



economax[®]

Cooling towers for ice cream parlours



THE REAL SOLUTION FOR SAVING WATER

WATER IS A PRECIOUS AND EXPENSIVE COMMODITY

THE COST OF WATER FOR COOLING MACHINERY AND THE DISPLAY CASES OF YOUR ICE CREAM PARLOUR IS A VERY IMPORTANT COST, CRUCIAL IN THE SAVINGS OF YOUR BUSINESS.

THE ECONOMAX® COOLING TOWER ALLOWS YOU TO CUT BACK YOUR WATER USAGE BY 95%.

THE ECONOMAX® COOLING TOWER IS THE BEST SYSTEM FOR SAVING WATER IN A NATURAL, ENVIRONMENTALLY-FRIENDLY WAY.

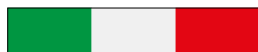
THE ECONOMAX® COOLING TOWER IS *GREEN*

If we do not waste water, it means we do not drain water resources and we also achieve a significant savings in terms of operating costs.

The ECONOMAX® cooling tower saves 95% of the water that would have otherwise been lost by transforming the ice cream machines' open cooling circuit into a closed one, which therefore allows you to save thousands of cubic metres of water through its reuse.

The ECONOMAX® cooling tower cools the water, making use of physics, and is thus a completely natural process with no need to use cooling gases or compressors.

The ECONOMAX® cooling tower is characterised by its incredibly low energy electrical consumption.

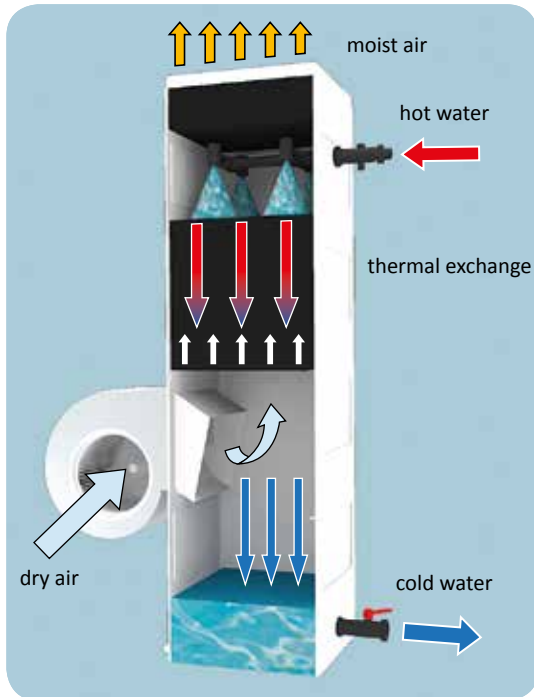


Our tower is completely Made in Italy and assembled at our plant in Sizzano.



Our tower allows you to benefit from potential preferential treatment by the government

THE WAY IT WORKS



Thanks to the development of technology used and strengthened for decades by MITA in the industrial field, ECONOMAX towers' great strength comes from their constructive simplicity and elevated efficiency.

The cooling effect is obtained by spraying hot water on an elevated surface of heat exchange, and by blowing a counter-current wind with a fan. The air, absorbing humidity from the water, causes its partial evaporation (less than 3% of the total), thus using up less energy. The resulting effect is a decrease in temperature of the remaining water that collects in an internal basin. A pump fitted with a variable impeller puts the newly-cooled water into the circuit and therefore in the production machines and display cases.

In addition, since the evaporative principle depends not only on the air temperature used for cooling but also on its ability to absorb water as vapor, the ECONOMAX® tower can be installed both internally and externally, even under direct sunlight and at high temperatures, maintaining a very high efficiency in any condition.

DIMENSIONS AND SIZE

The ECONOMAX® cooling towers are designed and perfected in order to be compatible with any machine that is normally present in artisan ice cream parlours, allowing for the cooling of any item that is water-cooled. They are available in two different sizes, depending on its heat capacity and therefore on the number of machines that can be cooled.

MODELS						
		ECONOMAX 25		ECONOMAX 45		
SHOP CONFIGURATION (EXAMPLE)	2x	batch freezers 20-60 lt/h	2x	batch freezers 30-100 lt/h		
	1x	pasteurizer 60-120 lt	2x	pasteurizers 60-120 lt		
	1x	display case 24 tray	1x	ageing vat 120+120 lt		
				1x	blast cabinet 5 tray	
				1x	display case 36 trays	

to confirm with the ECONOMAX® technician



SAVINGS CALCULATION

The **ECONOMAX®** cooling tower allows for the following savings:

1) in a shop with the following configuration:

2x	batch freezers	30 - 100 lt/h
1x	pasteurizer	60 - 120 lt
1x	display case	36 tray

The amount of water used to cool the shop's machines is 1.350.000 litres/year. The average cost of water consumption can be obtained by multiplying the cubic metres of water consumed by the value of the average cost.

with **ECONOMAX 25**

AMOUNT OF WATER SAVED IS 1.280.000 litres/year (95%).

