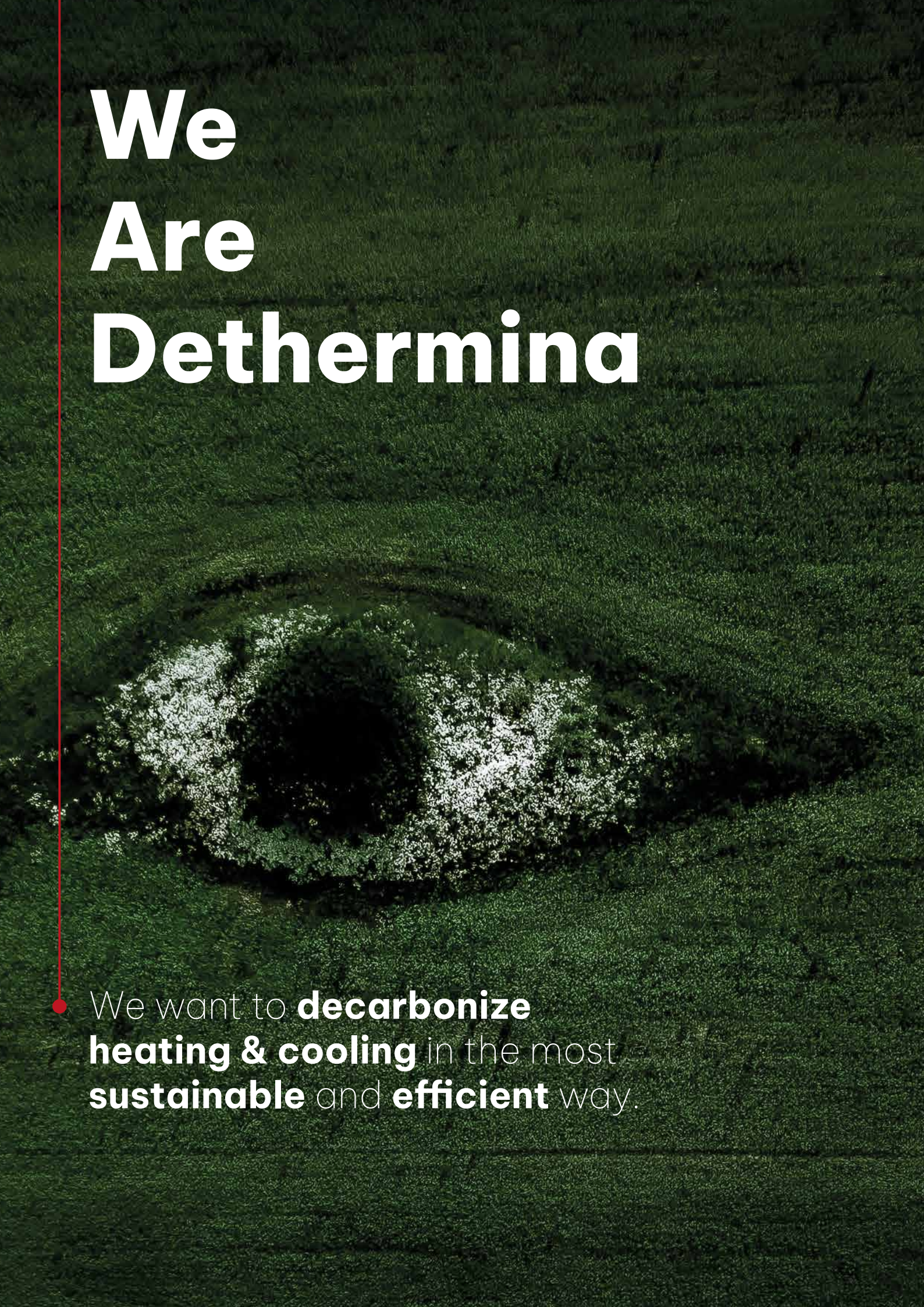
dethermina

Warm. Future proof.

A-COMBO80

Contents

We Are Dethermina



We want to **decarbonize heating & cooling** in the most **sustainable** and **efficient** way.

Why using an **heat pump** and a **chiller**, if you can have them **together**?

It's all about **moving thermal energy** already available around us, using the less electricity ever.

Decarbonization, made simple.

ENVIRONMENTAL SUSTAINABILITY
We **eliminate direct emissions** of CO_2 equivalent thanks to the use of natural refrigerants.

EFFICIENCY
The **technology** used in our heat pumps exceeds current limits to **reduce indirect CO_2 emissions**.

We are an **italian company** specialized in the design, production and sale of **heat pumps** operating **with natural gas**.

Combining **tradition** and **innovation**, we are committed to providing advanced solutions capable of responding to the most varied needs in the field of **heating** and **refrigeration**.

We aim to make the **energy transition** in heating **fast**, **easy**, **safe** and **accessible**.

