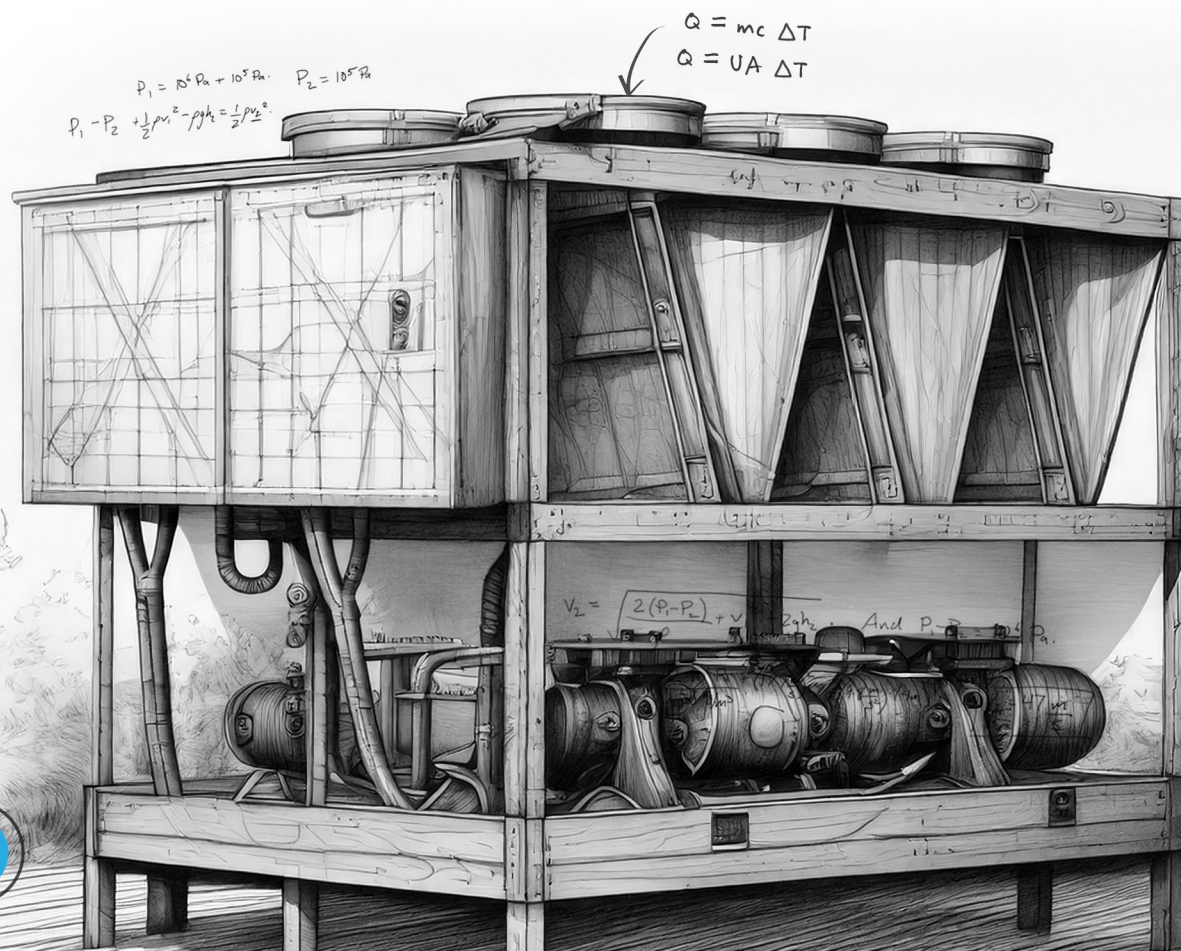


ECO COOLER

HVAC SYSTEMS

2025
Air Cooled Chiller - Screw

SCREW CHILLER





Special Public Places Commercial,
Office, Hospital, Restaruant, Coffee
Shop & Etc.



EFFICIENT COOLING

Unmatched Performance



Introduction

ECO COOLER builds enduring connections with its customers that go beyond merely selling units. Our motto at **ECO COOLER** is to create the best environment for people, helping build a better world to live in.

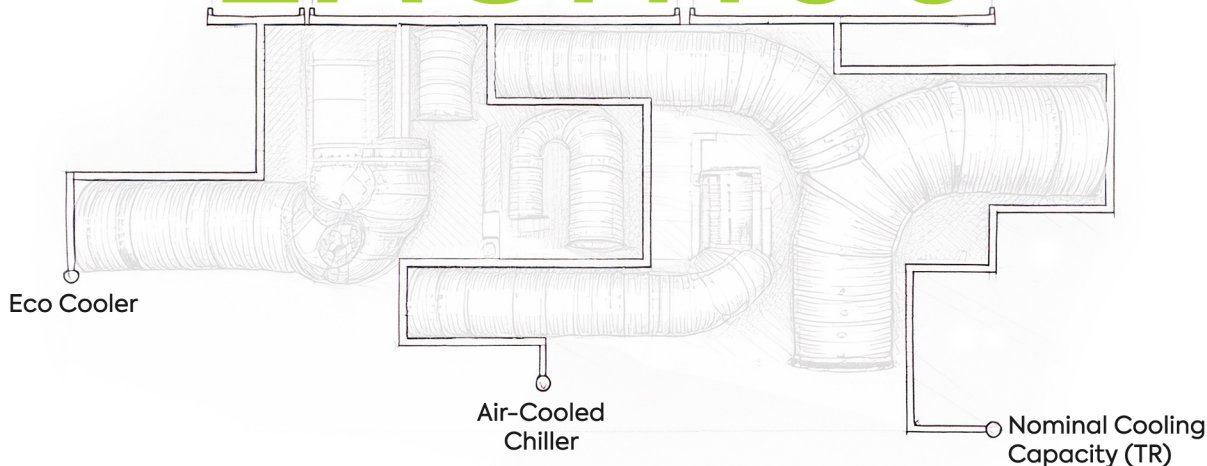
ECO COOLER Air Cooled Chillers, known as the **EACH** series, are designed to perform reliably in all weather conditions, from cold and moderate to hot climates. These chillers are suitable for a variety of environments, ranging from residential buildings to industrial sites with polluted surroundings.

Key features of the **EACH** series include optimum performance, high efficiency, low power consumption, easy installation, and quiet operation.

The **EACH** series offers cooling capacities ranging from 45 TR (158 kW) to 800 TR (2,800 kW). The models are divided into two categories: **STANDARD** (for cold and moderate climates) and **HIGH EFFICIENT** (for hot and tropical climates).