Average savings are equal to the amount of cubic metres of water saved by the average cost.

2) in shop with the following configuration:

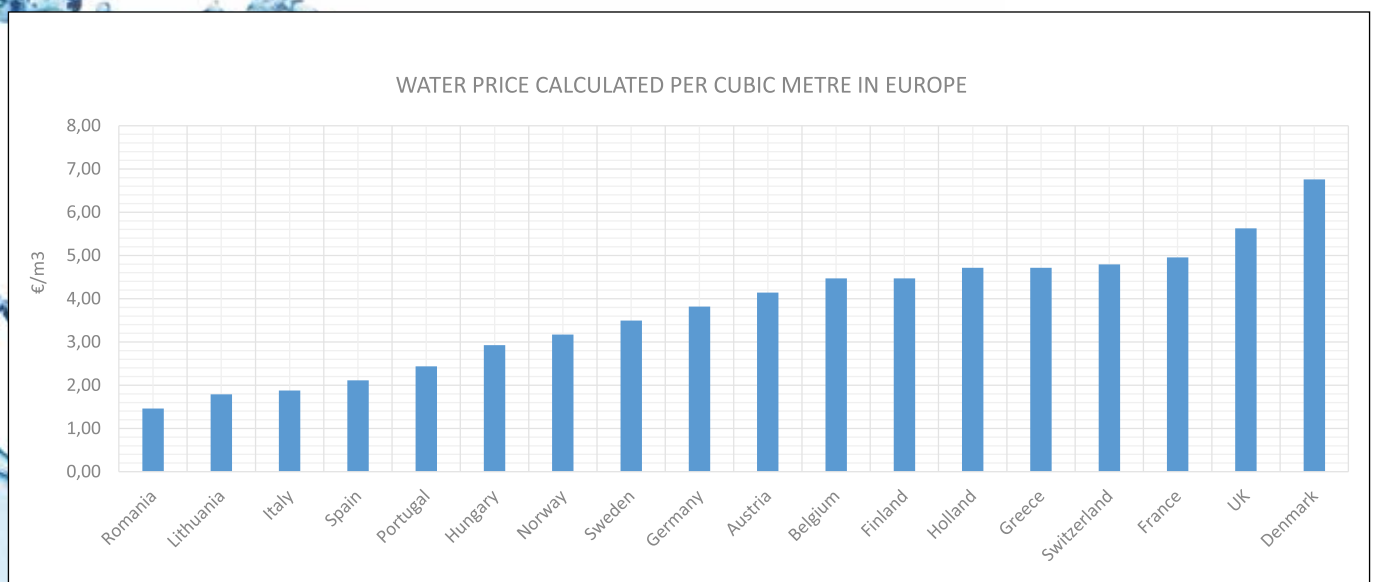
2x	batch freezers	30 - 100 lt/h
2x	pasteurizers	60 - 120 lt
1x	ageing vat	120 + 120 lt
1x	combined machine	15 - 45 kg/h
2x	display case	36 tray

The amount of water used to cool the shop's machines is 2.910.000 litres/year. The average cost of water consumption can be obtained by multiplying the cubic metres of water consumed by the value of the average cost.

with **ECONOMAX 45**

AMOUNT OF WATER SAVED IS 2.760.000 litres/year (95%).

Average savings are equal to the amount of cubic metres of water saved by the average cost.



