubes and aluminium fins epoxy coated.

Tubes are expanded through the fins to ensure both optimized mechanical resistance and thermal conductivity.

The tube thickness varies with the cooler size.

The coils are Eurovent certified by the manufacturers Friterm or Termokar, who are participating to the Eurovent Certita Certification program COILS (www.eurovent-certification.com). The coils are tested under pressure up to 20 bar according to PED.

TMV and THV ranges are provided with totally drainable non-freezing coils. JACIR engineered tubes and coil arrangement enabling a complete drain under gravity (no compressed air injection needed). They are completed by an integrated automatic power and flow regulations



Pre-cooling by evaporation

The evaporation section is used to pre-cool the ambient inlet air. The cooling/humidifying media covers the whole air inlet section, on both sides of the unit.

The design and the choice of materials have proven to give best efficiency and long operating life, both in urban and industrial environments.

For a better integration in the architecture of the building, its colour can be adapted on request, according to the needs. The cooling/humidifying pads are made of special cellulose, chemically treated to avoid moisture and to improve water absorbing characteristics.

Selected to simplify maintenance, the media pads are not directional. It is easy to disassemble the cooling/humidifying pads, without tools or special access requirements. Optionally, a telescopic pole especially designed for handles of cooling pads cover, is proposed in order to ease the handling from the ground.

POP-SCREEN option allows to meet the environmental requirements of the site, an additional fixing frame is available as an option to fix a protection net on the medias (against insects, near forests, etc).



Water distribution

The pre-cooling circuit is activated when fluid outlet temperature is higher than the set point. This wet/dry set point is around 23°C in a continental climate, for a fluid outlet temperature of 27°C. Collected water can be recirculated without any bacteriological risk (temperature is below the level for bacterial growth): the water consumption is then divided by a factor of 3 during adiabatic mode operation.

The water distribution channels are entirely enclosed on the top in Z-STEEL stainless-steel and do not require any pressure to operate. They are located outside the airflow and distribute water evenly onto the pads, in full safety. Their "U" shape makes internal cleaning very easy, without any tools, handles are provided to aid removal.

Z-STEEL stainless-steel channels collect the water which has not been evaporated. Once filtered, the water is then returned to the basin and sucked in by the recirculation pump.

The water is then driven to a covered stainless-steel sump: a level switch and control of the water level is secured by one- or two-level detectors. The water recirculation pump is serviced externally by an access hatch provided for this purpose and thus remains accessible when the cooler is in operation.

The system includes a drain valve that automatically opens to dump the water from the sump if the cooling section has been used during the previous 24 hours.

A drying cycle is incorporated which will drain the sump completely and will dry the pads and other items which come into contact with water by running the fans at high speed. This function minimises bacteria growth potential and prolongs pad life.

Optionally, a backup mode on the pump(s) is also available, as well as a master-slave regulation common in the case of an installation of several units on the same hydraulic grid.

Motor fan sets

The motor fan sets draw the air through the pads, then through the tube coils. Equipped with EC technology motors and directly coupled to low-speed axial fans. This combination offers both power efficiency and optimized sound level. The blades are made of aluminium and are directly fitted to the motor rotor. The motor fan coupling is direct and requires no maintenance. Fast electrical connectors allow easy and safe maintenance.



EC motors (Electronically Commutated)

The **TOPAZ NEO** adiabatic cooler is a cutting-edge technology and shows exceptional performance (efficiency over the ErP 2015 directive IE3 and efficiency near IE4). They are IP 55 insulation class, 380/400 V, 50/60Hz. Technology in compliance with eco conception (UE) 327/2011 concerning Directive 2009/125/CE application (ErP) for minimum efficiency after 2015.

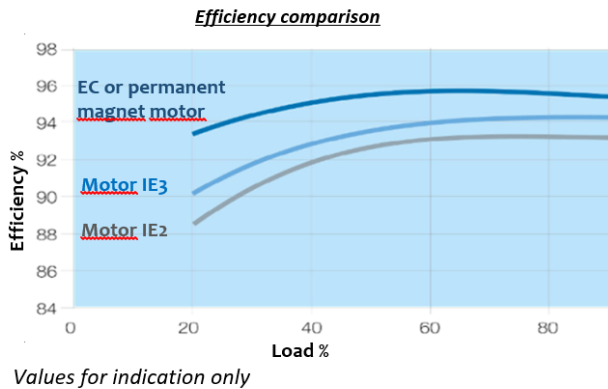
This efficiency places the **TOPAZ NEO** range at the peak of energy efficiency, especially as the motors are always controlled by the inverter.

The motor runs cooler, is smaller and lighter compared to an asynchronous motor and has maintenance and handling benefits. Also, a lower temperature means long-lasting bearings (grease nipples directly on the motor), and insulation materials.

These motors have a low carbon footprint → power savings. As an option, a backup mode on ventilation is also available: default activation of the fans at 50% in case of malfunction of the PLC.



Efficiency comparison



Frequency drive

Installed as a standard across the whole range, there is one frequency drive per motor.

EC motor directly coupled to its axial fan and regulated by the frequency drive allows to offer an exceptional efficiency and cos phi, even in case of low-speed variation.



Automaton

The **TOPAZ NEO** range is totally “Plug and Play”: the Schneider automaton, equipped with HMI (Human Machine Interaction), allows frequency drive and pre-cooling operation controls for full maintenance.

Here are some functions of the automaton:

- ∞ Digital monitoring including: pumps drain valve, water sump make-up valve, drain and dry pads mode control,
- ∞ Thermal load management,
- ∞ Automatic drain control of the adiabatic system,
- ∞ Analogue output for fan speed control with frequency drive,
- ∞ Analogue output for fan speed control,
- ∞ Management of recirculating water levels,
- ∞ Switching to dry/wet mode of one or two media sides (depending on model),
- ∞ Programming of the full draining (option),
- ∞ Internal clock to optimize the management of the day and night sound levels,
- ∞ Memory backup in case of power failure,
- ∞ Multi-line liquid crystal display of main parameters and alarms,
- ∞ User interface to modify the set points water recirculation level monitoring



In case of **drainable TOPAZ NEO range TMV** parallel installed on a same circuit, connections to the automaton will be necessary for the drain information share between all the units (connections customer supply).

Communication modes are optional: Ethernet, Modbus, LonWorks, or BACnet.

Intelligent accessibility

The **TOPAZ NEO** adiabatic cooler has been designed with two main goals: thermal performance and ease of maintenance. Therefore, the following technical features are incorporated:

The “H” arrangement of the cooler provides an ideal geometry for complete access to the mechanical equipment and to internal sides of the coils over the entire height. Hinged access hatch also allows easy and immediate maintenance of the pumps and strainers directly from the outside even during dry operation of the cooler.



Equipped with a mechanical shutter and its safety sensor, giving full opening without threshold to the inside of the cooler, the motor-fan units are safety dismountable from inside, on a non-slip aluminium tread plate for a safe maintenance.

Accordingly, lifting equipment, safety guards or walkways are not necessary to carry out maintenance.

As an option, a maintenance table equipped with a telescopic foot especially designed for the **TOPAZ NEO** can be used to disassemble the motor-fan units from the inside of the device in complete safety. Without effort or additional lifting means this device with wheels makes it possible to get down the motor-fan units from the roof of the cooler to the floor, then to remove it easily.



An isolation plate is then proposed, also as an option, in place of motor fan set during its maintenance to keep safe the performance.

Also, easy handling of the humidifying pads is possible, without any lifting/handling tools.



Support and casing

Strong structure, the frame and the roof of the **TOPAZ NEO** range are made of **SILVER STEEL**, except for the parts in contact with water and both end points of the cooler (external sides: adiabatic pre-cooling section), made of **Z-STEEL** stainless steel for its perfect resistance to corrosion.

As an option, the floor made of non-slip aluminium tread plate safe maintenance may be removable for waterproof check.