A-COMBO80

The **A-COMBO**80 units are **high efficiency 4 pipes units** using natural gas **R290** (propane).

It can deliver **hot water** up to **80°C** with **external temperature** down to **-20°C**.

It can deliver **cold water** down to **-10°C** with an **external temperature** as high as **45°C**.

And **it can be done simultaneously**.

Future proof.

An **innovative**, **ecological** and highly **efficient** solution that aims to change **heating and cooling**, to make it **sustainable**, with a significant reduction in costs and an improvement in comfort.

4 sizes are available, made on **2 different frames** with **double refrigeration circuit**.

A-COMBO80 190.2
A-COMBO80 220.2

A-COMBO80 260.2
A-COMBO80 300.2

A-COMBO80

SUSTAINABLE

The natural refrigerant **R290** allows for high performance, guaranteeing **high efficiency values** with **almost zero environmental impact** (GWP=3).

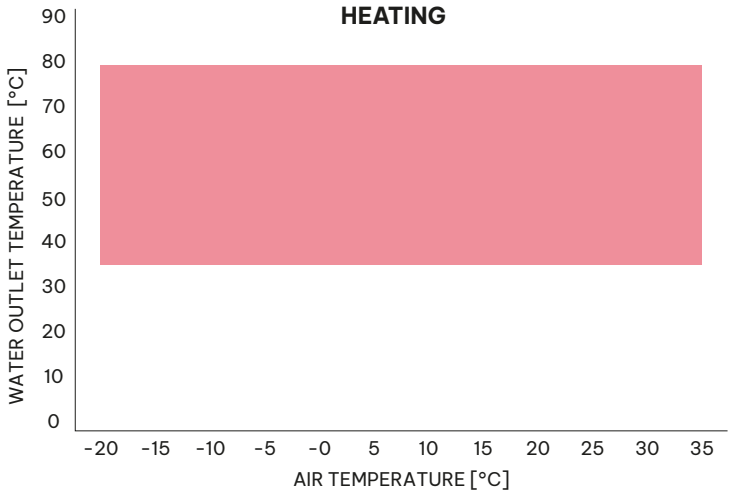
EFFICIENT

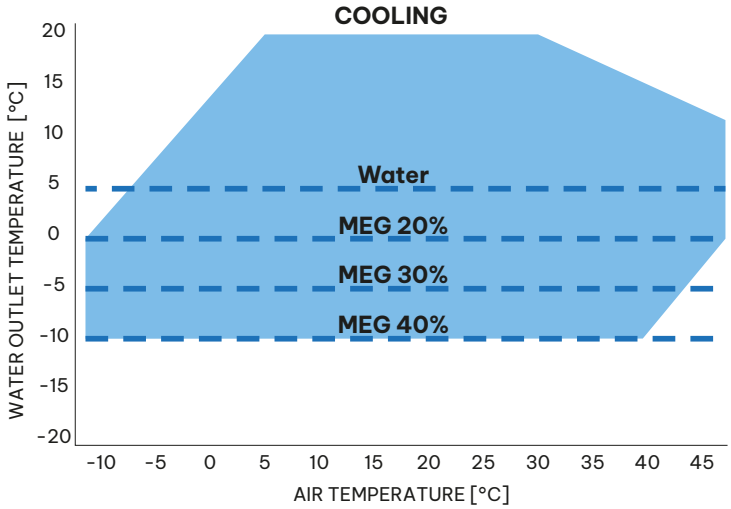
The unit includes:

- High efficiency **compressor**, equipped **with LSPM motor**.
- **Axial fan** with permanent magnet **EC** motor.
- **Full Inverter**

PERFORMING

The **A-COMBO**80 heat pump is capable of producing **hot water up to 80°C continuously and constantly with external temperatures down to -20°C** and cooling up to external temperatures of 35°C.





Why choose it

COMPATIBLE

Thanks to the possibility of producing high temperature water, it is possible to replace traditional heat generators with heat pump technology **without changing the system terminals**.

FLEXIBLE&RELIABLE

The **modular logic** guarantees high reliability of the entire **system**, thanks to the possibility of excluding one or more units, for any other customer needs, without interruptions in the operation of the system.

It allows you **to divide** the **requirement simultaneously** into **heating**, **cooling** and **domestic hot water**.

EASY

The structure is shaped to allow **easy access** to the technical compartment.

The easy-to-access panels can be quickly removed to allow maintenance operations.

The system units are **connected via LAN**, with the possibility of **remote control**, via touch-screen display and connection to external **BMS management** systems.