Nomenclature

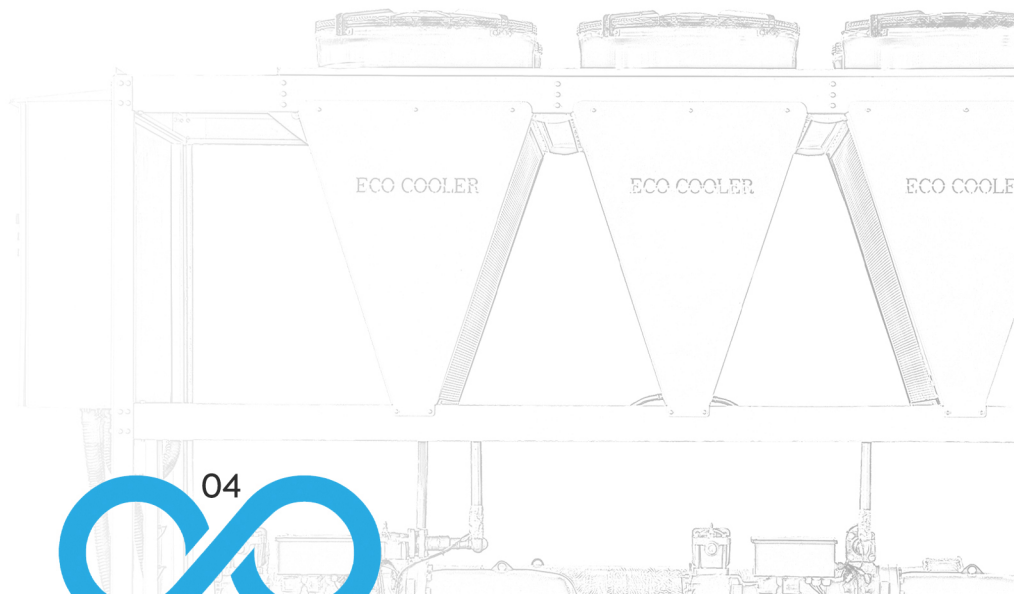
EACH100

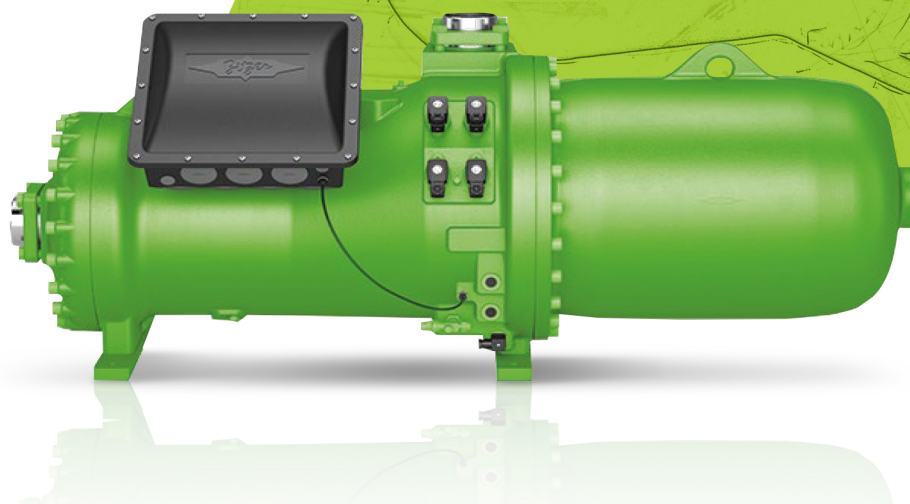




FEATURES AND BENEFITS

- Optimized energy efficiency in both full-load and part-load conditions.
- Low operating sound levels achieved through the latest compressor and fan designs.
- Stepped and stepless screw compressors combined with a professional control system to minimize energy consumption and optimize unit performance.
- Compact design for reduced installation space and a smaller footprint.
- One, two, three, or four truly independent refrigerant circuits to ensure outstanding reliability.
- Microchannel technology used in condensers, providing higher corrosion resistance, longer life, and a 30% reduction in refrigerant charge compared to traditional solutions.
- Structure and base made from hot-dip galvanized steel with an electrostatic coating for durability.





STANDARD SPECIFICATIONS

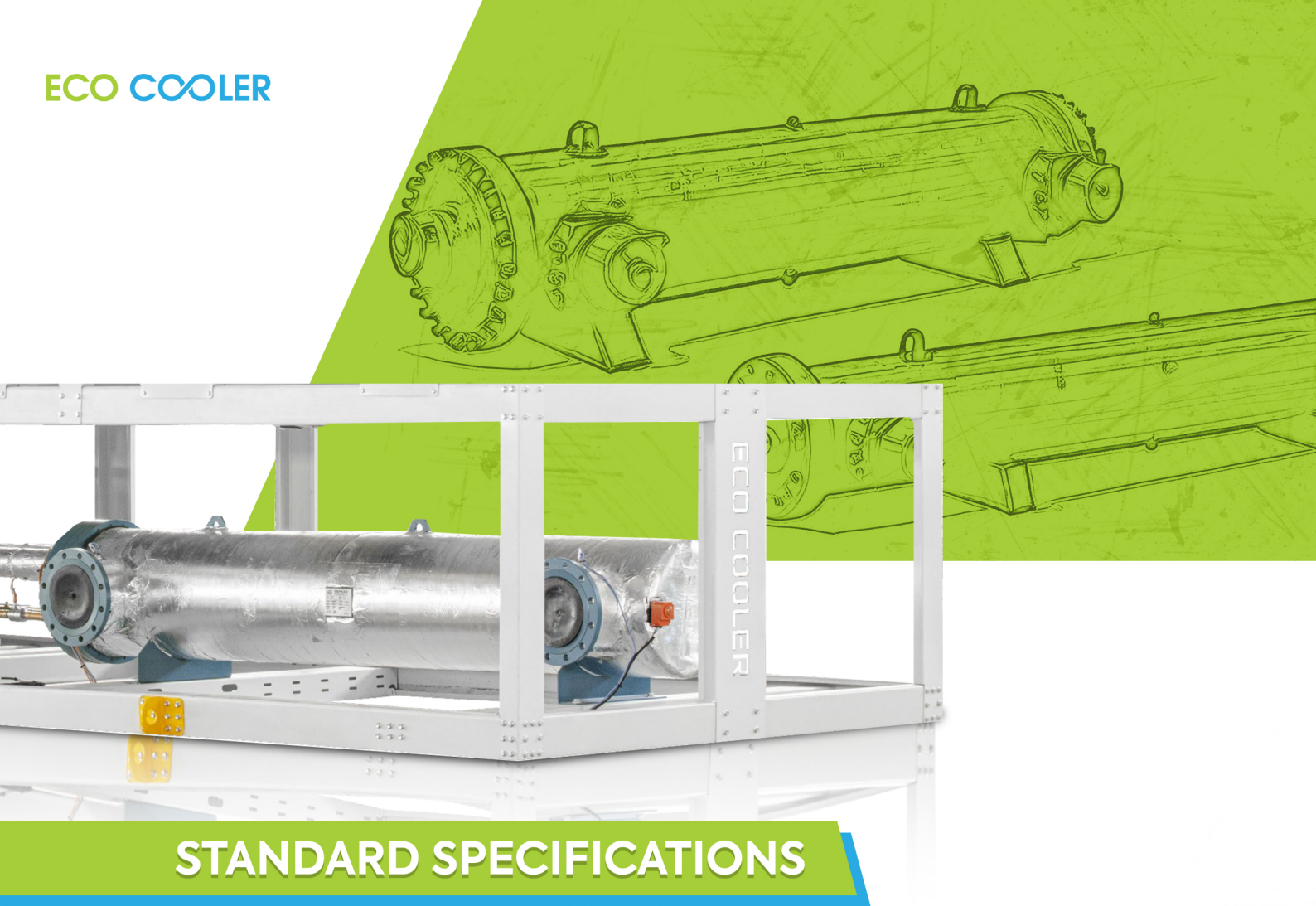
SEMI-HERMETIC SCREW COMPRESSOR

Each compressor features mechanical capacity control, providing excellent efficiency and seamless system integration. Screw compressors are equipped with:

- A solenoid valve for stepped or step-less capacity control.
- Suction and discharge shut-off valves.
- An oil sight glass.
- A check valve in the discharge gas outlet.
- An oil fill/drain service valve.

The compressors are directly flanged to a three-stage oil separator and have robust axial bearings configured in tandem. Additionally, they are equipped with:

- An internal pressure relief valve for burst protection.
- A manual lock-out electronic protection system with controls for thermal motor winding temperature, phase reversal, and discharge gas temperature protection.



STANDARD SPECIFICATIONS

SHELL AND TUBE LIQUID COOLER

The evaporator is designed as a high-efficiency DX shell-and-tube heat exchanger, featuring inner grooved copper tubes that are roller-expanded into the tube sheet. The evaporators are tested to ensure durability and reliability, with a refrigerant-side pressure of 30 bars and a water-side pressure of 10 bars. A helium leak test is conducted as a standard procedure.

A guarantee is provided against coolant leaks of up to 2 grams per year. Tests are conducted at various pressure levels for multi-circuit evaporators to ensure there is no leakage between circuits. The water connections utilize grooved pipes, and each evaporator shell is equipped with:

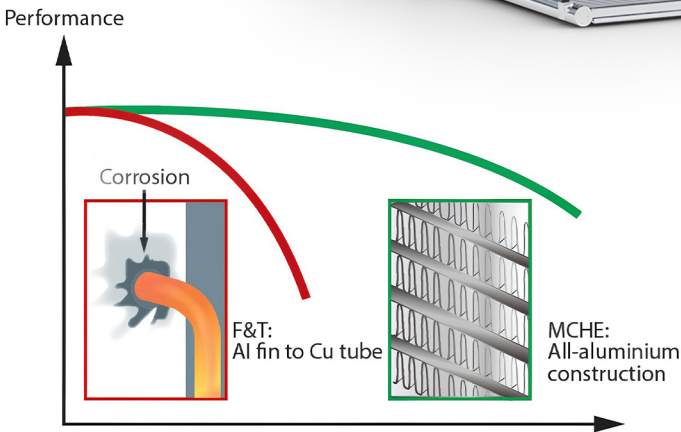
- A vent and a drain.
- Fittings for temperature control sensors.
- 3/4-inch insulation for thermal efficiency.

To prevent freezing at ambient temperatures as low as -29°C , the evaporator is equipped with heaters controlled by a thermostat.