CONSTRUCTION CHARACTERISTICS

COMPONENTS

External fiberglass casing

Distribution of hot water in PVC

Heat exchange filling in electrowelded PP

Drift eliminator in PP - EUROVENT certified

Float valve to reintegrate water

Electronically controlled centrifugal fan

Overflow discharge

Adaptor for air removal canal

Peepholes for inspection and maintenance

Steel undercarriage with wheels or attachments

Control panel with touchscreen interface

Electropump with inverter

Anti-dust filter

SENSORS AND SYSTEM

Pressure transducer

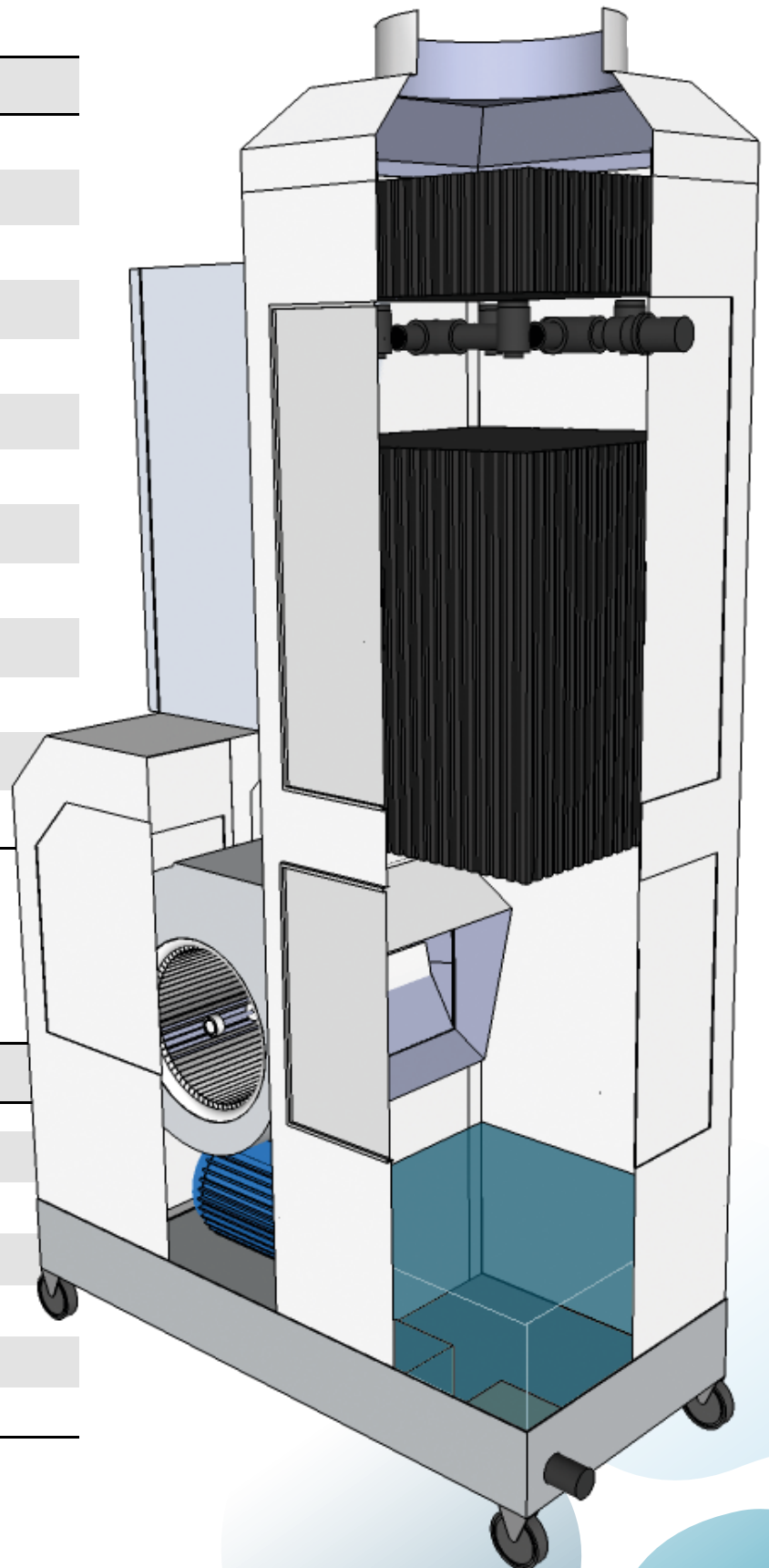
Solenoid valve for neutral fluids

PT100 thermal probe

Integrated inverter

Minimum level switch for pump protection

Anti-freeze electrical resistance



TECHNICAL CHARACTERISTICS

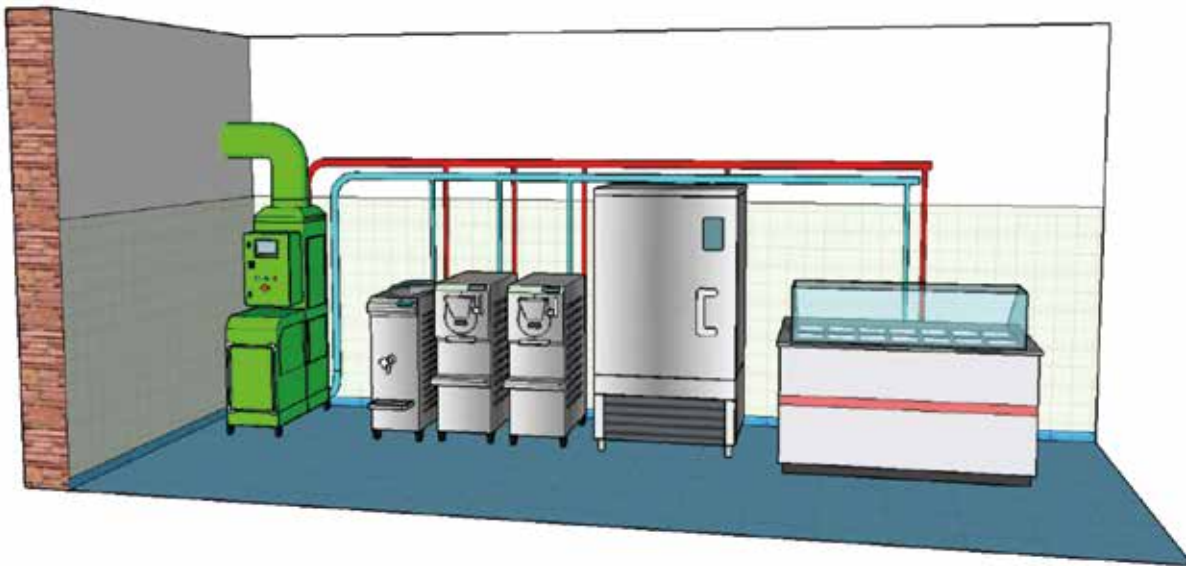
- **Control and regulation:** The integrated touch-screen dashboard on the control panels allows immediate access to all the machine's functions. The machine's system measures the operational parameters automatically and carries out a regular check in order to maintain the machine's optimal efficiency.
- **Structure:** The entire machine is constructed using anti-corrosive materials. The fibreglass casing can hold the machine's weight, guaranteeing an incredibly high resistance to external agents and time.
- **Heat exchange:** The PVC dashboards are structured to have an elevated surface of heat exchange in volumes contained. They are resistant to high temperatures and guarantee the highest performance.
- **Fan:** Direct-drive centrifugal fan with electronic control; the integrated inverter allows you to change its speed depending on the thermal load, keeping consumption and sound emissions to a minimum.
- **Pump:** Double-stage centrifuge with a stainless anti-corrosion impeller. It is controlled by a feedback inverter system through a pressure transducer, so as to guarantee the machine's optimal performance in any situation.
- **Bypass:** The Solenoid Valve controlled by a temperature probe in the basin allows for the sudden lowering of the circuit's water through the forced insertion of cold water from the external network when strictly necessary. The same valve carries out the proportional unblocking of recirculated water, maintaining limestone levels within the limits.
- **Filters:** The filter at the fan's intake limits the circulation of impurities and food powder in the case that the machine is installed inside a shop.
- **Communication:** The integrated control system lets the operator know when to intervene with ANY necessary maintenance operations and allows the appropriate service team to be contacted quickly.
- **Inspection and maintainance:** The peepholes positioned on the fibreglass casing allow for a simple, immediate access to all the internal parts of the machine, facilitating inspection, cleaning and maintenance with extreme simplicity.