SILENT

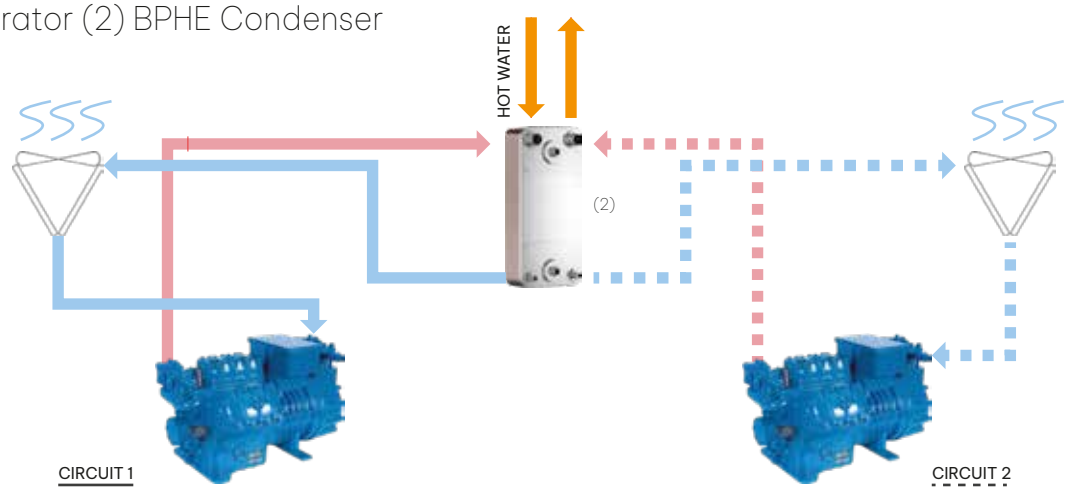
The unit is equipped with systems to optimize air flows (**AxiTop** and **FlowGrid**); the fans are equipped with electronically controlled **brushless motors** to ensure maximum levels of efficiency and noise.

The **compressor** is **isolated** in a technical compartment which has a **sound-absorbing coating**, and is equipped with **anti-vibration pipes**.

A-COMBO80

TOTAL HEAT RECOVERY MODE

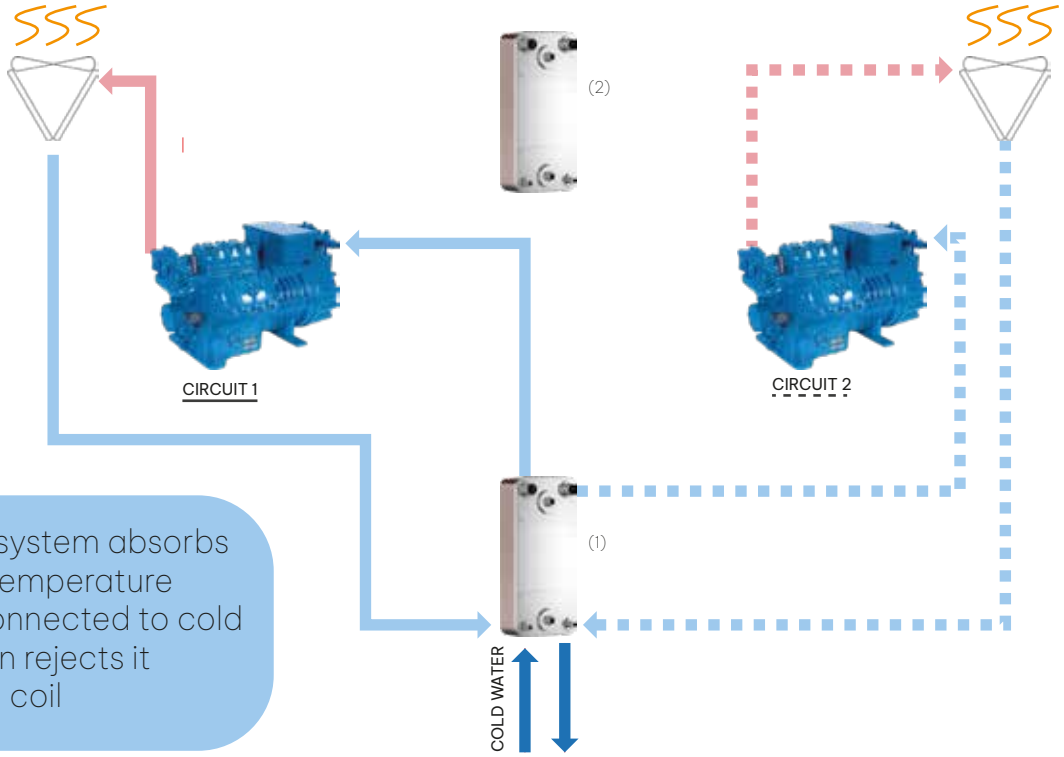
(1) BPHE Evaporator (2) BPHE Condenser



In **total heat recovery mode** external air is the heat source which is then distributed by the BPHE connnected to hot water pipes.