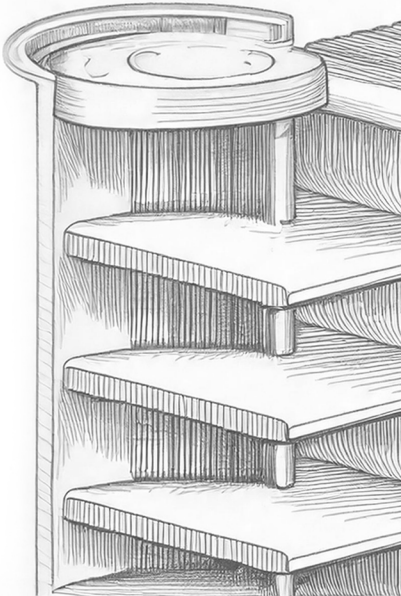
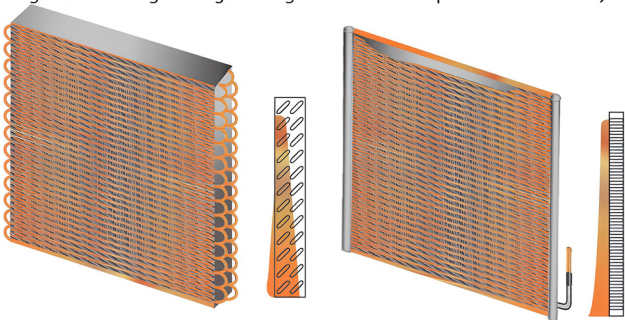
Condensers Coil

The condenser coils utilize microchannel technology, offering several advantages. These coils are constructed using integral NOCOLOK brazing, ensuring low contact resistance and enhanced heat transfer performance. The AL-AL structure eliminates electrical potential differences and significantly improves corrosion resistance.



F&T
dust removal difficult - heat transfer loss
high risk of damage during cleaning

MCHE
dust removal easy
immediate performance recovery



Condensers Coil

Microchannel condensers represent a significant advancement in heat exchange technology, offering superior efficiency and performance compared to traditional finned-tube coils. These condensers are designed to maximize heat transfer, minimize energy consumption, and enhance overall reliability. Below are the key benefits that make microchannel condensers a preferred choice in modern HVAC systems.

Benefits of Microchannel Condensers Over Finned-Tube Coils

1. Higher capacity per volume: Smaller tube diameters, more tube holes, and a larger internal surface area result in increased unit capacity.

2. Reduced airflow resistance: The small cross-sectional area minimizes airflow resistance, decreases eddy areas, and lowers noise levels.

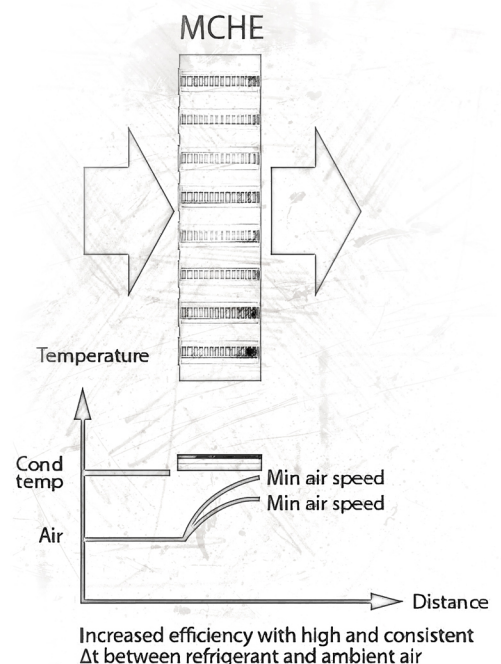
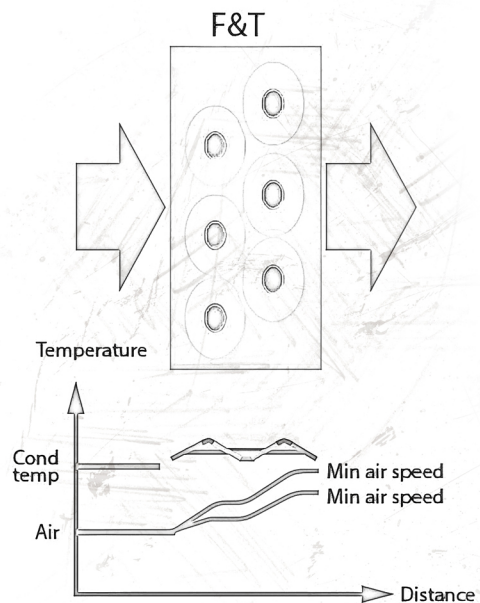
3. Increased refrigerant circulation: The parallel arrangement of flat tubes provides a larger refrigerant circulation area.

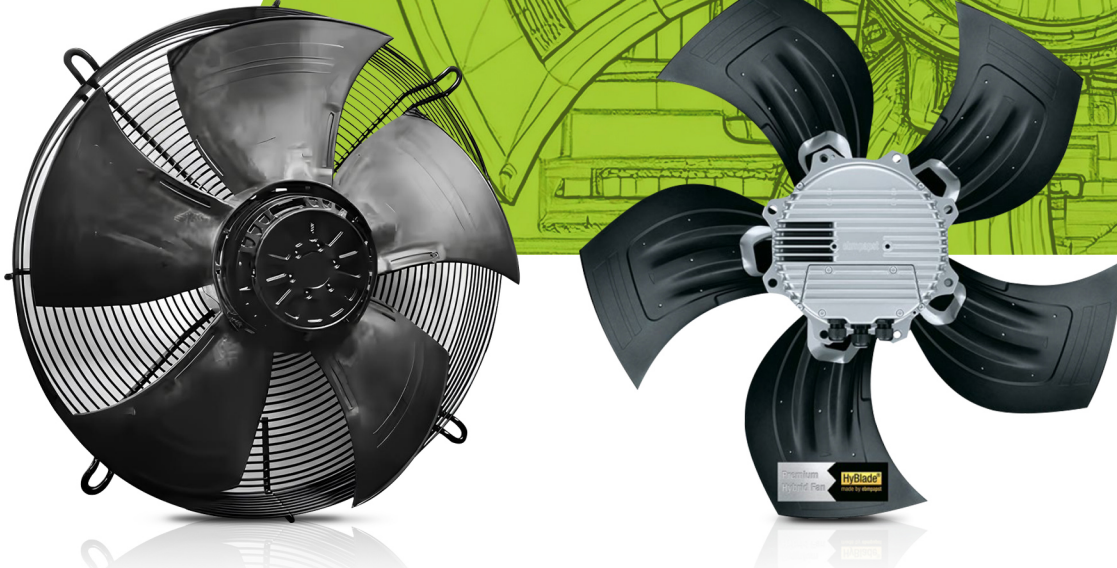
4. Optimized refrigerant phase transition: Adjustable baffles, both in position and quantity, improve heat transfer and minimize pressure drop.

5. Reduced heat exchange resistance: The structure effectively disrupts the air thermal boundary layer, facilitating better heat exchange.

6. Enhanced efficiency: The waving path design increases the contact area, further improving heat exchange performance.

Overall, microchannel condensers deliver superior performance and efficiency compared to traditional finned-tube coils.



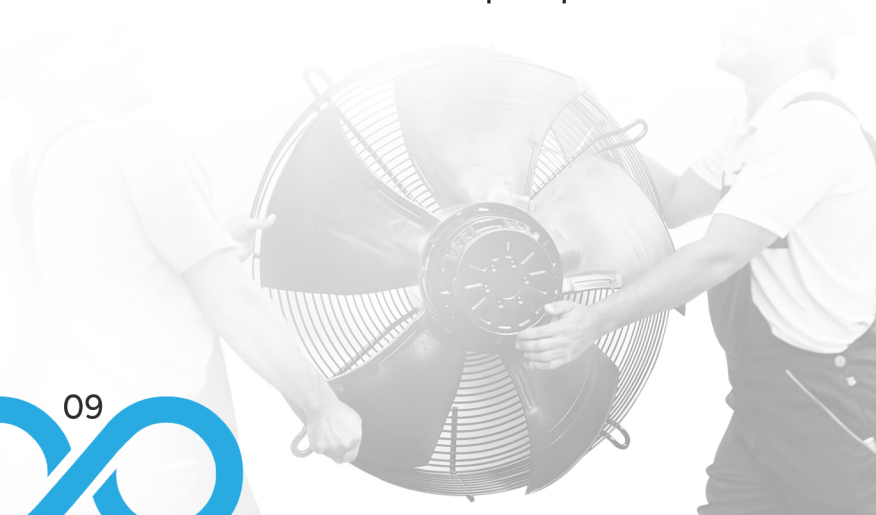


CONDENSER FAN

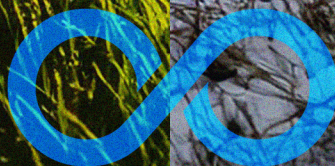
The direct-drive vertical discharge condenser fans are dynamically balanced to ensure smooth operation. These fans are equipped with totally enclosed air-over motors, which provide complete sealing of the motor windings to protect them from exposure to ambient conditions. The condenser fan motors are three-phase, featuring permanently lubricated ball bearings and internal thermal overload protection.