TOPAZ NEO OPTIONS

- ∞ Integrated drain protection system for **drainable TOPAZ NEO ranges TMV and THV**;
- ∞ Automated drain monitoring for drainable coils;
- ∞ Colour choice of the medias for a good integration in architecture site;
- ∞ POP-SCREEN: additional fixing frame to fix a protection on the medias (against insects, mear forests, etc);
- ∞ Telescopic pole especially designed for handles of cooling pads covers, is proposed in order to ease the handling from the ground;
- ∞ Backup mode on the pump(s);
- ∞ Backup mode on the motor fan set;
- ∞ Automaton communication gateway Ethernet, Modbus, LonWorks, or BACnet;
- ∞ Maintenance table equipped with a telescopic foot especially designed to disassemble the moto-fan units from the inside of the device in complete safety;
- ∞ Insulation plate in place of moto fan set during its maintenance to keep the performance;
- ∞ Removable floor made of non-slip aluminium tread plate for a safe maintenance for waterproof check;
- ∞ Master-slave regulation in case of an installation of several units on the same hydraulic grid.

Technical features TOPAZ NEO TM E09 S

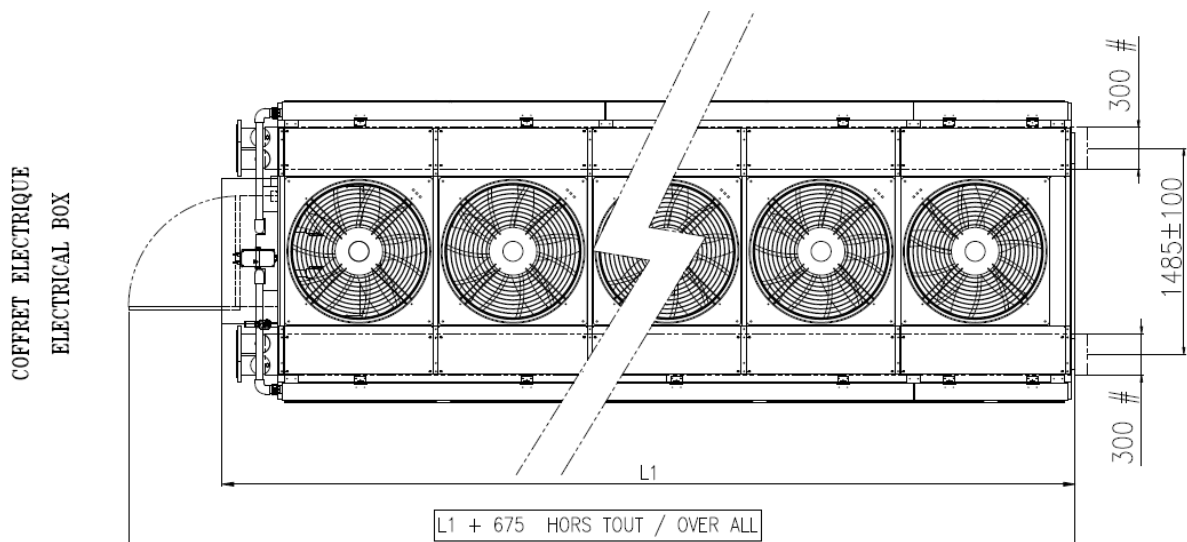
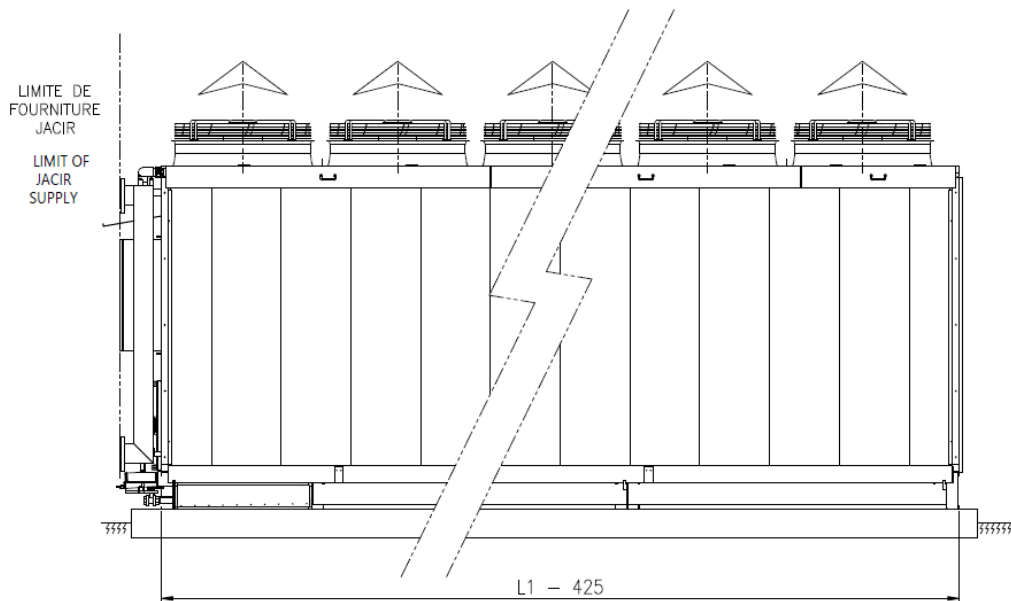
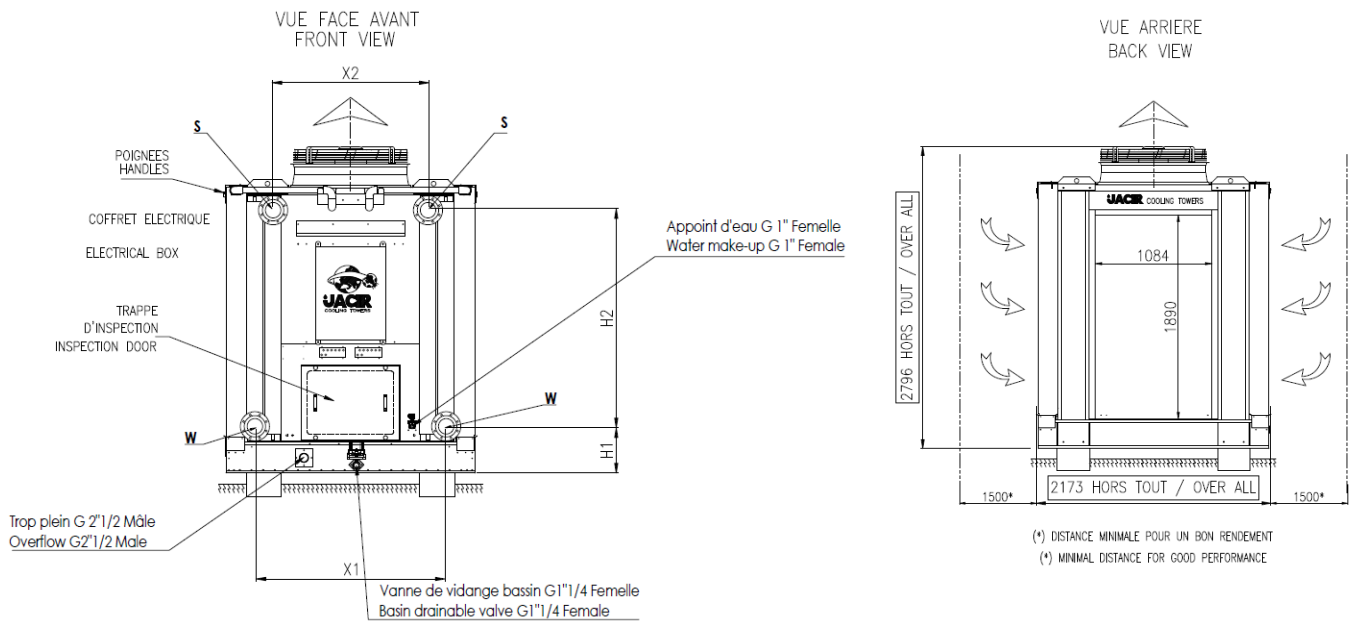
Série TOPAZ NEO