INTERNAL AND EXTERNAL INSTALLATION

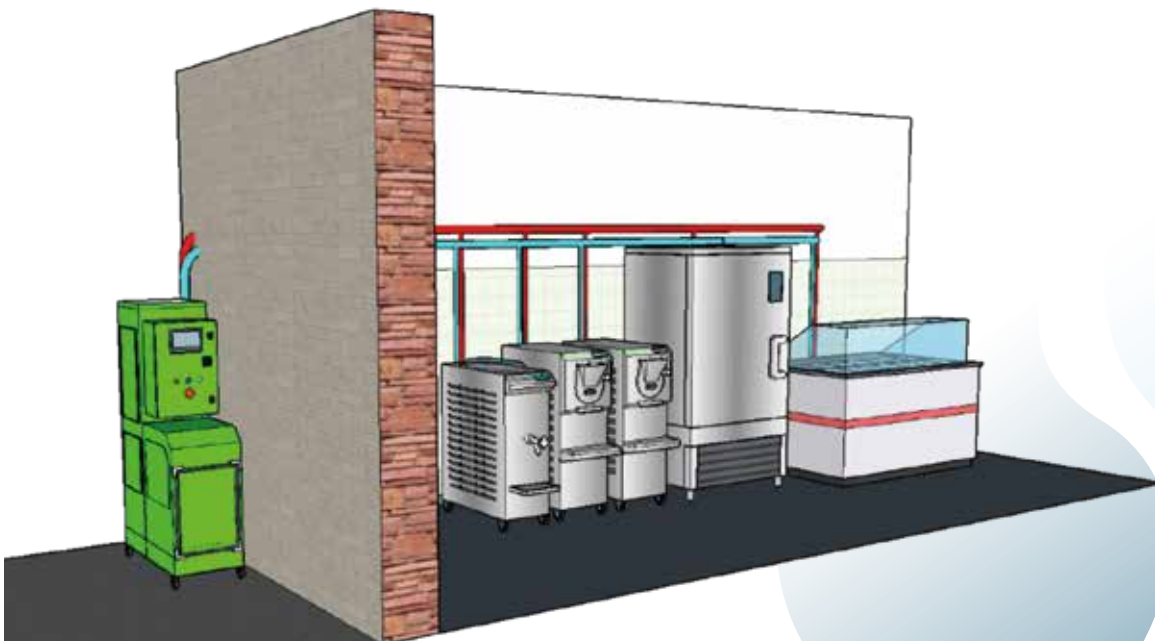
The ECONOMAX tower can be installed both inside and outside the establishment that will be using it. The removal of heat extracted from the machines happens using the normal low temperature water vapour, without polluting or requiring outdoor split-type systems.

Installation inside the establishment can be carried out by simply diverting the machine towards the outside using a common, metal tube, so as to allow the saturated air a free vent to leave.



As an alternative, the installation can be carried out directly on the outside of the shop by exposing the tower to the open air and positioning it in a courtyard, open space or even on the roof. The only hole necessary is, in this case, that for the two main collectors (what goes out and what comes back) between the tower and the shop's machines.

The fibreglass casing protects the machine in all its parts by atmospheric elements, guaranteeing an incomparable durability through time. Furthermore, the tower is not affected by direct exposure to sunlight in any way, maintaining high performance rates.



DIMENSION CRITERIA

Heat to dissipate and choice of machine

The heat potentiality calculation to dissipate in an artisan ice cream shop, measured in kcal/h, is essential for correctly establishing the most appropriate model cooling tower. Such a calculation can be carried out using the two following methods that follow, according to the technical data which is available related to the machines installed.

Method 1: calculation based on kW installed

From the technical profile of the machines, we measure its power in kW. We also obtain the equivalent heat to dissipate. The result obtained allows us to identify the most suitable “model” of tower.

Example

1 batch-freezer	4.0 kW
1 pasteurizer	4.0 kW
1 ageing vat	3.5 kW
1 display case	1.8 kW

TOTAL	12.5 kW

$$12.5 \text{ kW} \times 1.800 \text{ kcal/h/kW} = 22.500 \text{ [kcal/h]} \rightarrow \text{suitable tower: } \mathbf{ECONOMAX 25}$$

Method 2: calculation based on the water consumption network

As we know the hourly consumption of water of production machines, we can obtain the necessary effective flow rate and thus we can identify the most suitable “model” of tower.

Example

1 batch-freezer	200 l/h
1 pasteurizer	500 l/h
1 ageing vat	400 l/h
1 blast freezer	200 l/h
1 display case	600 l/h

TOTAL	1.900 l/h

$$1.900 \times 3 \times 1,5 = 8.550 \text{ l/h} \rightarrow 8.550 \times 5^\circ\text{C} = 42.750 \text{ [kcal/h]}^* \rightarrow \text{suitable tower: } \mathbf{ECONOMAX 45}$$

(*) Although the temperature of the water leaving the cooling tower is greater than that which can be obtained with a chiller/refrigeration unit, the quantity of heat removed from the cooling machines results is the same, inasmuch as the circulating water flow rate is three times higher .