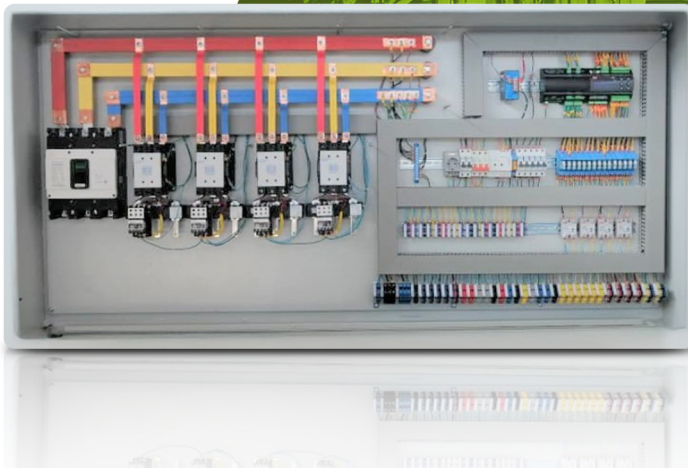
To enhance acoustic performance, the condenser fans incorporate optimized blade designs and utilize external rotor motors that comply with protection class IP54. The winding insulation corresponds to insulation class F, ensuring high electrical insulation capability.

The condenser fans are designed for maintenance-free and low-noise operation. This is achieved through the use of deep groove ball bearings, sealed on both sides and specially paired grease lubricant. These features ensure reliable and quiet performance.



SWIFT SPIN, CONTINUOUS BREEZE.





CONTROL PANEL

The control panel of the chillers is equipped with a state-of-the-art controller specifically designed to promote energy savings and maximize unit efficiency.

It offers a range of functions, including:

- ✓ *Monitoring various operating parameters such as water inlet and outlet temperatures, suction and discharge temperatures, and suction and discharge pressures.*
- ✓ *Protecting the system from frosting water*
- ✓ *Stepped or step-less capacity control to adjust the cooling capacity based on the demand.*
- ✓ *Control over the start and stop of the fans based on pressure conditions.*
- ✓ *Fan speed adjustment through an inverter, providing flexibility to match the required airflow.*
- ✓ *Connectivity to a Building Management System (BMS) using the MODBUS protocol, allowing for centralized monitoring and control*
- ✓ *Maintaining a log of all faults and alarms in the system's history for troubleshooting and maintenance purposes.*
- ✓ *Compressor hour equalization to ensure balanced usage and prolong the lifespan of the compressors*

Overall, the control panel offers comprehensive control and monitoring capabilities, enabling efficient operation and effective management of the chiller system



REFRIGERATION PIPELINE

REFRIGERATION PIPELINE

- **Independent Refrigeration Circuit Per Compressor:**

Each compressor operates on its own dedicated refrigeration circuit for improved reliability and efficiency.

- **Electronic Expansion Valve:**

Used to regulate refrigerant flow to the evaporator, maintaining constant superheat and providing the required cooling capacity.

- **Liquid Line Replaceable Core Type Filter Drier:**

The filter drier ensures that refrigerant circuits remain free of harmful moisture, sludge, acids, and oil-contaminating particles.

- **Liquid Line Moisture Indicator Sight Glass:**

Installed in the liquid line, this sight glass features an easy-to-read color indicator to show moisture content and allows for checking the system's refrigerant charge.

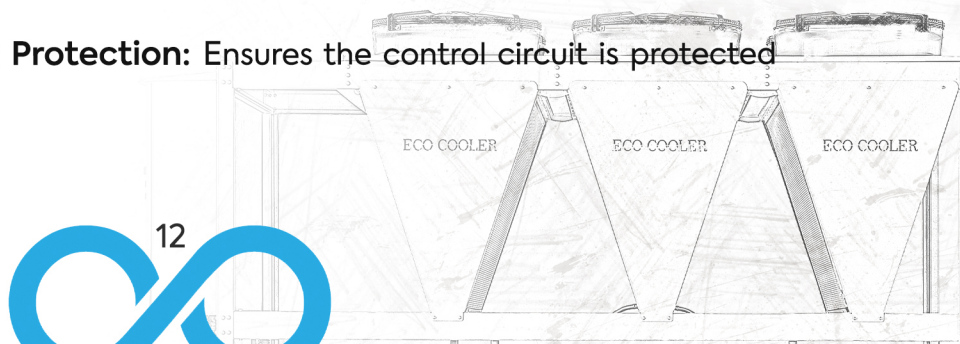
- **Liquid, Discharge, and Suction Line Shut-off Valves:**

These valves control refrigerant flow and isolate sections of the system when necessary.



Refrigeration Pipeline

- **Discharge, Suction, and Liquid Line Pipes:** All pipelines are sized to minimize pressure drop and maintain the proper velocity, ensuring efficient oil return.
- **Liquid Injection Kit:** Used for cooling the compressor at high discharge temperatures.
- **Compressor Part Winding Start:** Allows for proper operation of the compressor windings during startup.
- **Compressor In-Built Protection Device:** Provides internal protection to the compressor for safe operation.
- **Starter:** Operated by the control circuit, the starter provides power to the compressor motors. It is rated to safely handle both the Rated Load Amperage (RLA) and Locked Rotor Amperage (LRA) of the motors.
- **Crankcase Heaters:** Each compressor is equipped with an immersion-type crankcase heater that operates when the compressor is de-energized. This protects the system against refrigerant migration, oil dilution, and potential compressor failure.
- **High-Pressure Switch:** Provides additional safety protection in the event of excessive discharge pressure.
- **Low-Pressure Switch:** Provides safety protection in the event of very low suction pressure to prevent water freezing.
- **Unit On-Off Switch:** Allows for manual switching of the unit's control circuit.
- **Indicator Lights:** LED lights indicate when the unit is powered on, when the menu is being adjusted, and when faults occur due to trips on safety devices.
- **Under Voltage and Phase Protection:** Protects the chiller against low incoming voltage, single phasing, phase reversal, and phase imbalance by de-energizing the control circuit.
- **Fan Motor Circuit Breaker:** Protects each pair of condenser fan motors.
- **Compressor Circuit Breaker:** Protects the compressor from overload and short circuits. If tripped, the breaker cuts off the power supply to the compressor and controls the circuit through auxiliary contacts. These breakers are equipped with a thermal adjustable switch for precise overload settings.
- **External Overload Relay for Each Compressor:** Provides additional protection against overload conditions.
- **Control Fuse for Short Circuit Protection:** Ensures the control circuit is protected from potential short circuits.





OPTIONAL FEATURES

- ✓ **Water Flow Switch:** Paddle-type field-adjustable flow switch for water cooler circuits, integrated into safety circuits to ensure the unit remains off if the water flow is insufficient.
- ✓ **Unit Mounting Spring Isolators:** These Housed Spring Assemblies Have A Neoprene Friction Pad On The Bottom To Prevent Vibration Transmission.
- ✓ **Compressor Silencer Box:** Reduces The Compressor Operating Noise And Keeps The Compressor Clean.
- ✓ **Copper Fins/tubes Condenser Coils:** Ideal for use in the seashore or salty corrosive environments.
- ✓ **Pre-coated Aluminum Fins Condenser Coils (Mhg):** Suitable for seashore or acid-corrosive environments.
- ✓ **Building Management System (Bms):** Supports Modbus, BACnet, and CANbus protocols for seamless integration with building management systems.
- ✓ **Non-fused Main Disconnect Switches:** De-energize the power supply during servicing or repair work, and feature a door interlock for safety.
- ✓ **Evaorator Heater Tape:** Prevents freezing of water during low ambient temperatures.
- ✓ **Ground Current Protection:** Provides additional protection for the compressor in case of abnormal current leakage.

