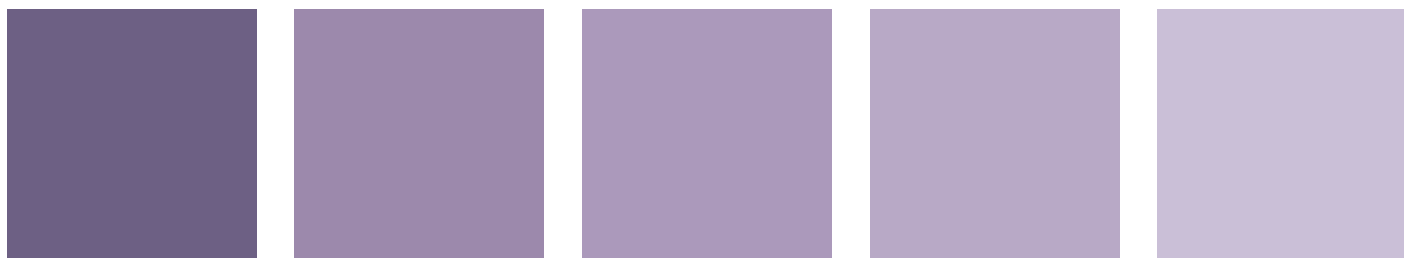
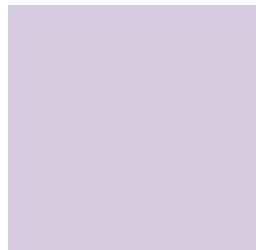




ENVIRONMENTAL
CLIMATE CONTROL
EQUIPMENT & SOLUTIONS

A horizontal bar consisting of five rectangular segments of varying shades of purple and blue, transitioning from dark on the left to light on the right.
A single rectangular segment of a light purple shade, positioned to the left of the main title bar.

AQUACOOOL



**Water-to-water heat pump
with passive energy recovery**



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General description

The **ETT** packaged unit is delivered ready to operate. Its full aluminium structure (frame & casing) ensures an excellent corrosion protection (20-year anti-corrosion guarantee).

The **ETT** unit can be installed either at ground level or on a roof.

ECODESIGN involves DECONSTRUCTION: ETT units are 98% recyclable (re-use and recycling rates based on ULTI+ 21).

Our technical choices have several impacts on the **environment**

• Legal and regulatory framework:

- In accordance with Directive 2008/98/EC on waste, clause 26: "The polluter-pays principle is a guiding principle at European and international levels. The waste producer and the waste holder should manage the waste in a way that guarantees a high level of protection of the environment and human health.", ETT is a member of "Recylum" for France.
- In accordance with articles 5.3, 5.4 and 11 of Regulation (EC) No 303/2008, ETT holds a certificate of capability to handle refrigerants (no. 637).



• Aluminium: a good choice for the planet!

- Aluminium is endlessly 100% recyclable.
- Recycling covers over 30% of aluminium needs.

• Low polluting ETT manufacturing process:

- Selective sorting, waste recovery, 60% of waste is recycled.
- No paint on casings, no use of solvent.
- ISO 14001 Certification (Environmental Management System).



• Consumables: efficient waste management:

- Filtration: ETT units include "ecodesign" air filters (selective sorting: frame - grille - media)

We placed ease of operation at the heart of our units design:

- The separate **technical section** facilitates unit control and maintenance and allows measurement and adjustment during operation.
- The **BEST controller** is specifically designed for this application. It allows great flexibility, thus optimum performance of the **ETT** unit through a user-friendly interface, be it local or remote (with remote display, PC or BMS).

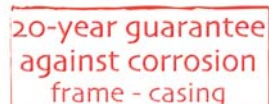


Each unit is checked and tested at the factory, prior to shipment, and a test certificate is issued. **ETT** Quality organisation is certified **ISO 9001** (AFNOR Certificate 1994/2016f).



Moreover, each unit is delivered with an **EC standard certificate of conformity** and complies with the standards listed below:

- Machinery Directive 2006/42/EC - Operator's safety
- Low Voltage Directive (LVD) 2014/35/EU
- Electromagnetic Compatibility (EMC) Directive 2014/30/EU
- Gas Appliances Directive (GAD) 2009/142/EC
- EN 60204-1 - Safety of machinery – Electrical equipment of machines
- EN 378-2: 2017 – Safety and environmental requirements
- Pressure Equipment Directive (PED) 2014/68/EU (sections 2.10, 2.11, 3.4, 5a and 5d of Annex I)
- Regulation (EU) 2016/2281 on ErPs EcoDesign



Operating principle

To complement the DESHU and OCTO+ ranges dedicated to air treatment, the **AQUACOOL** range is designed for pool water heating using **energy recovery on waste water**.