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		A	B	A	B	A	B	A	B	A	B	B	B	B	B	B	B
Nominal capacity max ¹	kW	89	104	180	204	271	307	356	417	453	514	623	695	805	915	1 024	1 134
Motor-fan	Qty / kW	1 x 3,2		2 x 3,2		3 x 3,2		4 x 3,2		5 x 3,2		6 x 3,2	7 x 3,2	8 x 3,2	9 x 3,2	10 x 3,2	11 x 3,2
Fan diameter	mm	910															
Motor absorbed power per unit	kW	4,7	4,8	7,4	7,6	10,2	10,5	12,9	13,3	15,7	16,1	19	21,8	24,6	27,5	30,3	33,2
Installed power per unit	kW	5,1	5,1	8,3	8,3	11,4	11,4	14,5	14,5	17,6	17,6	20,8	23,9	27	30,1	33,3	36,4
Inlet/outlet water connections (S/W)	DN	50		80		100				125							
Make-up water flow (max)	m ³ /h	0,4		0,5		0,7		0,9		1,15		1,3	1,5	1,6	1,7	1,8	1,9
Make-up water flow connection (threaded male)	inches (mm)	1" (26 x 34)															
Drain connection (threaded female)	inches (mm)	1" 1/4 (33 x 42)															
Overflow connection male (T)	inches (mm)	2" (50 x 60)										2" 1/2 (66 x 76)					
Weight empty	kg	650	750	1 150	1 300	1 650	1 850	2 100	2 450	2 600	3 000	3 600	4 150	4 700	5 300	5 850	6 450
Weight in operation	kg	1 100	1 200	1 700	1 900	2 300	2 600	2 900	3 350	3 500	4 050	4 750	5 500	6 200	6 900	7 600	8 350
Length overall (L1)	mm	1 705	1 705	2 815	2 815	3 925	3 925	5 035	5 035	6 145	6 145	7 255	8 365	9 475	10 585	11 695	12 805
Width overall	mm	2 173															
Height overall	mm	2 796															
Sound level ²	dBA	58		61		61		63		64		64	65	65	66	66	66

(1): Based on condensing temperature of 35°C/30°C and design ambient 35°C/22°C (dry/wet bulb).

(2): Sound pressure level Lp at 15 metres in free field, in 5 directions at 100% of the ventilation (+/- 2 dBA).

Drawings and dimensions TOPAZ NEO TM E09 S



Beam width as an indication that can be reduced to 140mm

Technical characteristics TOPAZ NEO TM E09 D

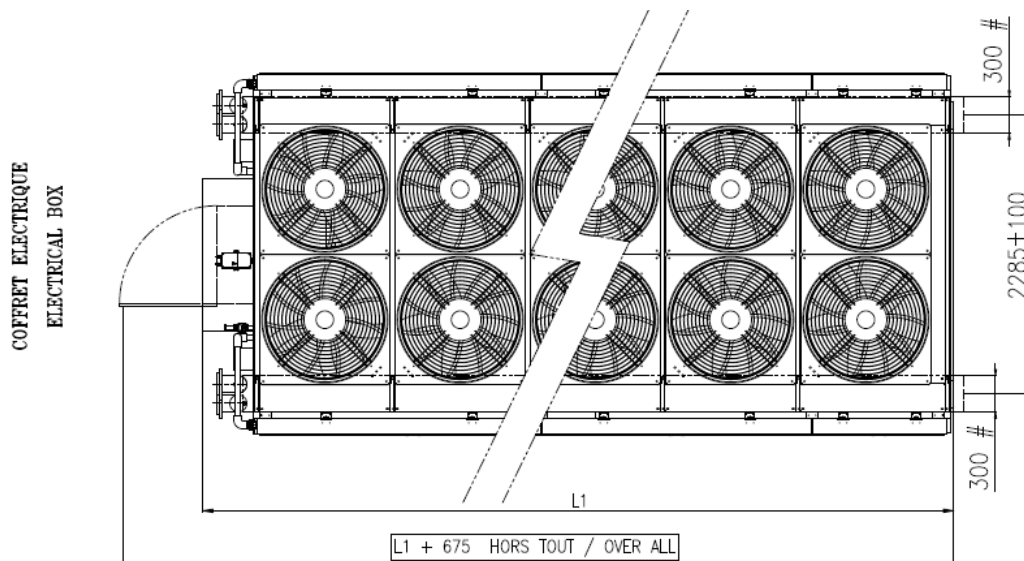
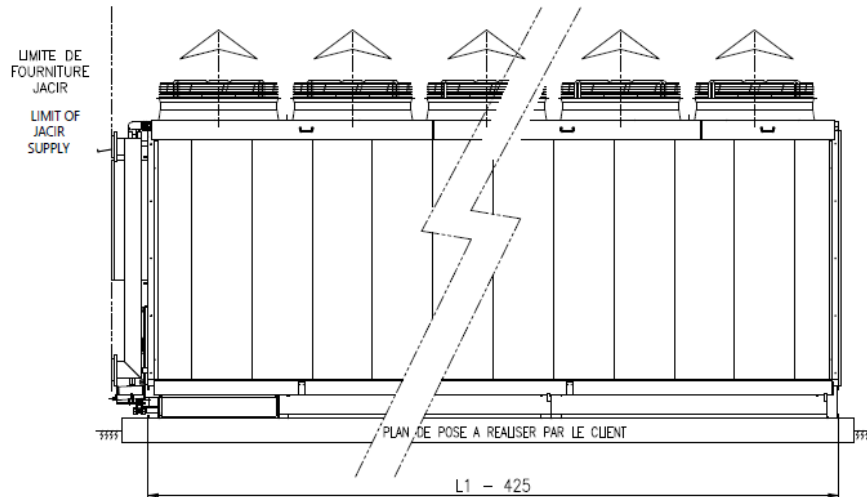
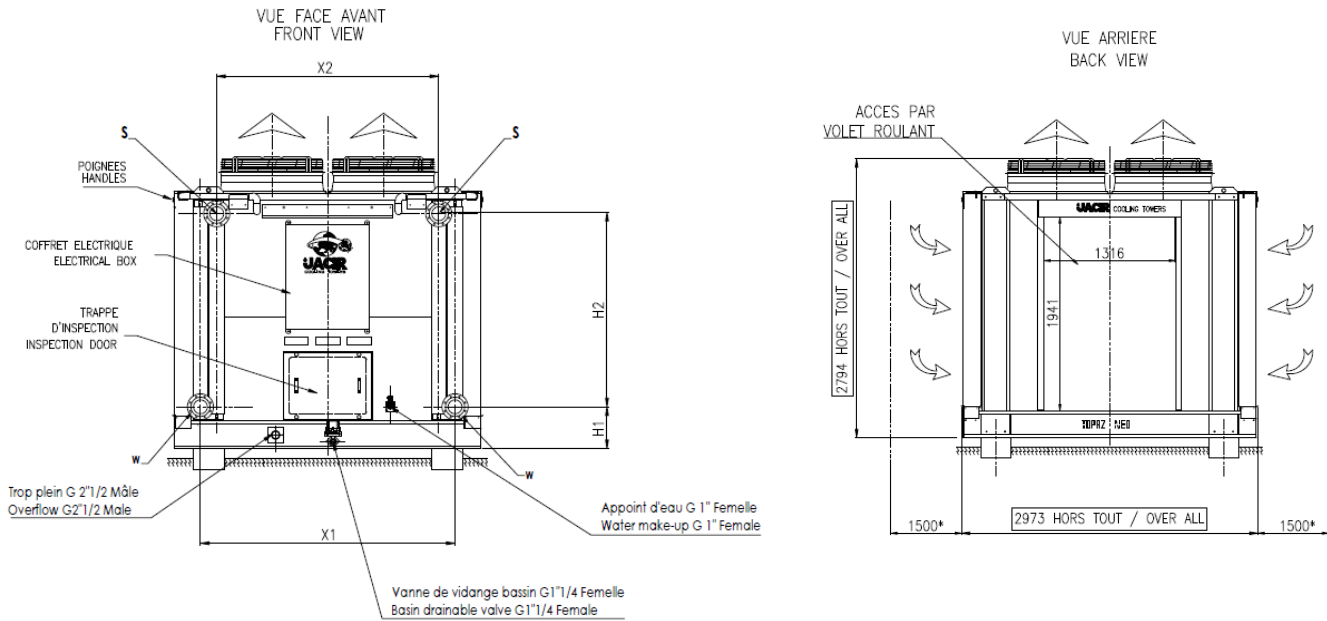
Série TOPAZ NEO