Physical Data

Description		Air-Cooled Screw Chiller(R134a)											
UNIT MODEL		EACH-45	EACH-50	EACH-60	EACH-70	EACH-80	EACH-90	EACH-100	EACH-115	EACH-140	EACH-150	EACH-170	EACH-200
COOLING CAPACITY*	RT	43.15	50.25	59.15	58.9	82.3	93.4	100	114.85	139.15	153.15	172.3	202.3
	kW	151	175.9	207	245	288	327	350	402	487	536	603	708
POWER REQUIREMENT		400V/3PH/50Hz											
POWER INPUT (kW)		47	58	70	76	95	108	118	137	154	171	197	230
OPERATING CURRENT (A)		85	96	119	113	170	192	195	230	270	305	345	393
TOTAL EER (W/W)		3.2	3.1	3	3.3	3	3	3	2.9	3.1	3.2	3.1	3.1
COMPRESSOR	TYPE	Semi Hermetic Compact Screw											
	QUANTITY (No.)	1					2						
	CAPACITY CONTROL (%) (STEPPED)	25-50-75-100 (4)											
CONDENSER	TYPE	MICRO CHANNEL											
	QUANTITY (No.)	6	6	8	8	10	12	12	12	8	10	10	12
	TOTAL FACE AREA (m ²)	6	6	6	8	8	12	12	12	16	20	20	24
CONDENSER FAN	TYPE	Propeller Direct Driven , 800mm dia , 920 rpm											
	FAN QTY (No.)	3	3	4	4	5	6	6	6	8	10	10	12
	AIR FLOW RATE (m³/h)	67500	67500	90000	90000	112500	135000	135000	135000	180000	225000	225000	270000
	MOTOR POWER FAN (kW)	5.7	5.7	7.6	7.6	9.5	11.4	11.4	11.4	15.2	19	19	22.8
EVAPORATOR	TYPE	Direct Expansion Shell & Tube											
	QUANTITY (No.)	1											
	WATER FLOW RATE (m³/h)	23.5	28	32.2	38.1	44.8	50.9	54.5	62.6	79.5	83.4	93.1	110.2
	PRESSURE DROP (kPa)	11.54	16.1	13.1	18	25.33	32.25	36.7	40.25	25.12	27.51	36.79	56.11
	WATER CONNECTION SIZE (IN /OUT) DIAMETER (mm)	125	125	150	150	150	150	150	150	150	150	150	150
EXPANSION VALVE		Electronic											
REFRIGERATION CIRCUITS (No.)		1					2						
REFRIGERATION CHARGING FROM THE FACTORY(Kg)	CIRCUITS 1	17.3	20	23.65	28	16.5	19	20	23	28	31	34.5	40.5
	CIRCUITS 2	0	0	0	0	16.5	19	20	23	28	31	34.5	40.5
SHIPPING WEIGHT (kg)		1837.3	2160	2548.65	2588	3053	3058	3980	4016	4001	4267	4309	5616
OPERATING WEIGHT (kg)		1965.3	2288	2720.65	2760	3220	3225	4147	4182	4278	4544	4579	5876
DIMENSION	HEIGHT (cm)	260	260	260	260	260	260	260	260	260	260	260	260
	WIDTH (cm)	132	132	132	132	132	132	132	132	220	220	220	220
	LENGTH (cm)	315	315	420	420	525	630	630	630	440	525	525	630

Physical Data

Description		Air-Cooled Screw Chiller(R134a)													
UNIT MODEL		EACH-230	EACH-270	EACH-300	EACH-330	EACH-360	EACH-380	EACH-400	EACH-450	EACH-525	EACH-600	EACH-660	EACH-720	EACH-760	
COOLING CAPACITY*	RT	236.6	272.85	312.5	336	368.3	378.5	404	460	545.7	625	672	736.6	757	
	KW	828	955	1094	1176	1289	1325	1416	1608	1910	3820	2188	2352	2578	
POWER REQUIREMENT		400V/3PH/50Hz													
POWER INPUT (KW)		254	300	334	381	413	413	460	516	600	668	762	826	826	
OPERATING CURRENT (A)		428	517	570	649	712	715	785	864	1034	1140	1298	1424	1430	
TOTAL EER (W/W)		3.3	3.2	3.2	3.1	3.1	3.3	3.1	3.1	3.2	3.2	3.2	3.1	3.1	
COMPRESSOR	TYPE	Semi Hermetic Compact Screw													
	QUANTITY (No.)	2						4							
	CAPACITY CONTROL (%) (STEPPED)	25-50-75-100 (4)													
CONDENSER	TYPE	MICRO CHANNEL													
	QUANTITY (No.)	14	16	16	18	20	22	24	24	32	32	36	40	44	
	TOTAL FACE AREA (m ²)	28	32	32	36	40	44	48	48	64	64	72	80	88	
CONDENSER FAN	TYPE	Propeller Direct Driven , 800mm dia , 920 rpm													
	FAN QTY (No.)	14	16	16	18	20	22	24	24	32	32	36	40	44	
	AIR FLOW RATE (m ³ /h)	315000	360000	360000	405000	450000	495000	540000	540000	720000	720000	810000	900000	990000	
	MOTOR POWER FAN (KW)	26.6	30.4	30.4	34.2	38	41.8	45.6	45.6	60.8	60.8	68.4	76	83.6	
EVAPORATOR	TYPE	Direct Expansion Shell & Tube													
	QUANTITY (No.)	1						2							
	WATER FLOW RATE (m ³ /h)	128.9	146.8	163.4	180.1	195.3	207	220.4	250.3	283.6	163.4	180.1	195.3	207	
	PRESSURE DROP (KPa)	55.82	34.4	45.11	60.5	70.43	29.66	56.11	55.82	34.4	45.11	60.5	70.43	29.66	
	WATER CONNECTION SIZE (IN /OUT)(DIN)	150	200	200	200	200	250	150	150	200	200	200	200	250	
EXPANSION VALVE		Electronic													
REFRIGERATION CIRCUITS (No.)		2						4							
REFRIGERATION CHARGING FROM THE FACTORY(Kg)	CIRCUITS 1	47.3	54.5	62.5	67.2	73.7	75.8	40.5	47.3	54.5	62.5	67.2	73.7	75.8	
	CIRCUITS 2	47.3	54.5	62.5	67.2	73.7	75.8	40.5	47.3	54.5	62.5	67.2	73.7	75.8	
	CIRCUITS 3	0	0	0	0	0	0	40.5	47.3	54.5	62.5	67.2	73.7	75.8	
	CIRCUITS 4	0	0	0	0	0	0	40.5	47.3	54.5	62.5	67.2	73.7	75.8	
SHIPPING WEIGHT (Kg)		6169.6	6739	6795	7611.4	8167.4	8716.6	11768	11849.2	13300	13590	15513.8	16689.8	17873.2	
OPERATING WEIGHT (kg)		6421.6	7209	7250	8044.4	8617.4	9306.6	12288	12353.2	14240	14500	16379.8	17589.8	19053.2	
DIMENSION	HEIGHT (cm)	260	260	260	260	260	260	260	260	260	260	260	260	260	
	WIDTH (cm)	220	220	220	220	220	220	220	220	220	220	220	220	220	
	LENGTH (cm)	735	840	840	945	1050	1155	1260	1260	1660	1660	1890	2100	2310	

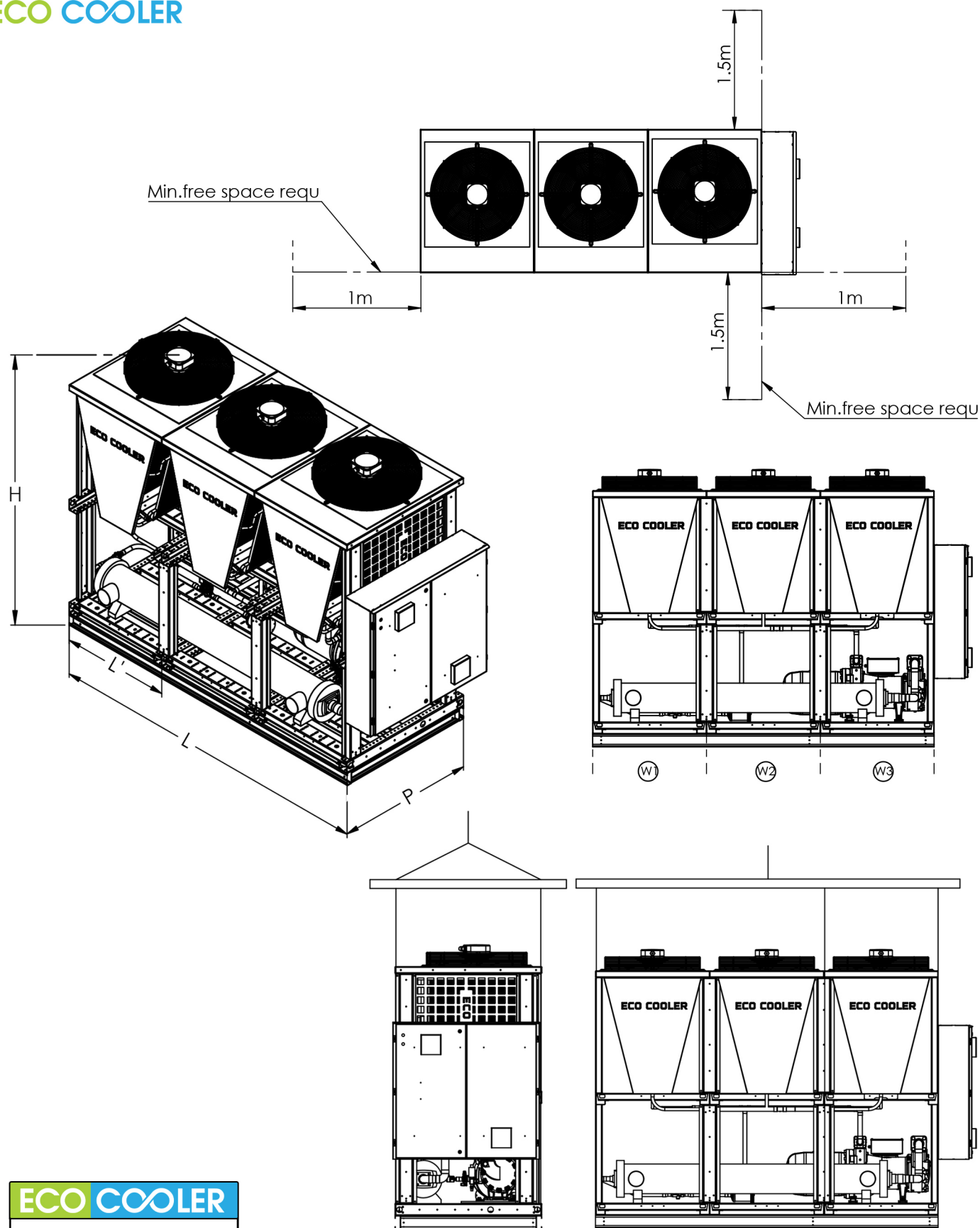
*Capacity ratings are based on standard ARI-550/590 conditions of: 35°C (95°F) ambient, 7°C (44.6°F) leaving chilled water temperature, a 5°C (9°F) inlet-outlet water temperature difference, and a fouling factor of 0.018 m².°C/kW (0.0001 ft².h.°F/Btu)."