CHILLER MODE

(1) BPHE Evaporator (2) BPHE Condenser

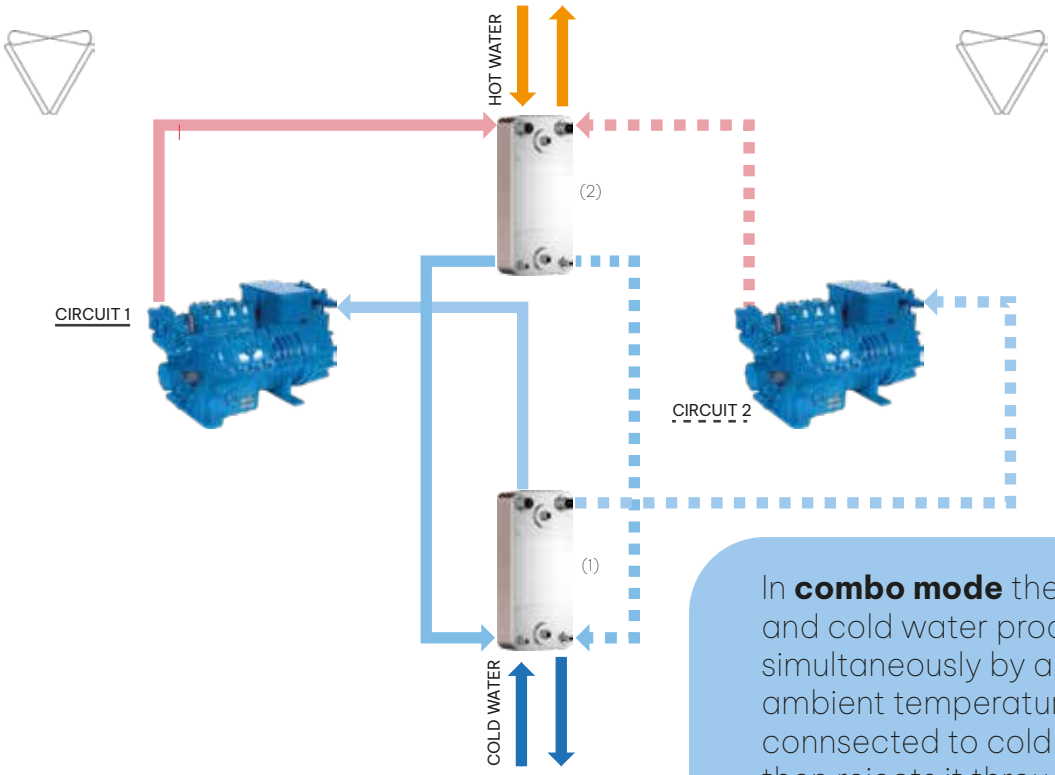


In **chiller mode** the system absorbs heat from ambient temperature through the BPHE connected to cold water pipes and then rejects it through the external coil

How it works

COMBO MODE

(1) BPHE Evaporator (2) BPHE Condenser



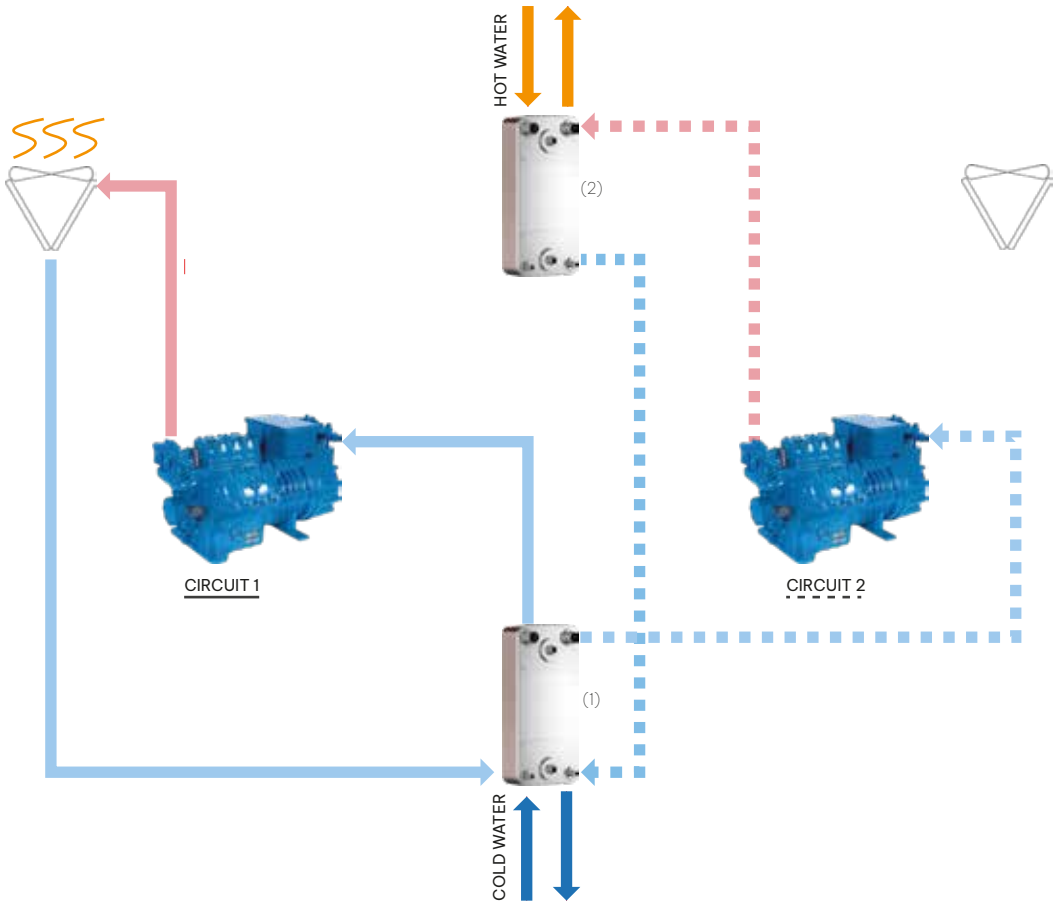
In **combo mode** the system enables hot and cold water production simultaneously by absorbing heat from ambient temperature through the BPHE connsected to cold water pipes and then rejects it through the BPHE connect to hot water pipes .