The **AQUACOOL** system combines passive energy recovery with a spiral plate heat exchanger and a heat pump. The association of those two energy-efficient systems allows significant energy savings on pool heating.

The spiral plate heat exchanger allows static recovery. Then, thanks to the heat pump, heat is recovered on waste water through the evaporator and transferred to tap water through the condenser.

Exchangers on the waste water circuit are equipped with removable covers fixed with clamps which provide easy access to interior heat transfer surfaces. The evaporator and the heat exchanger are located close to the unit large access doors for easy maintenance.

The unit operates as a heat pump:

- > Source: waste water, grey water, recovery on foot baths and pools
- > Treated fluid: tap water

The following operating modes are available:

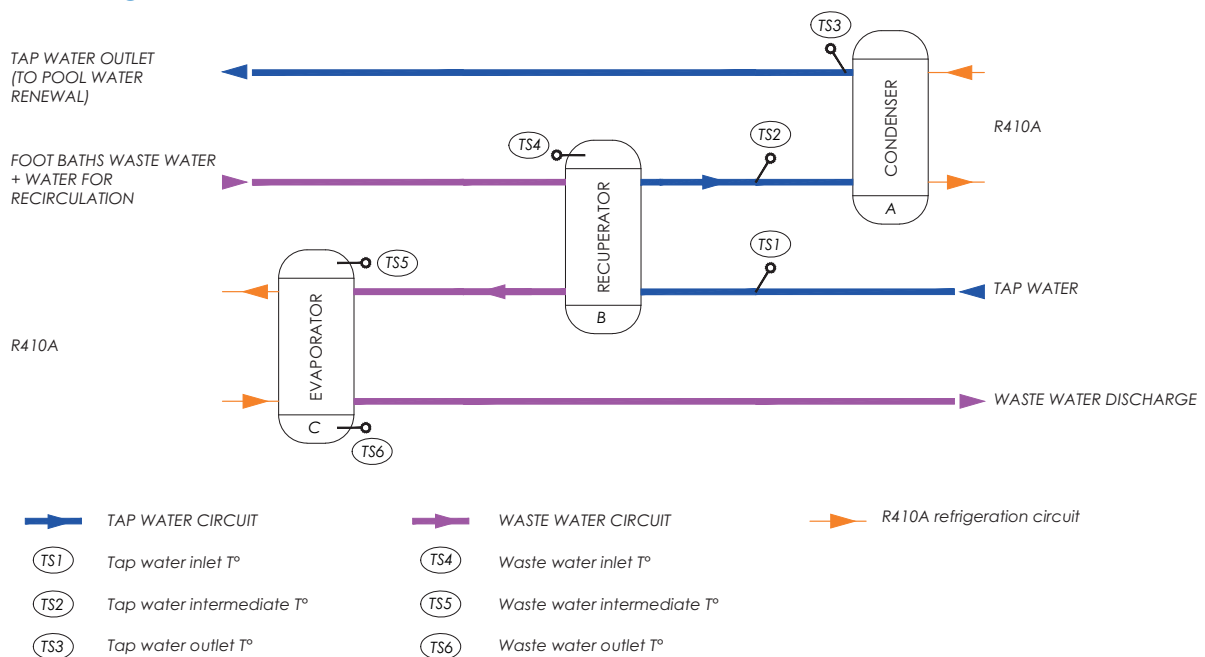
- > Static recovery with the heat exchanger
- > Static recovery with the heat exchanger + heating with the heat pump

Applications: Swimming pools, aquatic centres, etc.

For other applications, please contact us

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Schematic diagram:



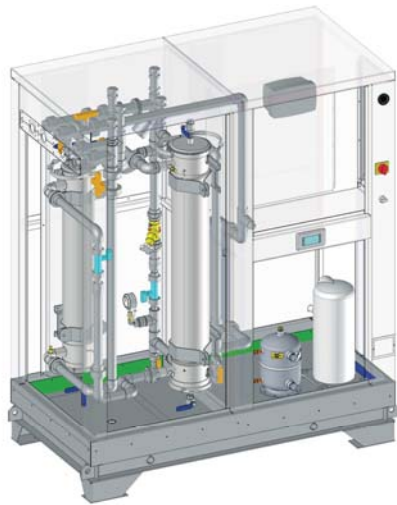
Tap water is first preheated through the water-to-water heat exchanger (B). Then it flows through the condenser (A) where it receives heat recovered on waste water by the evaporator (C).