*ECO COOLER reserves the right to modify technical information at any time without prior notice.

REFRESH WITH NATURE'S POWER!

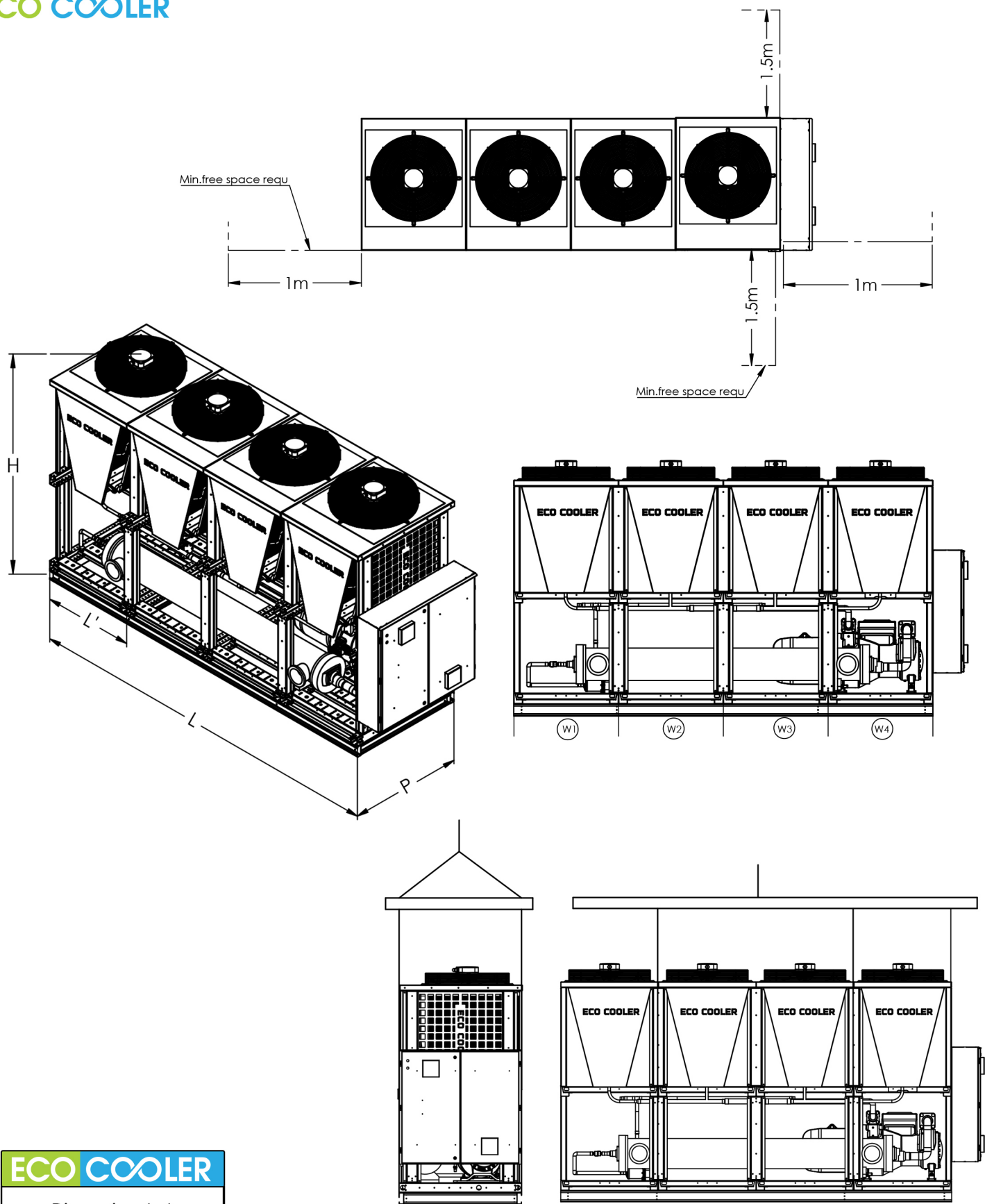


ECO COOLER



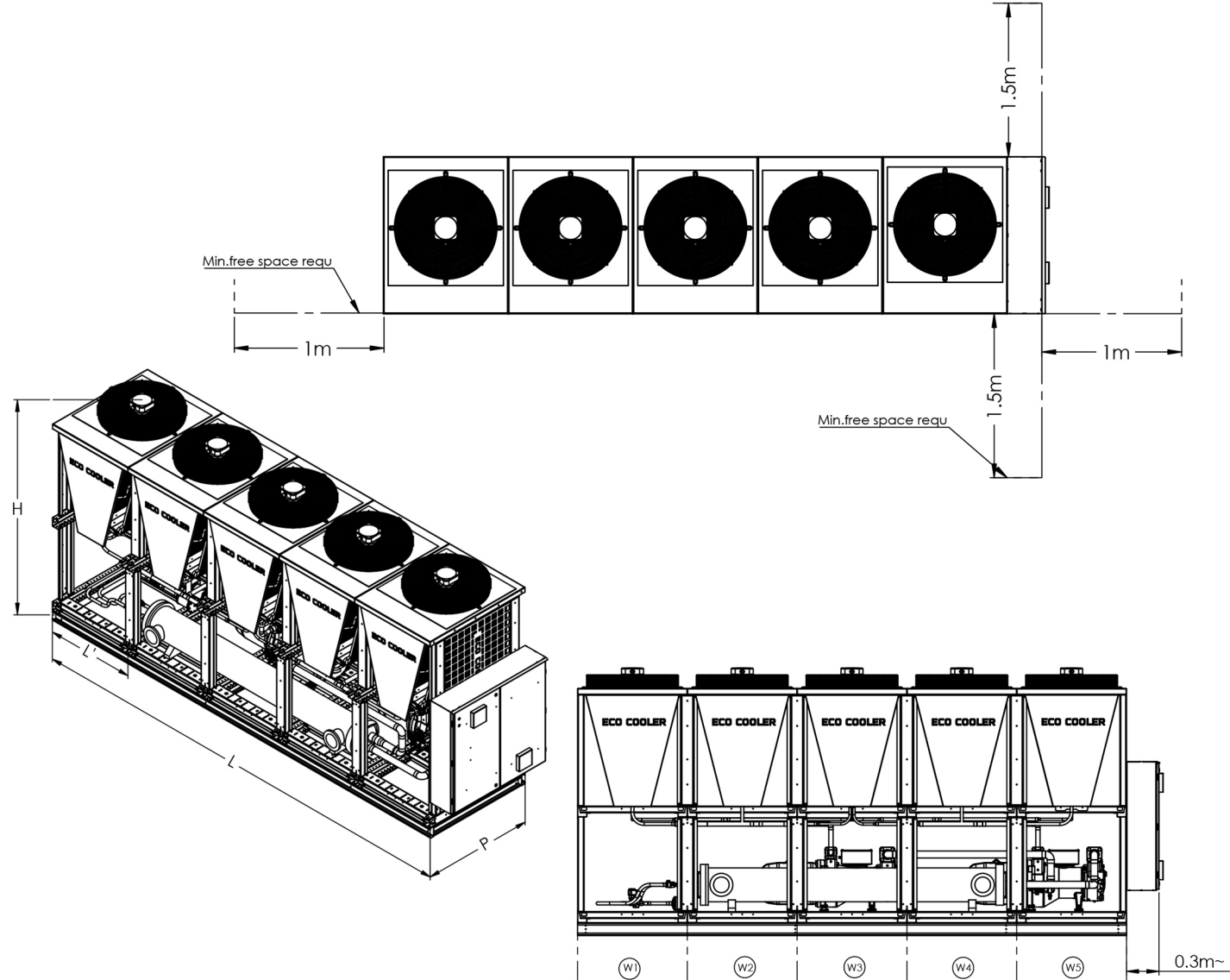
ECO COOLER	
Dimensions(m)	
L'	1.05
L	3.15
P	1.32
H	2.6