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		A	B	A	B	A	B	B	B	B	B	B	B	B	
Nominal capacity max ¹	kW	248	286	355	430	491	564	717	813	967	1 120	1 273	1 426	1 579	
Motor-fan	Qty / kW	4 x 3,2		6 x 3,2		8 x 3,2		10 x 3,2	12 x 3,2	14 x 3,2	16 x 3,2	18 x 3,2	20 x 3,2	22 x 3,2	
Fan diameter	mm	910													
Motor absorbed power per unit	kW	14,5	14,5	20,7	20,7	27	26,9	33,2	39,4	45,7	51,9	58,2	64,4	70,6	
Installed power per unit	kW	14,5	14,5	20,8	20,8	27	27	33,3	39,5	45,8	52	58,3	64,5	70,8	
Inlet/outlet water connections (S/W)	DN	80				100			125						
Make-up water flow (max)	m ³ /h	0.7		0.8		1.2		1.6	1.8	2	1.2	2.6	2.7	1.9	
Make-up water flow connection (threaded male)	inches (mm)	1" (26 x 34)													
Drain connection (threaded female)	inches (mm)	1" 1/4 (33 x 42)													
Overflow connection male (T)	inches (mm)	2" (50 x 60)							2" 1/2 (66 x 76)						
Weight empty	kg	1 350	1 500	1 900	2 150	2 450	2 800	3 450	4 100	4 700	5 320	6 000	6 650	7 300	
Weight in operation	kg	2 050	2 250	2 750	3 050	3 400	3 850	4 650	5 450	6 250	7 050	7 850	8 650	9 450	
Lenght overall (L1)	mm	2 815	2 815	3 925	3 925	5 035	5 035	6 145	7 255	8 365	9 475	10 585	11 695	12 805	
Width overall	mm	2 973													
Height overall	mm	2 794													
Sound level ²	dBA	64				65		66	67	67	68	68	69	69	

(1): Based on condensing temperature of 35°C/30°C and design ambient 35°C/22°C (dry/wet bulb).

(2): Sound pressure level Lp at 15 metres in free field, in 5 directions at 100% of the ventilation (+/- 2 dBA).

Drawings and dimensions TOPAZ NEO TM E09 D



Beam width as an indication that can be reduced to 140mm

Technical features TOPAZ NEO TH E09 D

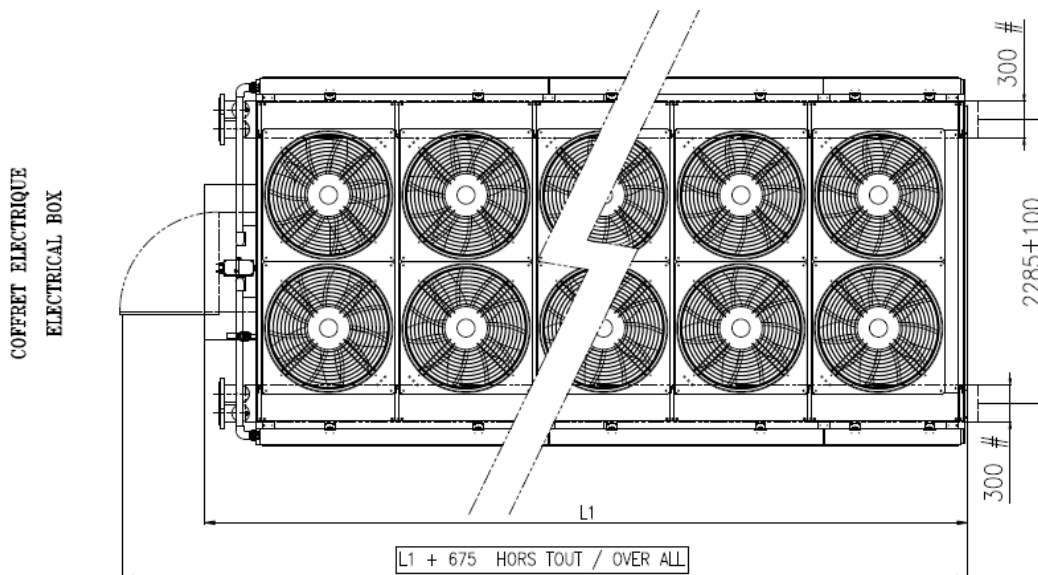
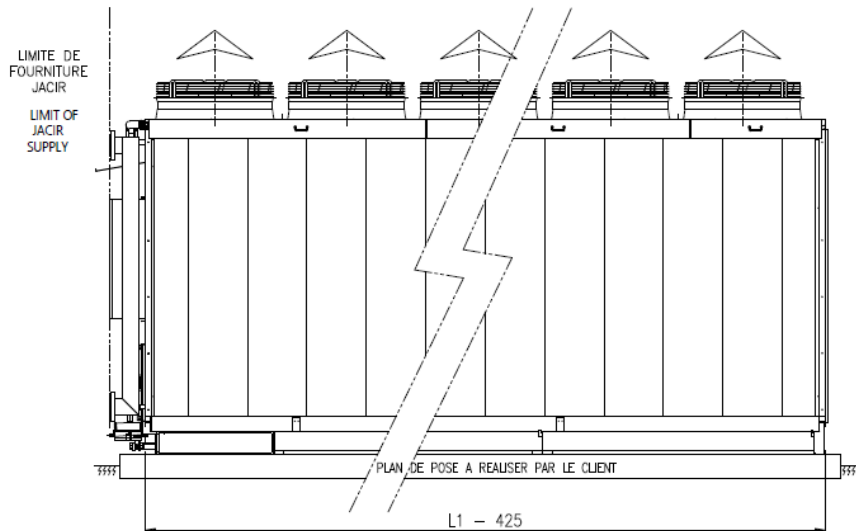
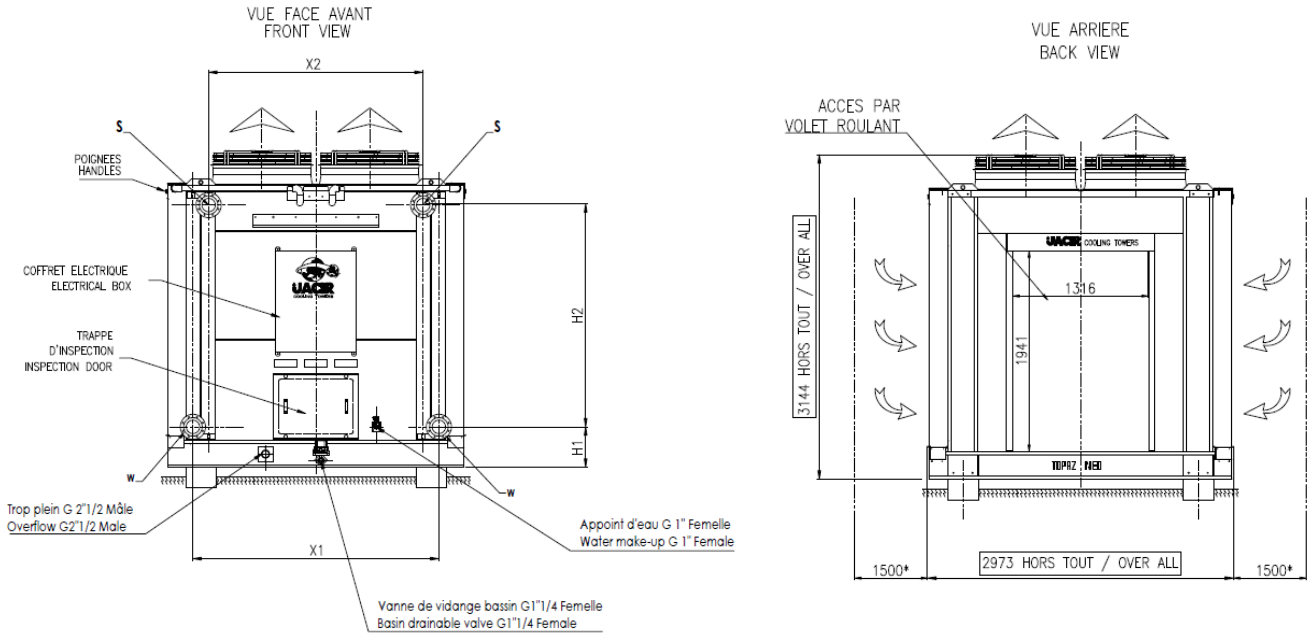
Série TOPAZ NEO