- Due to exchangers design (316L stainless steel), the **AQUACOOL system is intended for chlorinated fresh water applications only**. It is not compatible with salted water loops or salt water chlorinator systems.
- For swimming pool applications, it is recommended to protect the waste water circuit using a sand filter.
- It is recommended to install a bypass system on both circuits in case of complete maintenance operations.
- Stop and control valves are available as options.



Unit description



The ETT packaged unit comprises 3 different sections:

- 1 The hydraulic section is equipped with large access doors for easy maintenance.
- 2 The refrigeration section.
- 3 The electrical section houses the electrical board and connections.

Aluminium frame and casing:

- **Rigid, compact and lightweight vertical packaged unit**, perfectly weather-resistant, with a 20-year anti corrosion guarantee on casing.
- **Watertight floor** with drainage outlets around the unit, connected to rubber siphons.
- **Aluminium vertical panels and roof, mounted on aluminium frame.**
- **Access through large removable panels.** Panels are closed with square locks. Panels tightness is ensured by a flexible gasket under compression, providing ideal elasticity day after day.

Hydraulic assembly:

- **Water-to-water spiral plate heat exchanger** made of 316L stainless steel for static heat recovery. The exchanger can be accessed for cleaning through external trap doors fixed with clamps.
- **CPVC piping** for tap water and waste water circuits, with accessories (air vents, thermowells, etc.)
- **Analogue flow meters** on tap water and waste water circuits with treated flow rate measurement on the controller.
- **Removable filters, 500 µm efficiency** on tap water and waste water circuits.
- **Analogue pressure transmitter** for fouling detection on the evaporator and on the heat exchanger.

Thermodynamic assembly:

- **Refrigeration circuits** compliant with European directive on pressure equipment (PED 2014/68/EU).
- **R410A refrigerant.**
- **316L stainless steel spiral plate evaporator.** The exchanger can be accessed through external trap doors fixed with clamps for cleaning.
- **316L stainless steel brazed plate condenser.**
- **Anti-acid filter drier.**
- **HP and LP switches.**



Control description

Electrical assembly:

- **Electrical board compliant with French standards NF EN C 15-100 and NF EN 60204-01, including:**
 - ✓ **ETT controller.**
 - ✓ **Power switch** with lockable external handle for full load cut-off.
 - ✓ **400-230-24 volts transformer** for regulation and control circuits.
 - ✓ **Fault synthesis** with pending dry contact on terminal.
 - ✓ **Numbered terminal blocks** with disconnecting terminals for remote controls and transfers.
 - ✓ **Internal wiring** numbered at both extremities using numbered ferrules.
 - ✓ **Ik3 breaking capacity**, basis 10 KA.
 - ✓ **All components protected** by circuit breakers.
 - ✓ **Remote display** on the front of the unit.

Control assembly:

- **CTN type temperature sensors.** Their accuracy and liability have been tested and validated at the factory and on site.
- **BEST-type controller** (Building Energy Saving Technology) especially developed by ETT for this range of units. Programs are updated annually in order to add functions requested for some applications and to optimise units power consumption.

The microprocessor, the memory and the size of the controllers are adapted to the chosen applications and options by integrating a program set-up in the factory. The controller is in a plastic box that guarantees a high mechanical protection and reduces electrostatic shock threats.

The controller offers the following functions, among others:

- ✓ **On/Off** through the customer pump operation command contact.
- ✓ **On/Off** according to programmed schedule (2 time slots per day).
- ✓ **Fault synthesis** with dry contact for transfer to customer system.
- ✓ **Security management** (HP, LP, fouling, etc.) and faults management.
- ✓ **Operating time counting** for unit and compressor.
- ✓ **Unit instantaneous heating capacity display** (as standard) and **unit efficiency** (instantaneous COP) display (if the Energy meter option has been selected).
- ✓ **RS 485 communication as standard.**