EACH-45-50

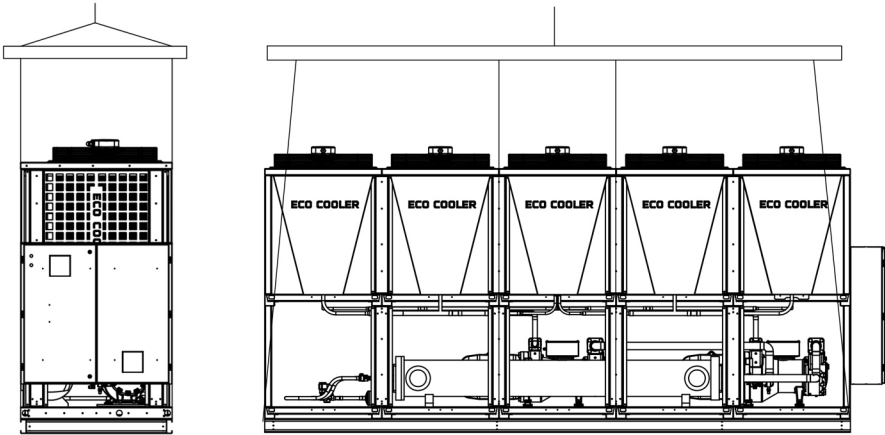


ECO COOLER	
Dimensions(m)	
L'	1.05
L	4.2
P	1.32
H	2.6

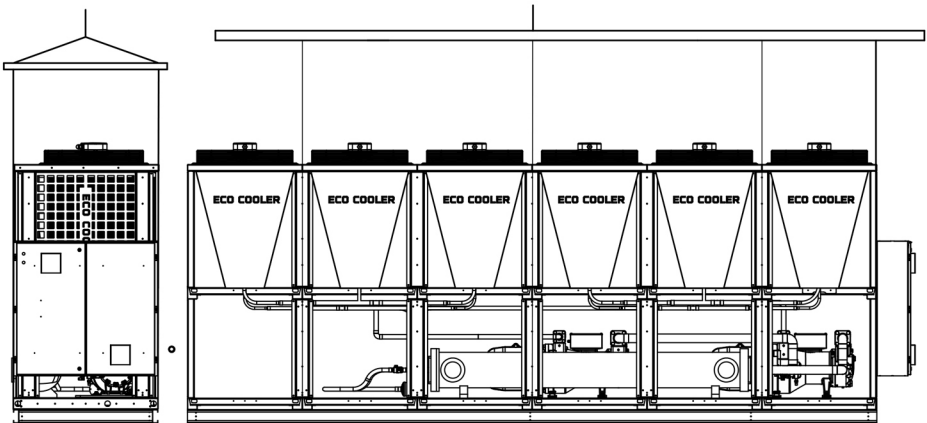
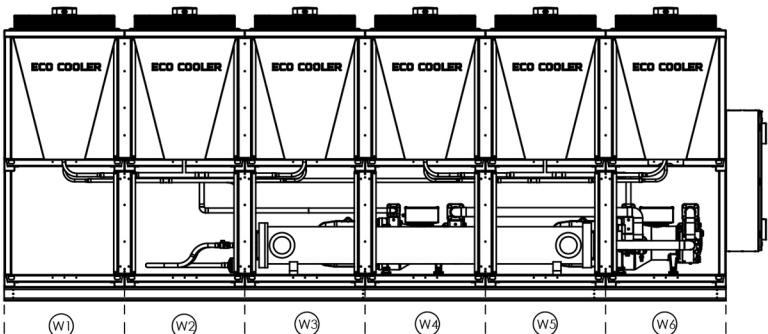
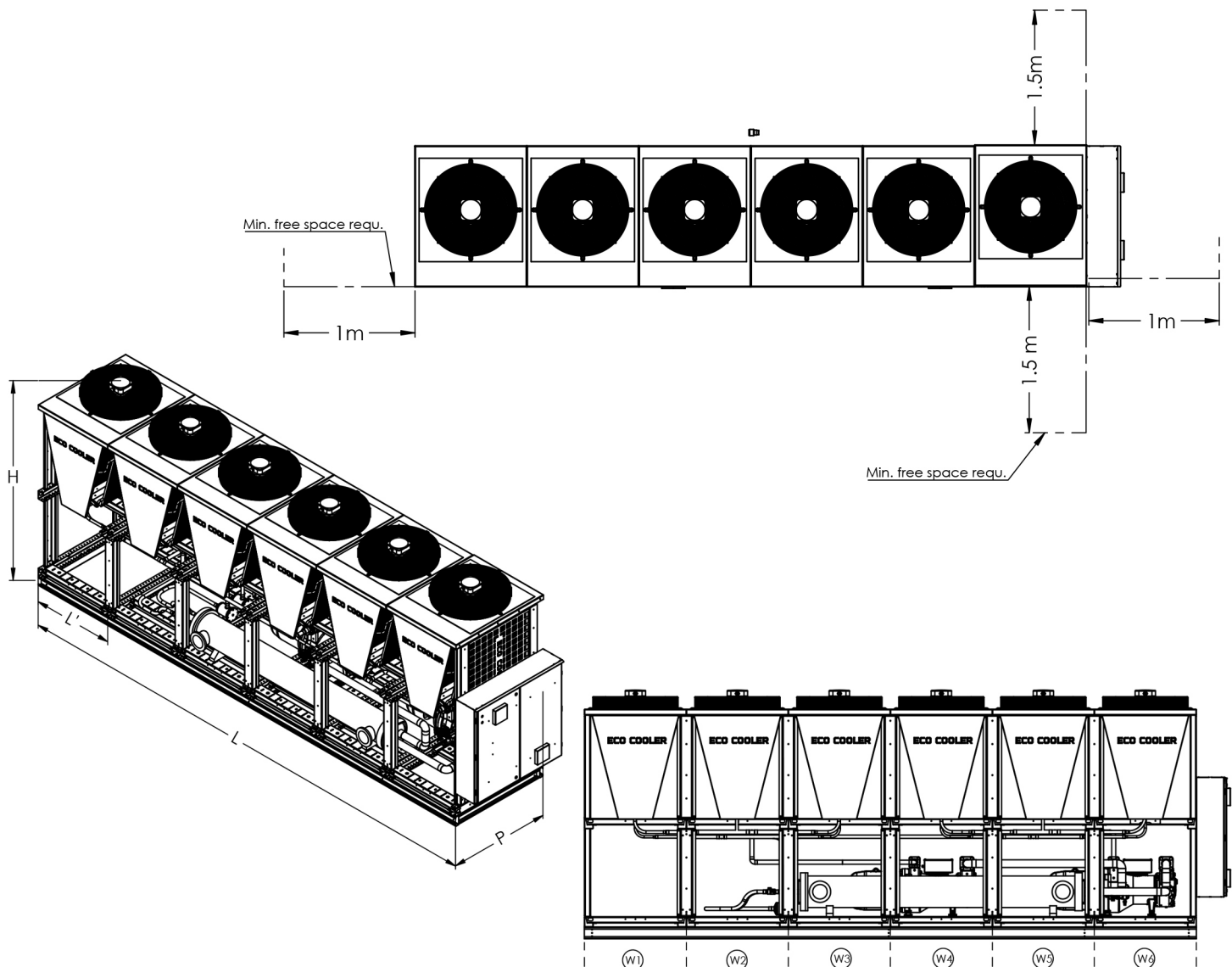
EACH-60-70