		TH2 E09 D3 2830		TH3 E09 D3 3930		TH4 E09 D3 5030		TH5 E09 D3 6130	TH6 E09 D3 7330	TH7 E09 D3 8430	TH8 E09 D3 9530	TH9 E09 D3 10630	TH10 E09 D3 11730	TH11 E09 D3 12830
		A	B	A	B	A	B	B	B	B	B	B	B	B
Nominal capacity max ¹	kW	276	317	395	476	543	626	796	902	1 073	1 243	1 413	1 583	1 769
Motor-fan	Qty / kW	4 x 3,2		6 x 3,2		8 x 3,2		10 x 3,2	12 x 3,2	14 x 3,2	16 x 3,2	18 x 3,2	20 x 3,2	22 x 3,2
Fan diameter	mm	910												
Motor absorbed power per unit	kW	14,4	14,4	20,7	20,7	27	26,9	33,2	39,4	45,7	51,9	58,2	64,4	70,6
Installed power per unit	kW	14,5	14,5	20,8	20,8	27	27	33,3	39,5	45,8	52	58,3	64,5	70,8
Inlet/outlet water connections (S/W)	DN	80		100		125								
Make-up water flow (max)	m ³ /h	0.6		0.9		1.3		1.5	1.8	2	2.3	2.6	3	3.1
Make-up water flow connection (threaded male)	inches (mm)	1" (26 x 34)												
Drain connection (threaded female)	inches (mm)	1" 1/4 (33 x 42)												
Overflow connection male (T)	inches (mm)	2" (50 x 60)						2" 1/2 (66 x 76)						
Weight empty	kg	1 450	1 600	2 100	2 300	2 700	3 000	3 700	4 400	5 050	5 750	6 450	7 150	7 850
Weight in operation	kg	2 250	2 450	3 000	3 300	3 750	4 150	5 050	5 900	6 750	7 650	8 500	9 400	10 250
Lenght overall (L1)	mm	2 815	2 815	3 925	3 925	5 035	5 035	6 145	7 255	8 365	9 475	10 585	11 695	12 805
Width overall	mm	2 973												
Height overall	mm	3 144												
Sound level ²	dB(A)	63		64		66		66	67	68	68	68	69	69

(1): Based on condensing temperature of 35°C/30°C and design ambient 35°C/22°C (dry/wet bulb).

(2): Sound pressure level Lp at 15 metres in free field, in 5 directions at 100% of the ventilation (+/- 2 dBA).

Drawings and dimensions TOPAZ NEO TH E09 D



Beam width as an indication that can be reduced to 140mm

Technical characteristics TOPAZ NEO TMV E09 D

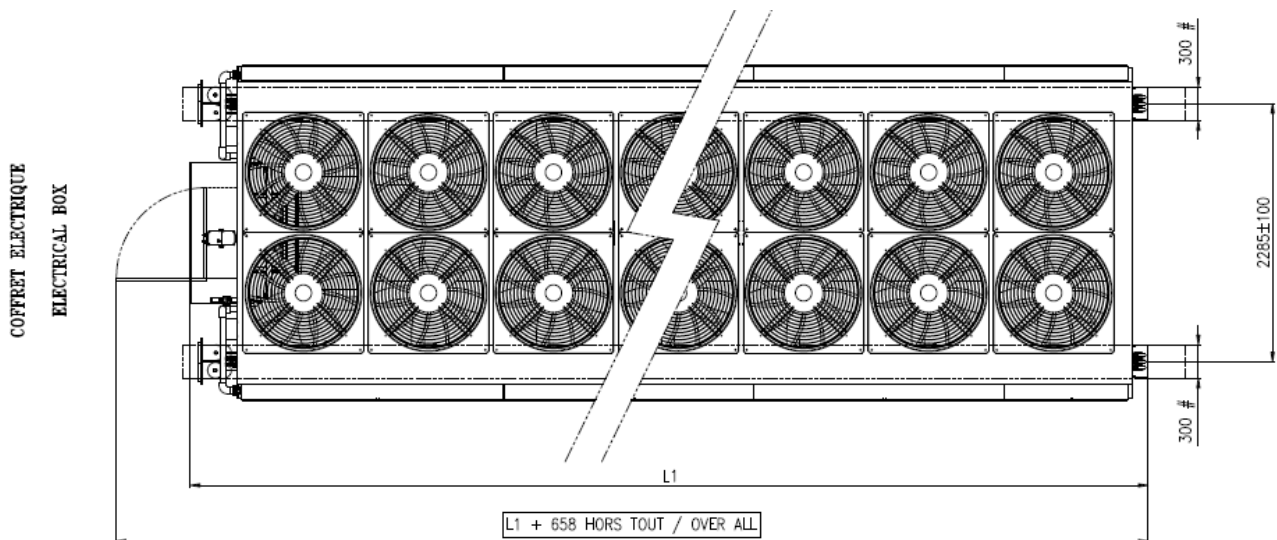
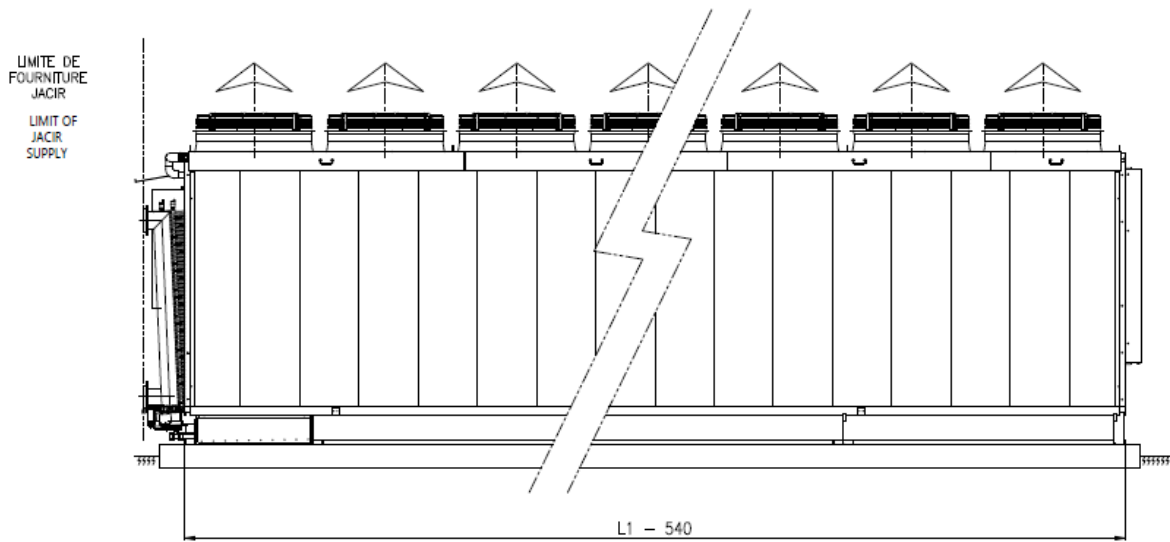
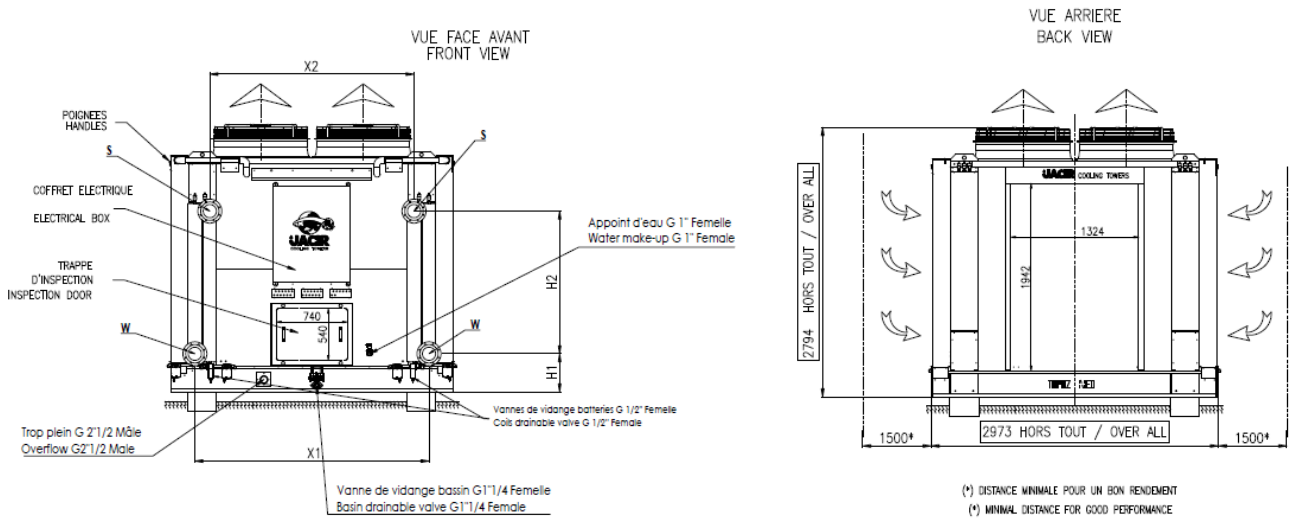
Série TOPAZ NEO