Main options

Acoustics	<ul style="list-style-type: none">▪ Compressor sound jacket
Hydraulics	<ul style="list-style-type: none">▪ Low water pressure switch on tap water circuit▪ TA valve on tap water circuit▪ Stop valves on tap water and waste water circuits
Cooling	<ul style="list-style-type: none">▪ HP and LP pressure gauges
Electricity	<ul style="list-style-type: none">▪ Total electrical energy metering according to 2002/91/EC▪ Soft starter (compressor current soft starter)
Control	<ul style="list-style-type: none">▪ myETTVision, internet communication with ADSL or 3G▪ MODBUS IP, LONWORKS or BACNET IP communication

	NAME	UOM	102	103	106	108
SPECIFICATIONS	Waste water/tap water rated flow rate	L/h	800	1500	2500	3500
	Min. flow rate	L/h	400	1000	2000	3000
	Max. flow rate	L/h	1000	2000	3000	4000
	Static heating capacity ⁽¹⁾	kW	9.8	17.9	36.4	49.7
	Thermodynamic heating capacity ⁽¹⁾	kW	8.2	13.2	19.6	26.7
	Total heating capacity ⁽¹⁾	kW	18.0	31.1	56.0	76.4
	Power input ⁽¹⁾	kW	1.2	1.7	3.0	3.9
	Overall COP ⁽¹⁾	kW/kW	15.3	18.4	18.7	19.4

ELECTRICAL CONNECTION	Total installed electrical power	kW	3.6	4.8	7.0	9.3
	Rated current	A	6.5	8.5	12.1	16.3
	Starting current	A	30	48	66	103

GENERAL	Outside sound power level	dB(A)	55	57	60	61
	Resulting outside sound pressure level at 1 m, ref. 2x10 ⁻⁵ in free field	dB(A)	47	49	52	53
	Unit weight with water	kg	372	382	431	439
	Tap water circuit pressure drop	kPa	33	57	134	214
	Waste water circuit pressure drop	kPa	5	17	42	66
	Connections	mm	Ø40 CPVC pipe ends to be glued			
	Dimensions (L×W×H)	mm	1500 x 785 x 1800			
	Minimum tap water/waste water inlet temperature for minimum flow rate operation ⁽²⁾	°C/°C	6/25			

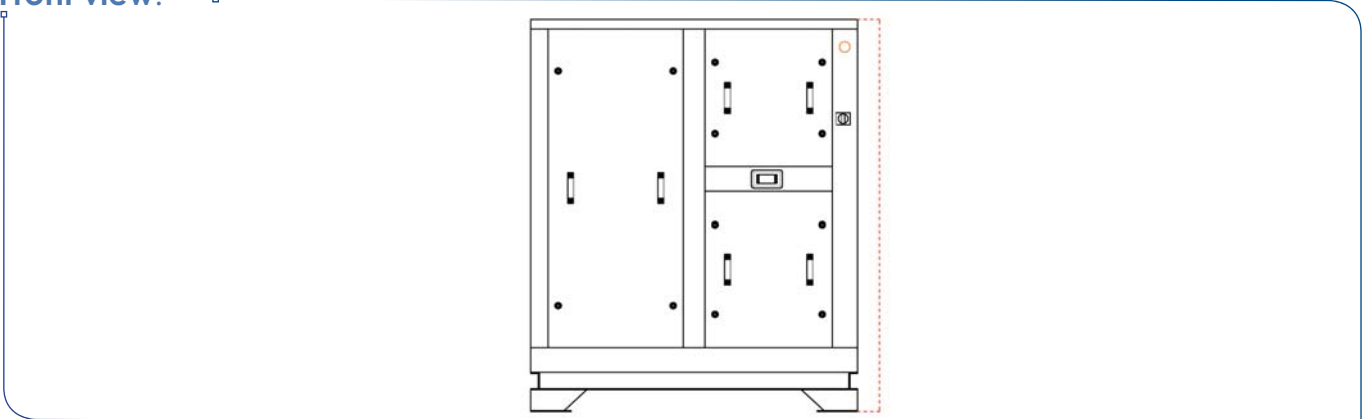
(1) Heating capacity for +28 °C waste water inlet temperature and +10 °C tap water inlet temperature.