Additional notes on dimensions

The nominal potential of the towers (25.000 - 45.000 kcal/h) is attributed to the following operational conditions:

$T_{\text{water in}}$ in 34 - 35 °C

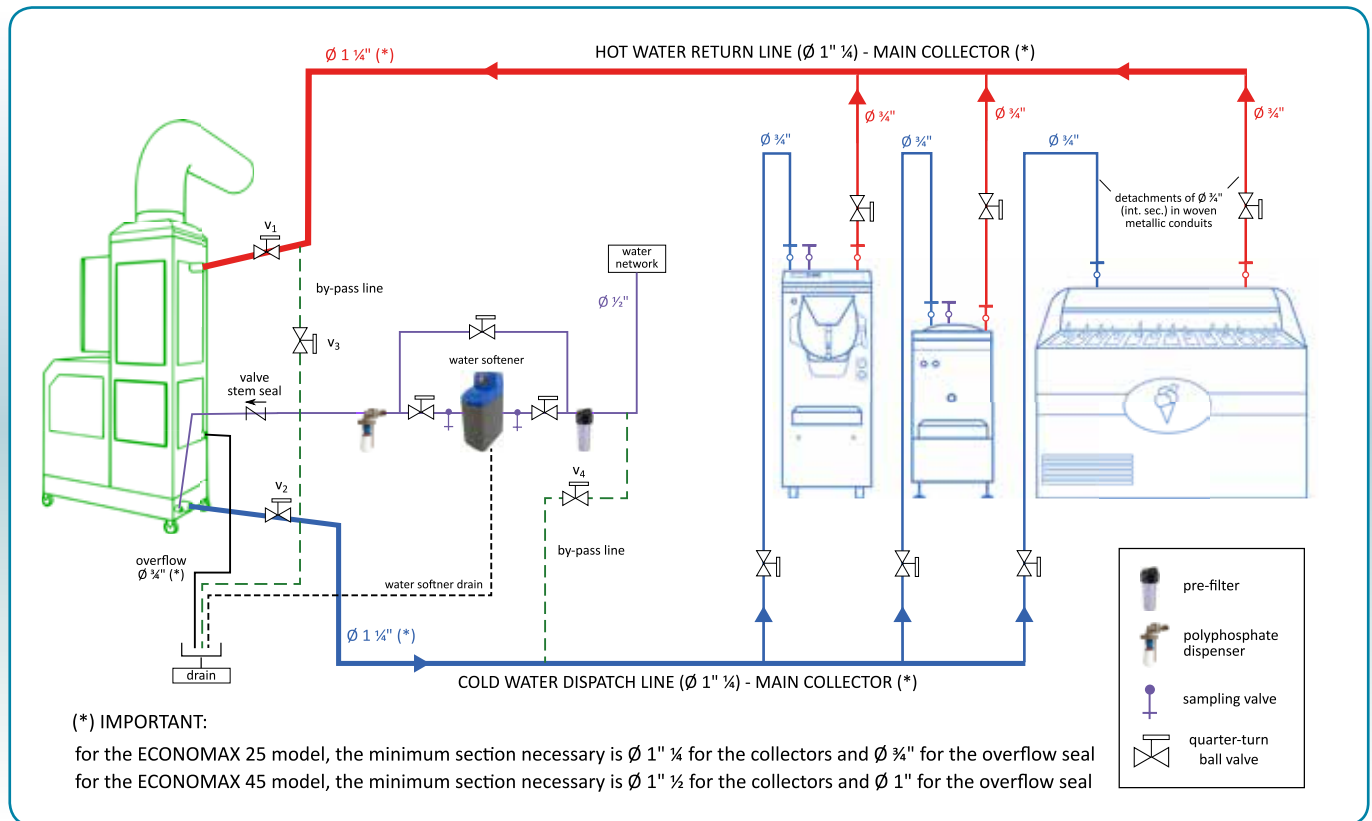
$T_{\text{water out}}$ 29 - 30 °C

$T_{\text{wet_bulb}}$ 24 / 25 / 26 °C (North / Centre / South)

In the case of an installation inside the establishment, the operational conditions are affected by factors such as:

- The establishment’s ventilation (little ventilation = decreased air flow)
- Temperature and humidity in a closed environment (more elevated $T_{\text{wet_bulb}}$ = weaker performance)
- Length of the air extraction channel (greater loss of charge = decreased air flow)

HYDRAULIC PLANT



MINIMUM NECESSARY DIAMETERS: The minimum diameters indicated are those of the main collectors (what goes out and what comes back).

The “detachments” from the machines’ main tubes must be as short as possible, with $\varnothing \frac{3}{4}''$ (internal diameter) and carried out with woven metallic conduits (NOT rubber or a “machine washable” linen material).