		TMV2 E09 D3 2830		TMV3 E09 D3 3930		TMV4 E09 D3 5030		TMV5 E09 D3 6130	TMV6 E09 D3 7330	TMV7 E09 D3 8430	TMV8 E09 D3 9530	TMV9 E09 D3 10630	TMV10 E09 D3 11730	TMV11 E09 D3 12830
		A	B	A	B	A	B	B	B	B	B	B	B	B
Nominal capacity max ¹	kW	195	251	306	384	410	442	585	675	807	907	1 020	1 112	1 027
Motor-fan	Qty / kW	4 x 3,2		6 x 3,2		8 x 3,2		10 x 3,2	12 x 3,2	14 x 3,2	16 x 3,2	18 x 3,2	20 x 3,2	22 x 3,2
Fan diameter	mm	910												
Motor absorbed power per unit	kW	13	14,5	18	20	21.5	27	32	37	44	49	55	56	55
Installed power per unit	kW	14,5	14,5	20,8	20,8	27	27	33,3	39,5	45,8	52	58,3	64,5	70,8
Inlet/outlet water connections (S/W)	DN	80		100				125						
Make-up water flow (max)	m ³ /h	0.8		0.9		1.3		1.7	1.8	2	2.2	2.6	2.7	2.8
Make-up water flow connection (threaded male)	inches (mm)	1" (26 x 34)												
Drain connection (threaded female)	inches (mm)	1" 1/4 (33 x 42)												
Overflow connection male (T)	inches (mm)	2" (50 x 60)						2" 1/2 (66 x 76)						
Weight empty	kg	1 350	1 500	1 900	2 150	2 450	2 800	3 435	4 100	4 700	5 320	6 000	6 650	7 300
Weight in operation	kg	2 050	2 250	2 750	3 050	3 400	3 850	4 650	5 450	6 250	7 050	7 850	8 650	9 450
Lenght overall (L1)	mm	2 930	2 930	4 040	4 040	5 150	5 150	6 260	7 370	8 480	9 590	10 700	11 810	12 920
Width overall	mm	2 973												
Height overall	mm	2 794												
Sound level ²	dB(A)	64			65		66	67	67	68	68	69	69	

(1): Based on condensing temperature of 35°C/30°C and design ambient 35°C/22°C (dry/wet bulb).

(2): Sound pressure level Lp at 15 metres in free field, in 5 directions at 100% of the ventilation (+/- 2 dB(A)).

Drawings and dimensions TOPAZ NEO TMV E09 D



Beam width as an indication that can be reduced to 140mm

Technical characteristics TOPAZ NEO THV E09 D

Série TOPAZ NEO

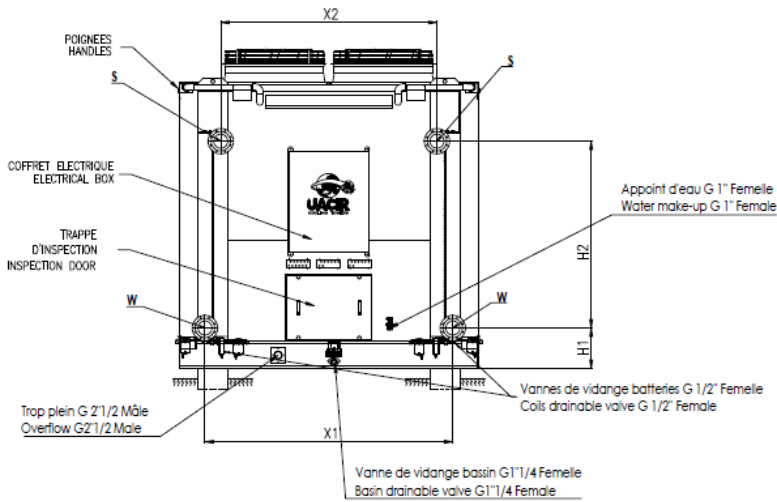
		THV2 E09 D3 2830		THV3 E09 D3 3930		THV4 E09 D3 5030		THV5 E09 D3 6130	THV6 E09 D3 7330	THV7 E09 D3 8430	THV8 E09 D3 9530	THV9 E09 D3 10630	THV10 E09 D3 11730	THV11 E09 D3 12830	
		A	B	A	B	A	B	B	B	B	B	B	B	B	
Nominal capacity max ¹	kW	195	251	306	384	410	442	585	675	807	907	1 020	1 112	1 027	
Motor-fan	Qty / kW	4 x 3,2		6 x 3,2		8 x 3,2		10 x 3,2	12 x 3,2	14 x 3,2	16 x 3,2	18 x 3,2	20 x 3,2	22 x 3,2	
Fan diameter	mm	910													
Motor absorbed power per unit	kW	13	14,5	18	20	21.5	27	32	37	44	49	55	56	55	
Installed power per unit	kW	14,5	14,5	20,8	20,8	27	27	33,3	39,5	45,8	52	58,3	64,5	70,8	
Inlet/outlet water connections (S/W)	DN	80		100				125							
Make-up water flow (max)	m ³ /h	0.8		0.9		1.3		1.7	1.8	2	2.2	2.6	2.7	2.8	
Make-up water flow connection (threaded male)	inches (mm)	1" (26 x 34)													
Drain connection (threaded female)	inches (mm)	1" 1/4 (33 x 42)													
Overflow connection male (T)	inches (mm)	2" (50 x 60)						2" 1/2 (66 x 76)							
Weight empty	kg	1 450	1 600	2 100	2 300	2 700	3 000	3 700	4 400	5 050	5 750	6 450	7 150	7 850	
Weight in operation	kg	1 600	2 450	3 000	3 300	3 750	4 150	5 050	5 900	6 750	7 650	8 500	9 400	10 250	
Lenght overall (L1)	mm	2 930	2 930	4 040	4 040	5 150	5 150	6 260	7 370	8 838	9 590	10 700	11 810	12 920	
Width overall	mm	2 973													
Height overall	mm	2 794													
Sound level ²	dBA	64			65		66	67	67	68	68	69	69		

(1): Based on condensing temperature of 35°C/30°C and design ambient 35°C/22°C (dry/wet bulb).

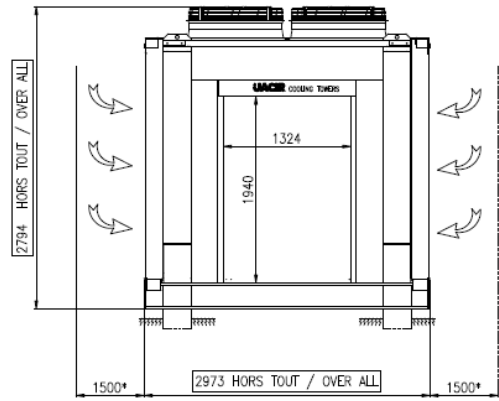
(2): Sound pressure level Lp at 15 metres in free field, in 5 directions at 100% of the ventilation (+/- 2 dBA).