A-COMBO80 220.2 has been designed as a **reliable polyvalent unit**, appointed to guarantee all the comfort customer's needs along the seasons.
It uses four pipes technology, where both evaporators and condensers could be used to produce hot and chilled water at the same time.

A-COMBO80

COOLING+PARTIAL HEATING MODE

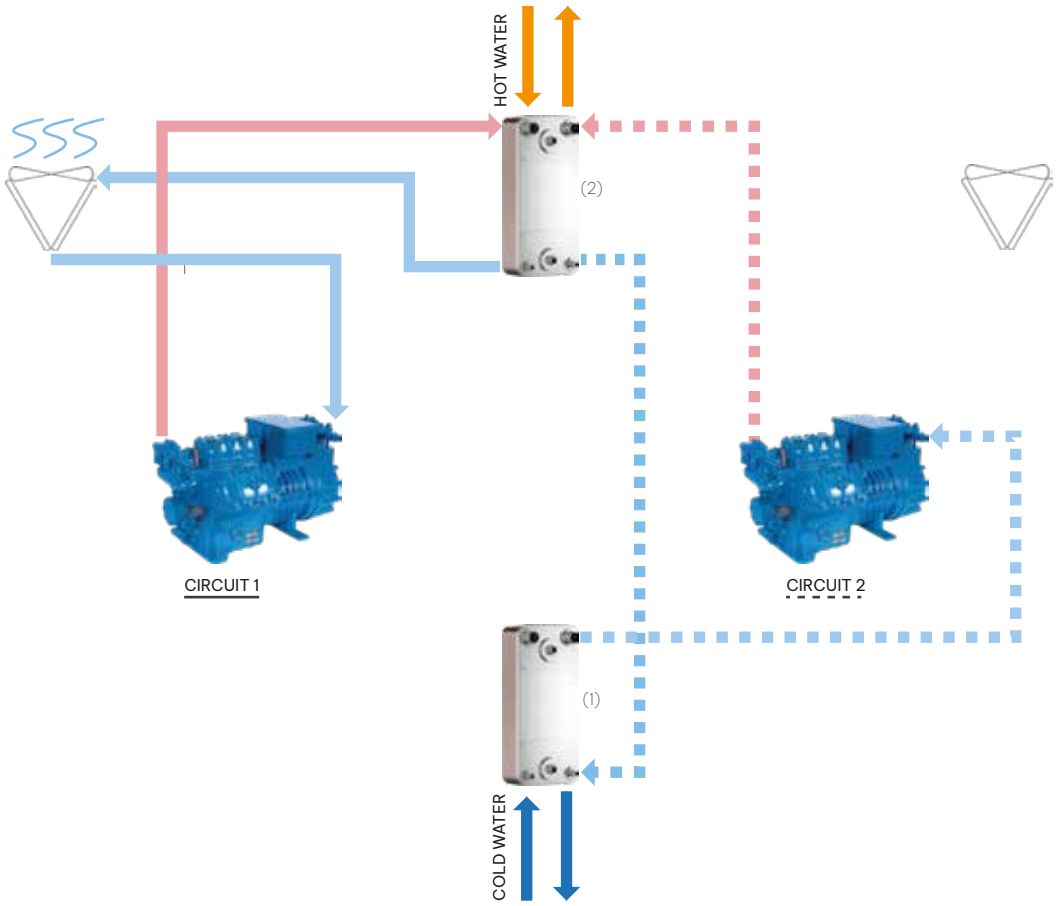
(1) BPHE Evaporator (2) BPHE Condenser



How it works

HEATING+PARTIAL COOLING MODE

(1) BPHE Evaporator (2) BPHE Condenser



Your safety

INSULATED TECHNICAL COMPARTMENT

The **technical compartment** containing the compressor and all the components of the refrigeration circuit is **insulated** and **ventilated**.