MODEL	D_{\min} hot water	D_{\min} cold water
ECONOMAX 25	$1'' \frac{1}{4}$	$1'' \frac{1}{4}$
ECONOMAX 45	$1'' \frac{1}{2}$	$1'' \frac{1}{2}$

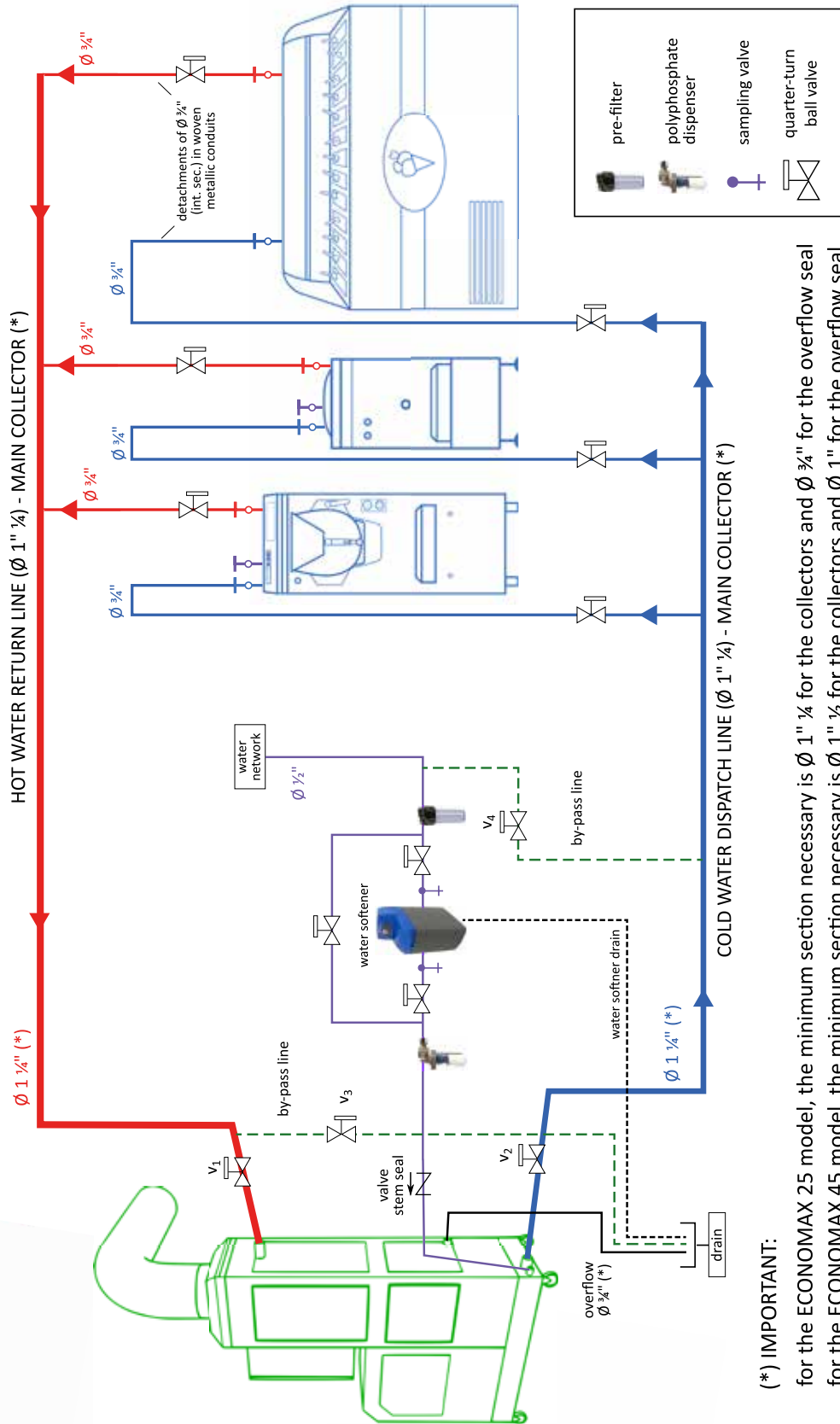
SAFETY AND BYPASS SYSTEM: the two situations that have been set out allow the tower to operate, or, when necessary, exclude the tower continuing to work with throwaway water taken from the public network.

NORMAL SITUATION: valve V1 and V2 --> open
valve V3 and V4 --> closed

EMERGENCY: valve V1 and V2 --> closed
valve V3 and V4 --> open

WATER PURGING SYSTEM: periodic water purge is automatically carried out through the overflow discharge channel. The water that is removed is automatically counted and corresponds to the amount needed to maintain the limestone level in the machine at the default values.