Drawings and dimensions TOPAZ NEO THV E09 D

VUE FACE AVANT
FRONT VIEW

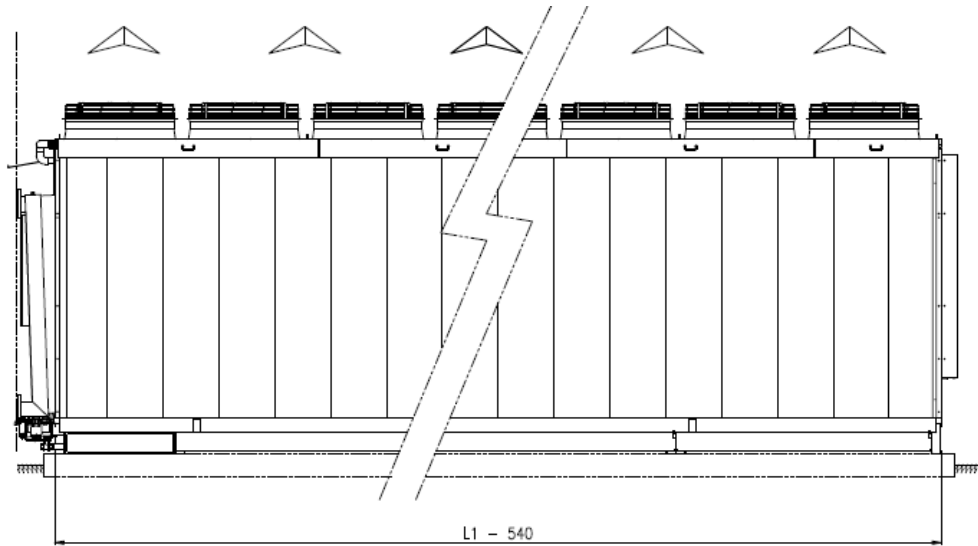


VUE ARRIERE
BACK VIEW

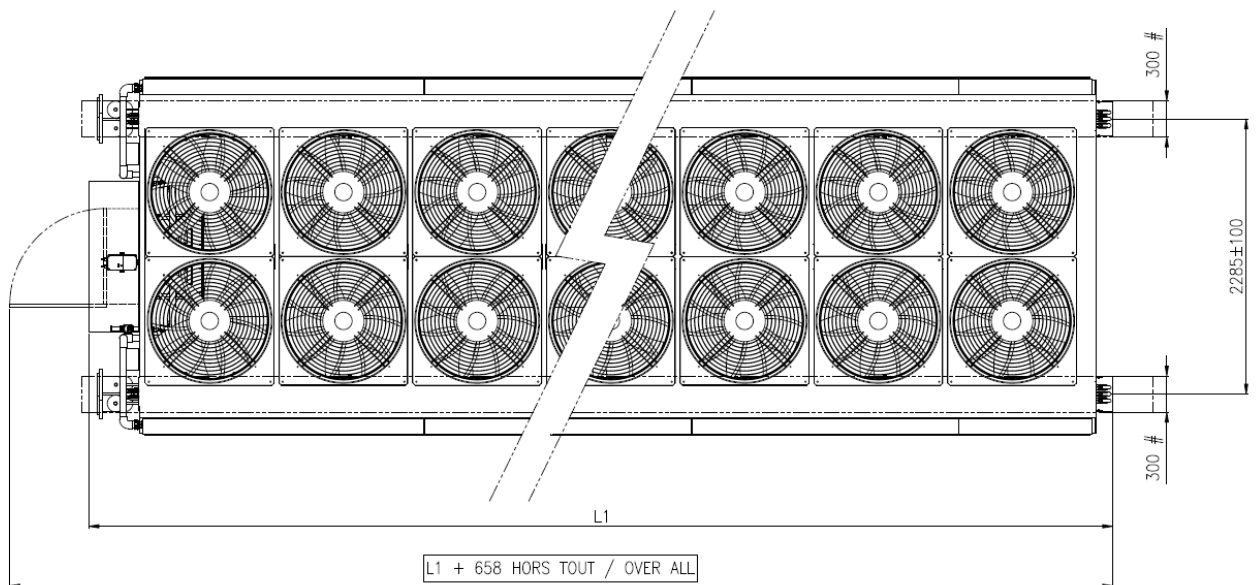


(*) DISTANCE MINIMALE POUR UN BON RENDEMENT
(*) MINIMAL DISTANCE FOR GOOD PERFORMANCE

LIMITE DE FOURNITURE JACIR
LIMIT OF JACIR SUPPLY



COFFRET ELECTRIQUE
ELECTRICAL BOX



Beam width as an indication that can be reduced to 140mm

In site layout TOPAZ NEO

In order to achieve optimum thermal performance, the **TOPAZ NEO** adiabatic cooler must be installed according to the following criteria: the choice of location in relation to surrounding obstacles must meet the following instructions (for any special set-up please contact JACIR):

- A- There must be sufficient open space along the two sides of the unit where air intakes are located.
- B- The prevailing winds direction and near obstacles must be considered to limit risks of cooling air reinjected (this is particularly important when there are several TOPAZ working on the same site).
- C- Air outputs must be cleared of any obstructions.

Minimum distances required:

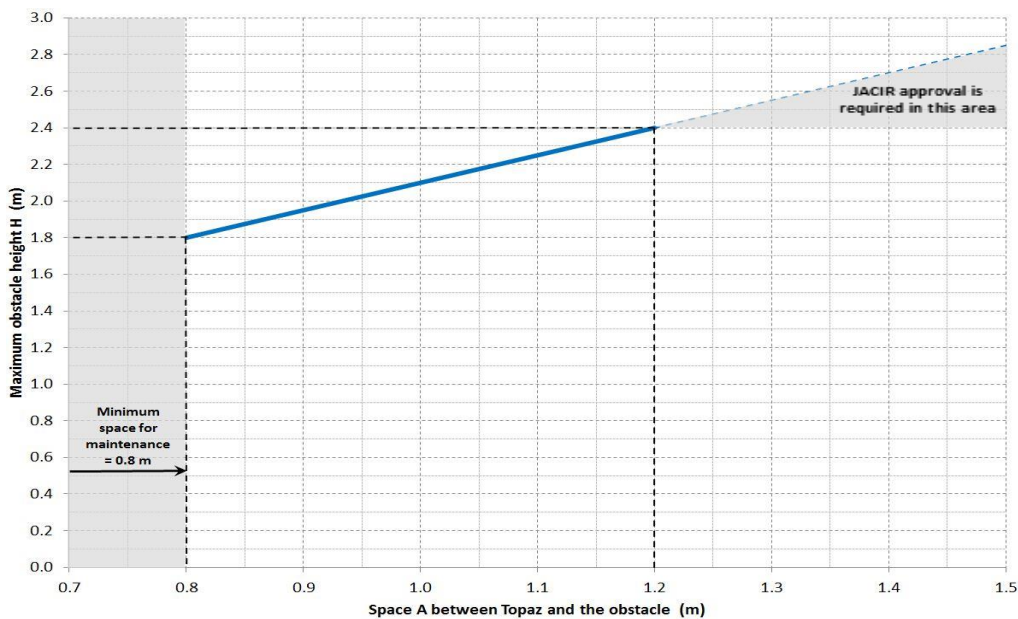
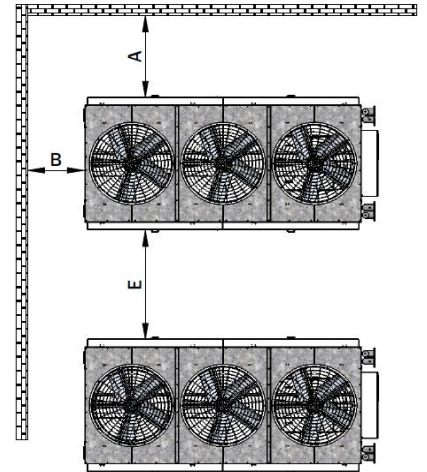
- ∞ A = minimum given by the graphic (unit are supposed to lay on the ground with no air movement under the unit).