ATEX CERTIFIED COMPRESSOR

The **compressor** used is certified according to the **ATEX directive 2014/34/EU**.

The **refrigeration circuit** is optimized **to reduce** the **refrigerant charge**.

comes first

ATEX SENSOR

Inside the technical compartment there is an **ATEX sensor** which, in the event of any refrigerant leaks, activates the **safety systems** (with independent power supply) when the threshold of 10% of the LFL (Low Flamable Level) is exceeded.

ATEX FAN

An **ATEX fan** guarantees **emergency** ventilation inside the technical compartment in the event of a leak of R290 and avoids the accumulation of high concentrations of refrigerant.

Your safety

ATEX COMPONENTS

Each circuit is equipped with:

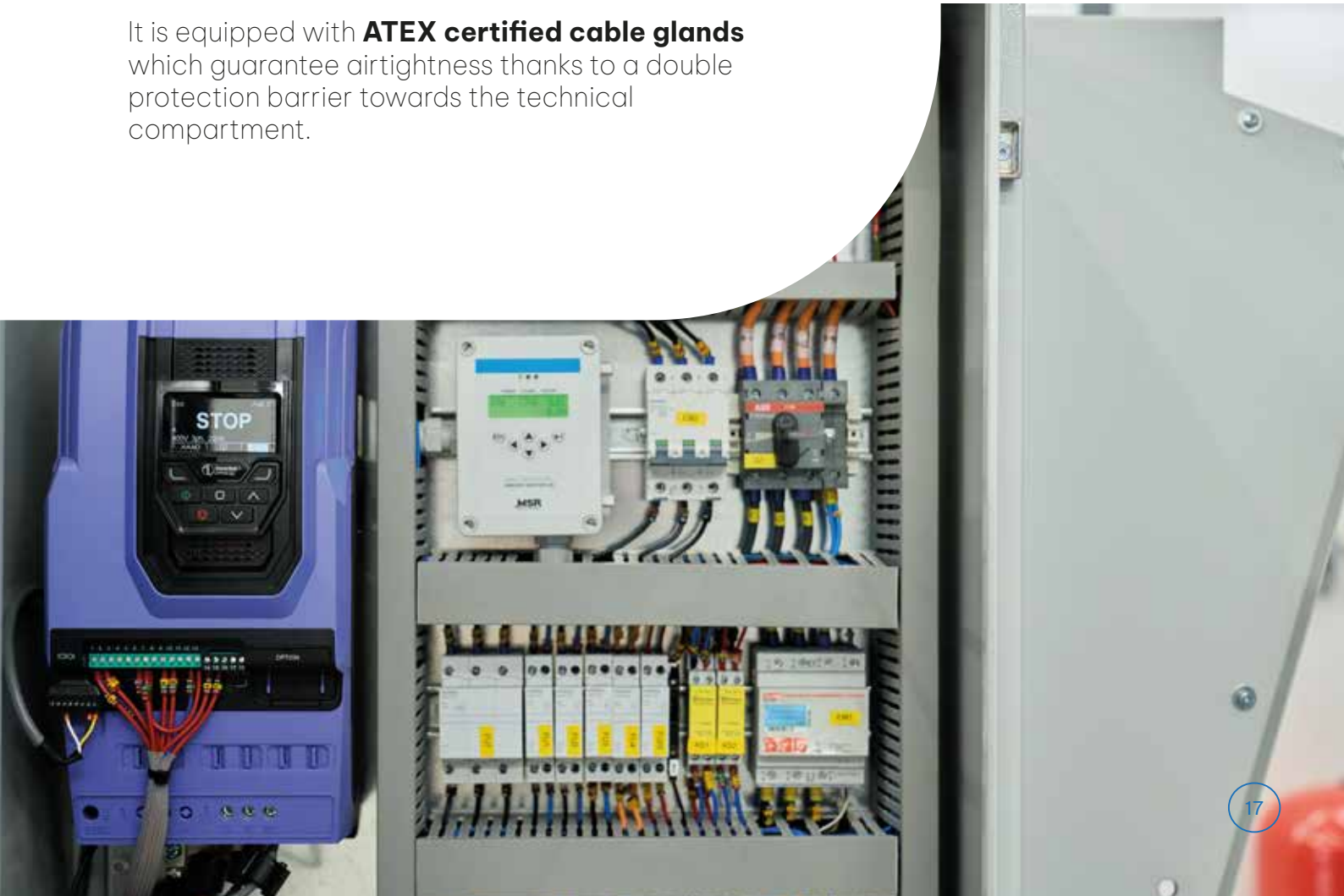
- ATEX pressure transducers
- ATEX high and low pressure switches