HYDRAULIC PLANT



(*) IMPORTANT:
 for the ECONOMAX 25 model, the minimum section necessary is $\varnothing 1\frac{1}{4}$ " for the collectors and $\varnothing \frac{3}{4}$ " for the overflow seal
 for the ECONOMAX 45 model, the minimum section necessary is $\varnothing 1\frac{1}{2}$ " for the collectors and $\varnothing 1$ " for the overflow seal

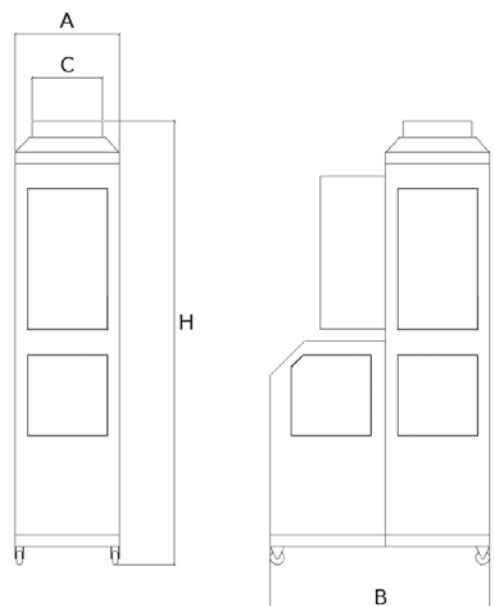
DATASHEET		ECONOMAX 25	ECONOMAX 45
HEAT POWER DISSIPATED	kW _t	29	52
	kcal/h	25.000	45.000
NOMINAL WATER FLOW RATE	m ³ /h	5	9
INLET WATER TEMPERATURE	°C	34	34
OUTLET WATER TEMPERATURE	°C	29	29
EVAPORATED WATER	m ³ /h	0.04	0.075
N° NOZZLES	n°	4	4
PRESSURE LOSS AT NOZZLES	mH ₂ O	4	4

FAN			
MODEL		Centrifugal EC	Centrifugal EC
TRANSMISSION		Direct drive	Direct drive
MOTORD (BRUSHLESS + INVERTER)	n°	1	1
IP PROTECTION RATING	IP	55	55
NOMINAL POWER (MAX)	kW	0,4	2
POLES	n°	6	6
SPEED	rpm	1.000	1.000
VOLTAGE / PHASE / FREQUENCY	V/n°/Hz	230/400/3/50	230/400/3/50
RATED CURRENT AT 400 V	A	2.00	2.80
AIR FLOW	m ³ /h	2.500	4.000

PUMP			
MODEL		centrifugal multistage (2x) + inverter	
NOMINAL WATER FLOW RATE	m ³ /h	5	9
PRESSURE DROP	mH ₂ O	54	52
IP PROTECTION RATING	IP	55	55
NOMINAL POWER (MAX)	kW	2,2	3
POLES	n°	2	2
SPEED	rpm	2.800	2.800
VOLTAGE / PHASE / FREQUENCY	V/n°/Hz	400/3/50	400/3/50

NOISE EMISSIONS		Lwa tot
NORMAL MODE	L [dB(A)]	70 (max)
NOCTURNAL MODE	L [dB(A)]	61,5

MODEL		ECONOMAX 25	ECONOMAX 45
Dimensionis	A	450	600
	B	1.000	1.200
	H	1.920	2.030
	C	304 (ext)	404 (ext)
Diameters	Water inlet	1 1/4"	1 1/2"
	Water outlet	1 1/4"	1 1/2"
	Water refill	1/2"	1/2"
	overflow	3/4"	1"
Weight	empty	120	150
	Full load	200	290





THE COMPANY

Founded in Milan in 1960, MITA plans, produces and sells cooling towers for commercial and industrial waters for open and closed circuits, evaporation capacitors, adiabatic coolers and capacitors, and full machinery for industrial cooling.

MITA offers its knowledge and technical know-how that has been acquired over 50 years of experience in cooling waters for its clients, and has installed more than 25,000 machines across Europe.

Other than the choice between different standard models, MITA provides ad hoc solutions for every client, and is constantly researching and creating technologically innovative models and solutions, focusing its attention on saving energy and being environmentally friendly.

In 2012, Torralval Cooling joined the MITA group. Torralval is a Spanish company that has been active in the field of industrial cooling since 1967.

In 2016, MITA created the ECONOMAX subdivision, formed with the goal of developing and selling cooling towers for ice cream parlours.