(2) For operation with thermodynamics

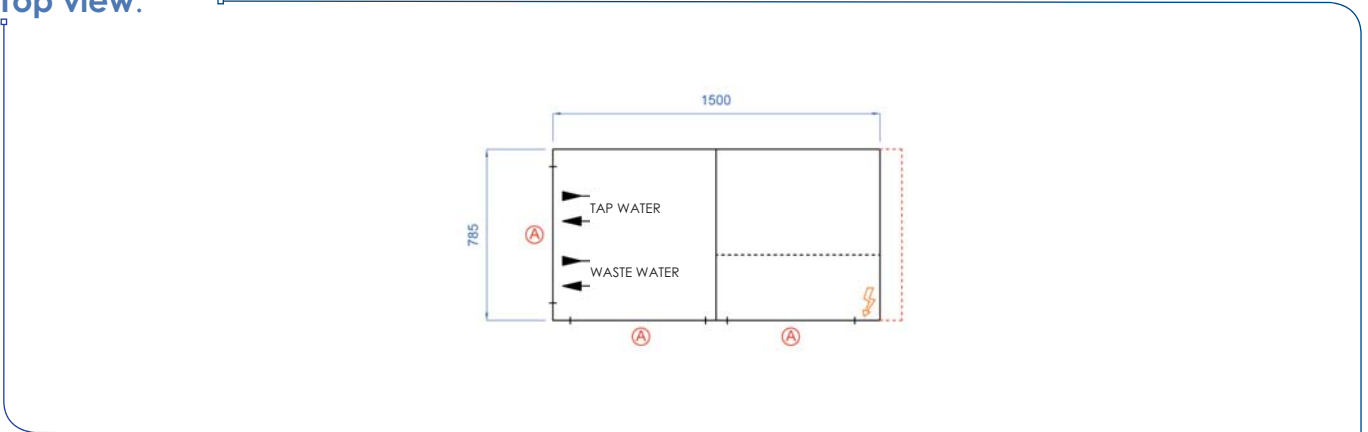
Dimensions and connections

Type 102 - 103 - 106 - 108

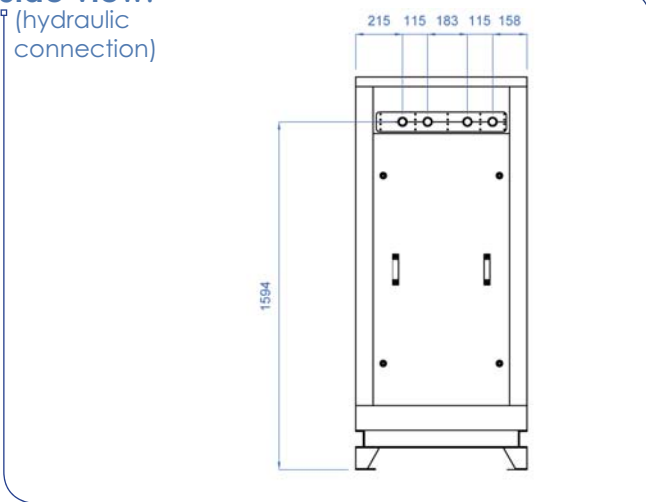
Front view:



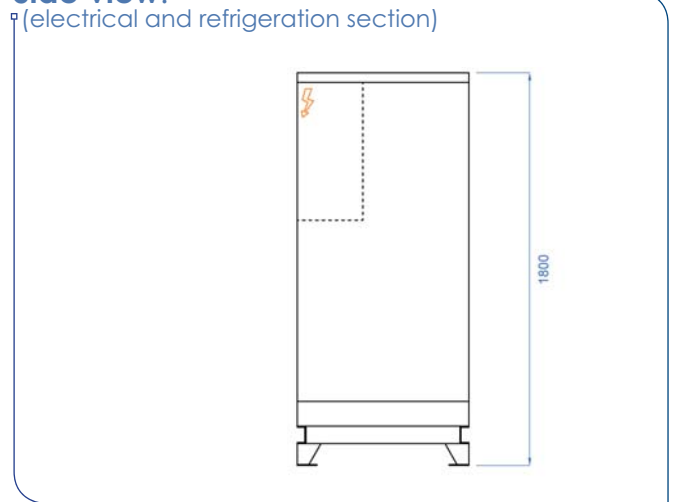
Top view:



Side view:



Side view:

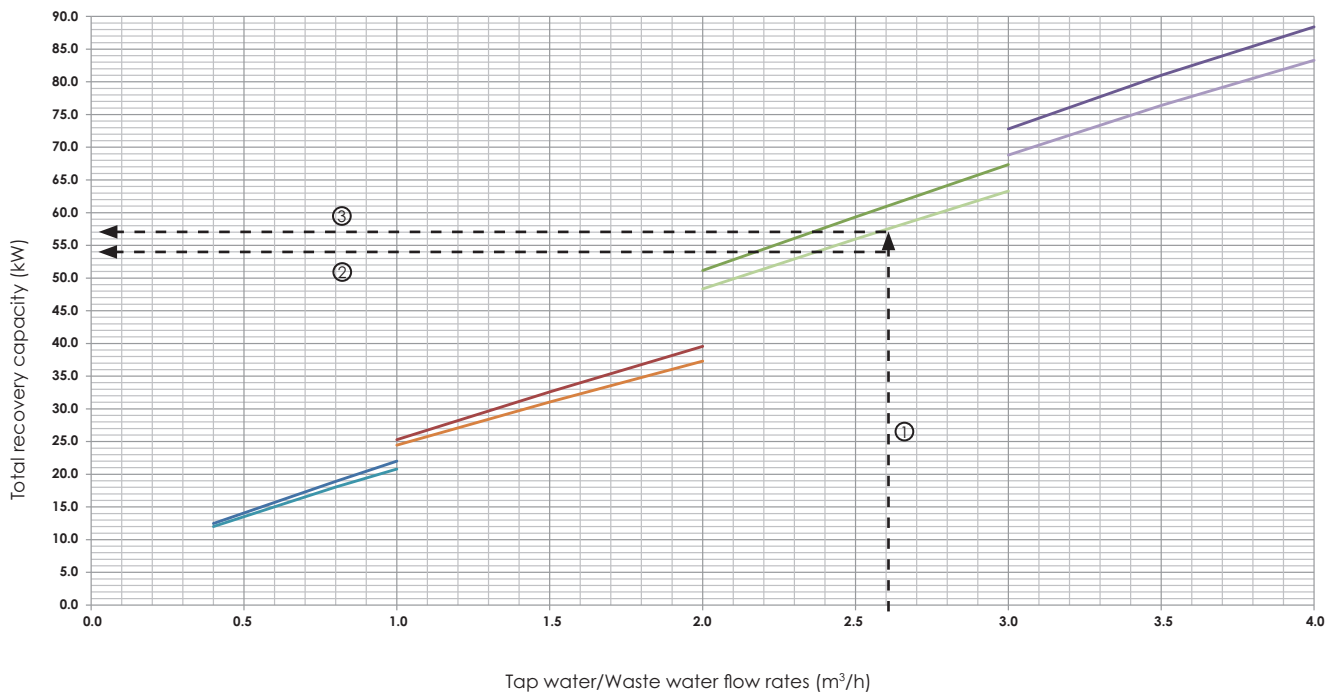


- Ⓐ Access
- ⚡ Power supply
- Provide 100 mm clearance (minimum) for side ventilation.

	Length	Width	Height
Casing dimensions	1500 mm	785 mm	1800 mm
Transport overall dimensions	1560 mm	800 mm	1800 mm
Connections	Ø40 CPVC pipe ends to be glued		

Aquacool selection diagram

Selection diagram:



Aquacool 102:

— Tap water inlet temperature: + 8 °C

— Tap water inlet temperature: + 10 °C

Aquacool 103:

— Tap water inlet temperature: + 8 °C

— Tap water inlet temperature: + 10 °C

Aquacool 106:

— Tap water inlet temperature: + 8 °C

— Tap water inlet temperature: + 10 °C

Aquacool 108:

— Tap water inlet temperature: + 8 °C

— Tap water inlet temperature: + 10 °C

- Select the unit based on tap water/waste water flow rate **(1)**.
- Total recovery capacity indication for 2 tap water inlet temperatures: + 10° C **(2)** and + 8° C **(3)**.

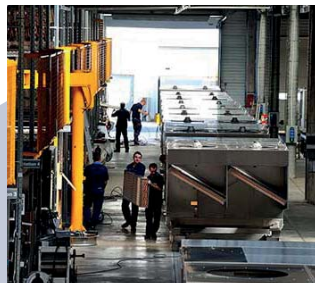
Example:

For a flow rate of 2.5 m³/h **(1)**, the suitable unit is the **Aquacool 106**.

For + 10 °C tap water inlet temperature, total recovery capacity is 56 kW **(2)**.

For + 8 °C tap water inlet temperature, total recovery capacity is 59 kW **(3)**.





Reference: MARK-BRO_16-EN_A

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