comes first

IP54 ELECTRICAL PANEL

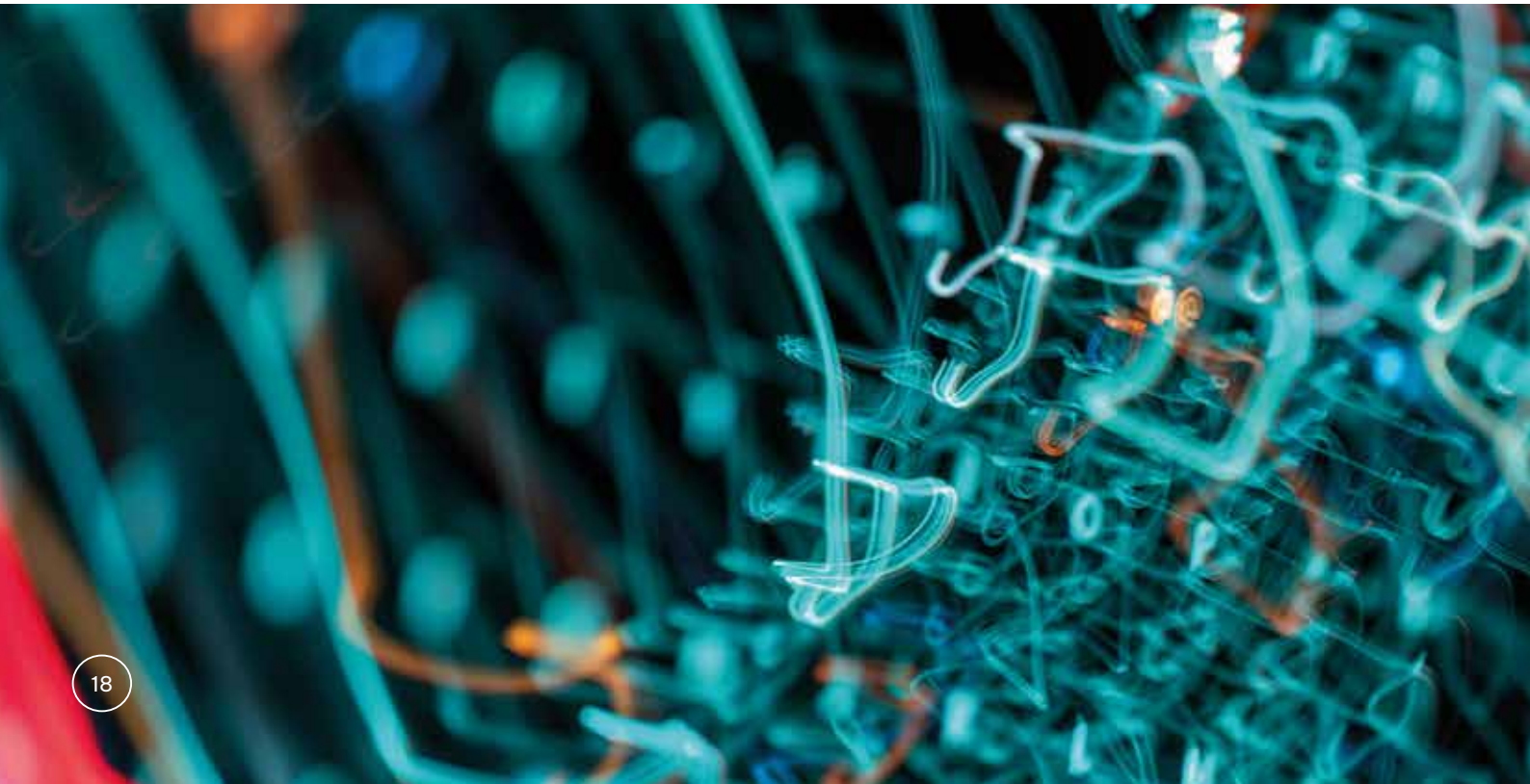
The electrical panel, which contains the components of the control and protection system, has a watertight structure with **IP54** protection degree in accordance with the EN60529 standard.

It is equipped with **ATEX certified cable glands** which guarantee airtightness thanks to a double protection barrier towards the technical compartment.