A= minimum 0.9 m from T4

A= minimum 1.2 m from T4 to T7

A= minimum 1.3 m from T8 to T11

- ∞ B = minimum 1 m
- ∞ E = minimum 1,8 m (from T4 fans)
- ∞ E = minimum 2.4 m (from T4 to T7 fans)
- ∞ E = minimum 2.6 m (from T8 to T11 fans)



When the equipment is located near a building or a fence, top of the fan(s) must be higher than, or equal to, any adjacent wall or building. Special attention must be paid to avoid any hot and humid air being recycled into the equipment. All units must be positioned to prevent hot air being returned towards air intakes. This criterion must be taken into account should any extensions be made. Given dimensions are minimum general recommendations

Prescription TOPAZ NEO

Adiabatic cooler will be selected according the following data:

- ∞ Power to be dissipated:
- ∞ Ambient air temperature of °C, and a wet bulb temperature of
- ∞ Temperature range from °C to °C
- ∞ The sound pressure level will not be greater than db(A) at 10 metres, average in 5 directions.

Adiabatic cooler data JACIR brand TOPAZ NEO type

Tube coils

- ∞ EUROVENT certified coils,
- ∞ The coils will be tested under pressure up to 20 bar and will have passed tests and certifications for thermal performance, sealing and pressure according to PED,
- ∞ The coils will be vertically installed, in “H” configuration, in order to allow full access to the internal sides of the coils and to the mechanics, without intermediate wall, through a service entrance over the whole width and height of the equipment,
- ∞ Tube coils will be made of copper tubing and aluminium fins with epoxy coated,
- ∞ The tubes thickness minimum will be provided according equipment size,
- ∞ Tubes will be seamless and expanded through the fins to secure a mechanical resistance and optimized thermal conductivity,
- ∞ Headers will be installed on a single side of the unit to make the internal access easier by a large service entrance on the opposite side.

Pre-cooling by evaporation

- ∞ The pads will be made of cellulose, chemically treated in order to avoid moisture and to improve its absorbing characteristics,
- ∞ The media pads are not directional, so that any side can be used,
- ∞ The cooling/humidifying pads will cover the whole air inlet section, on the two sides of the unit,
- ∞ Removal of the pads is simple and does not require any tools of lifting equipment.

Water distribution

- ∞ The open water distribution channels will be designed for easy cleaning and will be made of Z-STEEL stainless-steel, without external pressure regulation,
- ∞ The open water distribution channels will be placed out of the air flow, easily accessible under the hood without help of any tools,
- ∞ In order to significantly reduce water consumption in adiabatic mode, the Z-STEEL stainless-steel header will collect the non-evaporated water. The water will be sent to a stainless-steel Z-STEEL sump. Water level regulation will be secured by one or two pumps,
- ∞ The system will include a drain valve, which will be automatically activated on a daily cycle,
- ∞ A full drain cycle, combined with full speed fan operation, will automatically dry parts in contact with the water.

Motor fan sets

- ∞ The motor fan sets will be aligned in a single or a double row at the top of the unit. They will draw the air through the pads and tube coils. It will be composed by one motor per fan,
- ∞ EC technology motors (Electronical Commutation) will be IP 55 insulation class, 380/400 V, 50/60 Hz, direct coupling requiring no maintenance, especially selected for a continuous running operation,
- ∞ Each motor will include its frequency drive automaton driven,
- ∞ The motor fan sets will be completely removable from inside the unit for maintenance avoiding high walkways or lifting tool needs for operating staff security.

Control panel with automaton

- ∞ Schneider automaton will control EC motor fan and will activate the pre-cooling mode,
- ∞ The TOPAZ NEO cooler will be delivered totally "Plug and Play", with different communication languages as an option, and will be equipped with HMI (Human Machine Interface),
- ∞ As a standard, functions of the automaton will be as follows: general fault alarm, wet mode ad setting, drain valve position, water make-up valve for the sump control, analogue output for fan speed control with frequency drive,
- ∞ Communication modes will be provided as an option for TOPAZ remote monitoring.

Support frame and casing

- ∞ TOPAZ support and roof will be rigid and strong, made of SILVER-STEEL,
- ∞ The internal floor of the unit will be made of non-slip aluminium tread plate and will be removable in order to check easily the building terrace waterproof,
- ∞ All metallic parts in contact with water (adiabatic pre-cooling section) will be in Z-STEEL stainless-steel,
- ∞ Internal access for unit maintenance and motor fan set removal will be via a mechanical roller shutter door equipped with a safety switch, without any doorstep for ease of access to the whole height and width of the equipment,
- ∞ An access service door to the pump(s) and strainer will allow inspection and cleaning by the outside, without switch of the cooler.

Options

- ∞ Automated drain system: TOPAZ NEO drainable TMV-THV,
- ∞ POP-SCREEN: additional fixing frame to fix a protection on the medias (against insects, near forests, etc),
- ∞ Colour choice of the medias for a good integration on architecture site,
- ∞ Backup mode on the pump(s),
- ∞ Backup mode on the motor fan set,
- ∞ Automaton communication gateway Ethernet, Modbus, LonWorks, or BACnet,
- ∞ Telescopic pole especially designed for handles of cooling pads covers, is proposed in order to ease the handling from the ground,
- ∞ Maintenance table equipped with a telescopic foot specially designed to disassemble the motor-fan units from the inside of the device in complete safety,
- ∞ insulation plate in place of motor fan set during its maintenance to keep safe the performance,
- ∞ Removable floor made of non-slip aluminium tread plate for safe maintenance for waterproof check,
- ∞ Master-slave regulation in case of an installation of several units on the same hydraulic grid.

Prescription TOPAZ NEO drainable TMV-THV

High performance adiabatic cooler, JACIR brand TOPAZ NEO Series will be designed to operate with glycol content of %.

Adiabatic cooler will be selected according the following data:

- ∞ Power to be dissipated:
- ∞ Ambient air temperature of °C, and a wet bulb temperature of
- ∞ Temperature range from °C to °C
- ∞ The sound pressure level will not be greater than db(A) at 10 metres, average in 5 directions.

Drainable and non-freezing Adiabatic cooler data JACIR brand TOPAZ NEO type THV or TMV

Tube coils

- ∞ EUROVENT certified coils,
- ∞ The coils will be tested under pressure up to 20 bar and will have passed tests and certifications for thermal performance, sealing and pressure according to PED,
- ∞ The coils will be vertically installed, in “H” configuration, in order to allow full access to the internal sides of the coils and to the mechanics, without intermediate wall, through a service entrance over the whole width and height of the equipment,
- ∞ Tube coils will be made of copper tubing and aluminium fins with epoxy coated,
- ∞ The tubes thickness minimum will be provided according equipment size,
- ∞ Tubes will be seamless and expanded through the fins to secure a mechanical resistance and optimized thermal conductivity,
- ∞ Headers will be installed on a single side of the unit to make the internal access easier by a large service entrance on the opposite side.
- ∞ Geometrical configuration of drainable coils: engineered tubes and coil arrangement enabling a complete drain under gravity (no compressed air injection needed).
- ∞ An additional, integrated automatic drain will secure power and flow regulations (it excludes fluids collection tank). An electrical heat tracing and antifreeze protection will be necessary for process main piping until the electrical valve.

Pre-cooling by evaporation

- ∞ The pads will be made of cellulose, chemically treated in order to avoid moisture and to improve its absorbing characteristics,
- ∞ The media pads are not directional, so that any side can be used,
- ∞ The cooling/humidifying pads will cover the whole air inlet section, on the two sides of the unit,
- ∞ Removal of the pads is simple and does not require any tools of lifting equipment.

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- ∞ The system will include a drain valve, which will be automatically activated on a daily cycle,
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- ∞ Backup mode on the motor fan set,
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- ∞ Maintenance table equipped with a telescopic foot specially designed to disassemble the motor-fan units from the inside of the device in complete safety,
- ∞ Insulation plate in place of motor fan set during its maintenance to keep safe the performance,
- ∞ Removable floor made of non-slip aluminium tread plate for safe maintenance for waterproof check,
- ∞ Master-slave regulation in case of an installation of several units on the same hydraulic grid.