A-COMBO80 range

MODEL		A-COMBO80 190.2	A-COMBO80 220.2
COMPRESSOR			
Circuit	n°	2	2
Type		Semi-hermetic reciprocating with inverter driven LSPM	Semi-hermetic reciprocating with inverter driven LSPM
FANS			
Quantity	n°	4	4
Type		Axial EC motor	Axial EC motor
USER SIDE EXCHANGER			
Quantity	n°	2	2
Type		Brazed plates	Brazed plates
ELECTRICAL DATA			
Power supply	[Ph/V/Hz]	3+N/400/50	3+N/400/50
Maximum power input	kW	80	94,6
Maximum Running Amperage (MRA)	A	136,6	167
Leak R290 detection circuit power supply	[Ph/V/Hz]	1/230/50	1/230/50
SOUND DATA (configuration LN)(1)			
Sound power level	[dB(A)]	87	87
Sound pressure level at 10 mt free field(2)	[dB(A)]	55	55
SCOP			
Seasonal coefficient of performance(3)	SCOP	3,61	3,69
DIMENSIONS			
Lenght	mm	2912	2912
Depth	mm	2260	2260
Height (Version LN)	mm	2458	2458
Water connection (IN/OUT)	"	3"	3"



Technical data

	A-COMBO80 260.2	A-COMBO80 300.2
	2 Semi-hermetic reciprocating with inverter driven LSPM	2 Semi-hermetic reciprocating with inverter driven LSPM
	6 Axial EC motor	6 Axial EC motor
	2 Brazed plates	2 Brazed plates
	3+N/400/50 106,8 186 1/230/50	3+N/400/50 128 128 1/230/50
	89 56	89 56
	3,54	3,66
	3910 2260 2455 4"	3910 2260 2455 4"

NOTES
1) In accordance with ISO 3744 (Heating mode)
2) Version SLN at 10 meters: -4 dB(A) (**30.1 excluded**). For STD version contact technical department.
3) In accordance with EN 14825 User application MT (55°C) climatic zone Average

A-COMBO80 range

MODEL		A-COMBO80 190.2	A-COMBO80 220.2
HEATING mode			
Heating capacity (1)	kW	183,0	212,5
Power input(1)	kW	51,1	58,9
COP(1)	W/W	3,58	3,61
Water flow(1)	m³/h	31,9	37,1
Pressure drops(1)	kPa	30,1	33,8
Water temperature (IN/OUT)	°C	40 / 45	40 / 45
Maximum water temperature (OUT)	°C	80	80
COOLING mode			
Cooling capacity (2)	kW	153,9	178
Power input (2)	kW	48,3	54,4
EER (2)	W/W	3,19	3,27
Water flow(2)	m³/h	27,6	31,4
Pressure drops(2)	kPa	24,7	26,3
Water temperature (IN/OUT)	°C	12 / 7	12 / 7
COMBO mode			
Heating capacity	kW	194,8	229,1
Cooling capacity	kW	147,7	173,5
Power input	kW	47,1	55,6
TER	W/W	7,27	7,25
User (EVAPORATOR)			
Fluid type	-	Water	Water
Water temperature (IN/OUT)	°C	12 / 7	12 / 7
Water flow	m³/h	25,4	29,8
Pressure drops	kPa	21	23,8
User (CONDENSER)			
Fluid type	-	Water	Water
Water temperature (IN/OUT)	°C	40 / 45	40 / 45
Water flow	m³/h	35,9	39,8
Pressure drops	kPa	33,5	38,2

NOTES

1) Air temperature 7°C R.H 87% -water temperature in/out 40°C/45°C (according to EN 14511-2022)
2) Air temperature 35°C-water temperature in/out 12°C/7°C (according to EN 14511-2022)

Performances

	A-COMBO80 260.2	A-COMBO80 300.2
	248,3	290,0
	71,4	81,8
	3,48	3,55
	43,9	50,8
	42,1	44,2
	40 / 45	40 / 45
	80	80
	220,2	257,6
	64,4	76,4
	3,42	3,37
	43,2	51,0
	38,7	42,3
	12 / 7	12 / 7
	274,5	325,5
	211,9	252,1
	62,6	73,4
	7,77	7,87
	Water	Water
	12 / 7	12 / 7
	34,4	43,3
	28,1	31,5
	Water	Water
	40 / 45	40 / 45
	45,5	56,6
	44,4	53,4

Options

EQUIPMENTS

Water pump kit on-board
Low temperature kit
Low noise kit

MOUNTED OPTIONALS

Copper-copper coils
Coils BLYGOLD coating treatment (4000h salt spray resistant)
Coils HERESITE coating treatment (6000h salt spray resistant)
Coils protection grids
Energy meter
Serial interface for BMS systems (MODBUS RTU)

ACCESSORIES

Vibration-damping kit (rubber) for supports
Vibration-damping kit (spring) for supports
Flow meter (hydronic circuit)
Water filter (mandatory even if not provided by manufacturer)
Vibration-damping kit for joints
Water pressure gauge
Filling group (hydronic circuit)
Gas separator (hydronic circuit)
Shut off valves (hydronic circuit)
Flow switch (hydronic circuit)
Safety valve (hydronic circuit)
Remote control panel (touch screen)

Notes

dethermina

dethermina
Warm. Future proof.

dethermina S.p.A.

Via F. Imparato, 190
80146 Napoli (Italy)

+39 081 767 4523

info@dethermina.it

www.dethermina.it

pi/cf 10292131215
cciaa NA n. 1094917

Dcatcom_A-COMBO80_02_25_EN