ECO COOLER	
Dimensions(m)	
L'	1.05
L	5.25
P	1.32
H	2.6

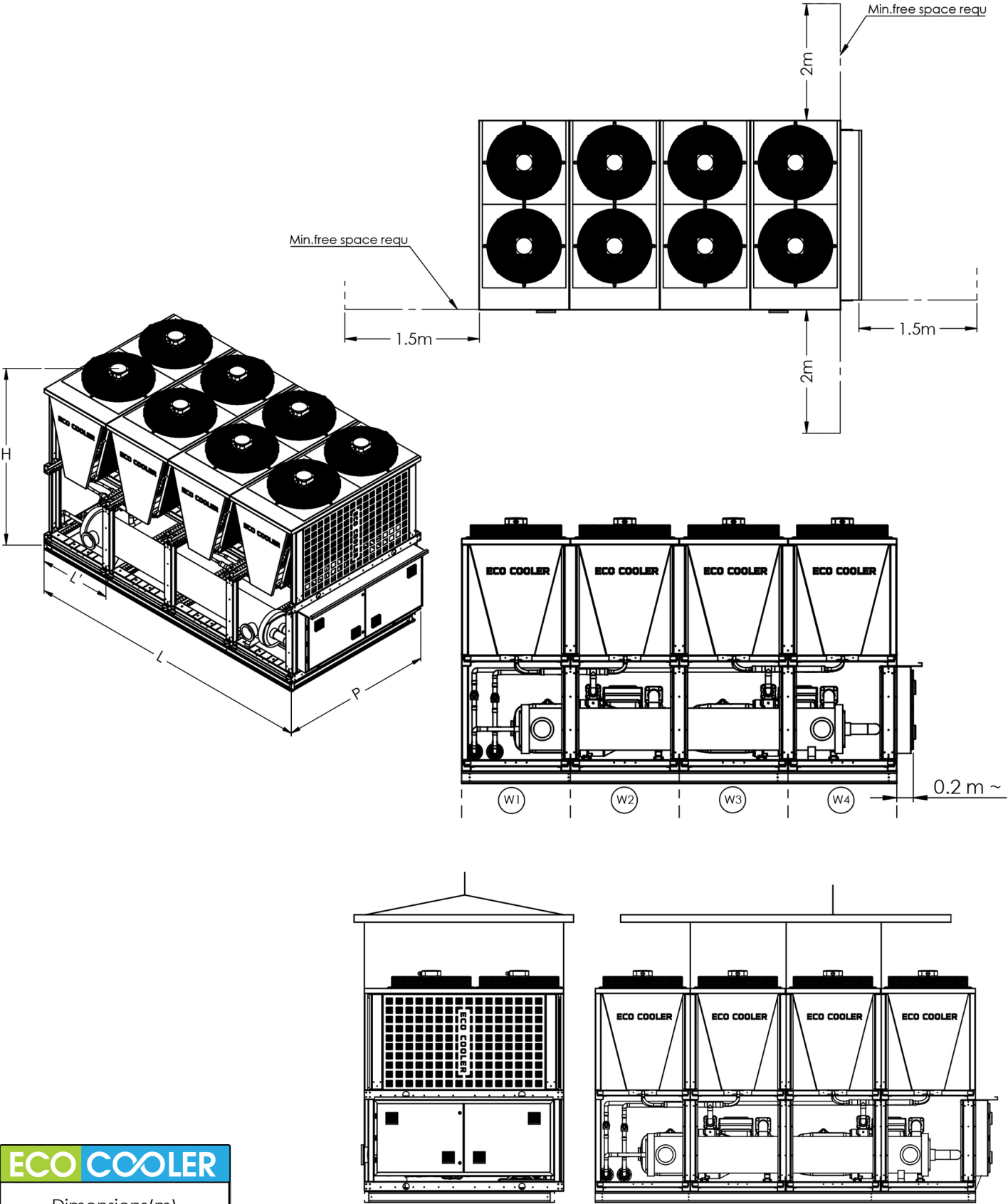


EACH-80



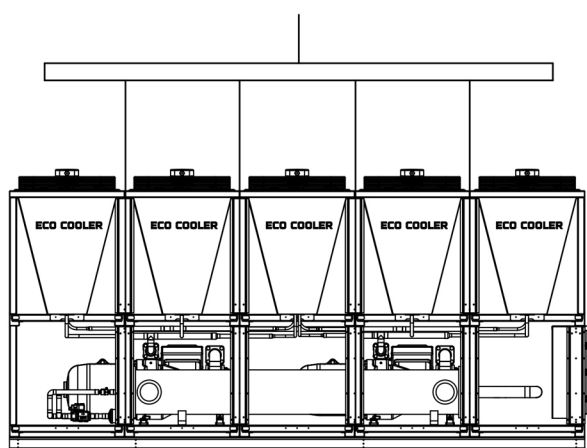
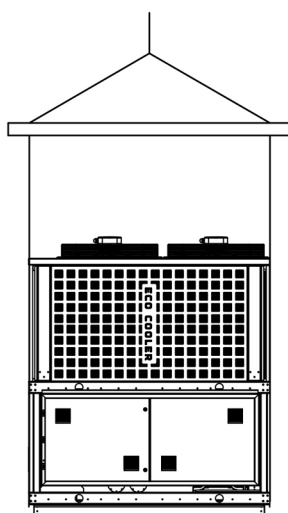
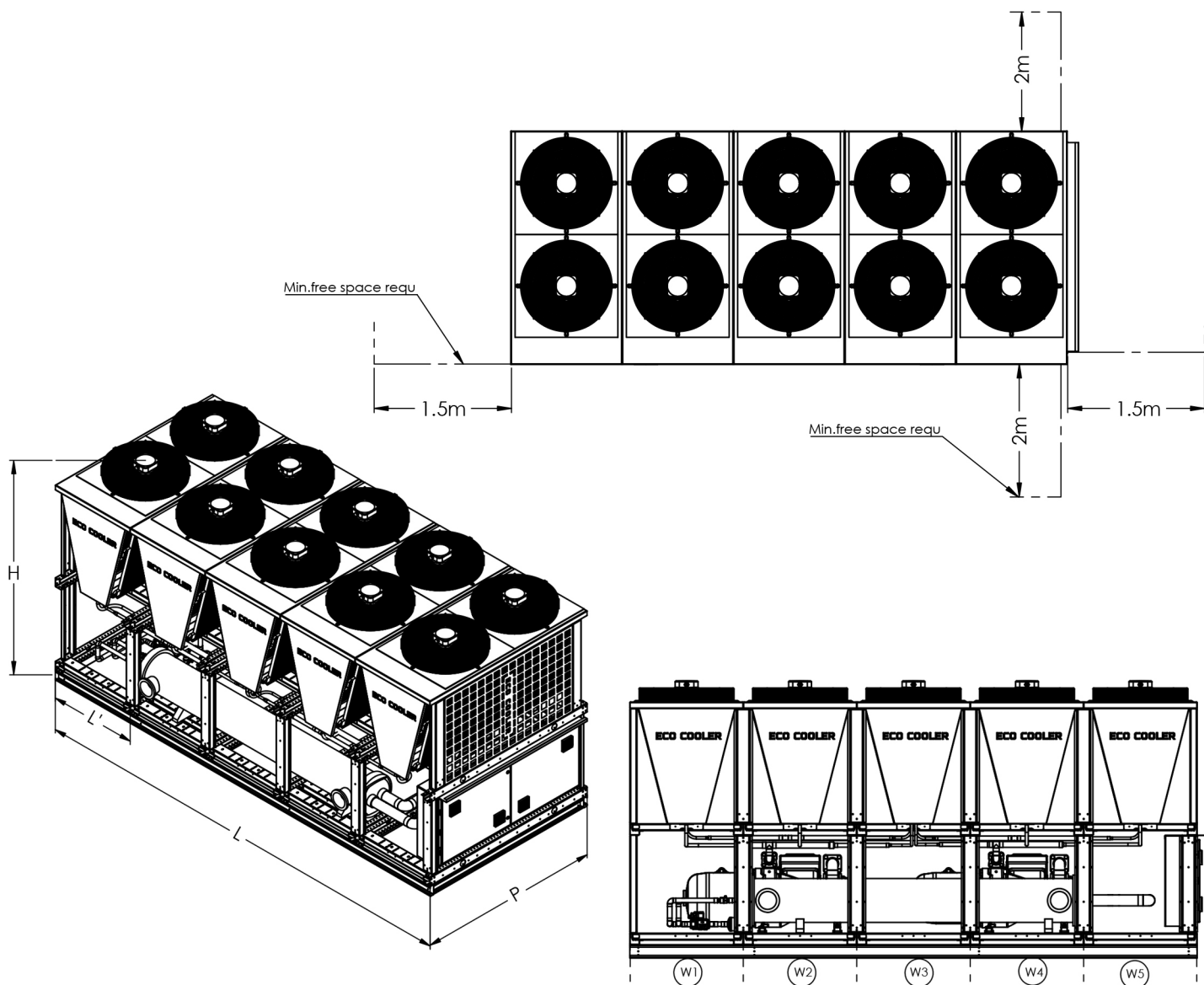
ECO COOLER	
Dimensions(m)	
L'	1.05
L	6.3
P	1.32
H	2.6

EACH-90-100-115



ECO COOLER	
Dimensions(m)	
L'	1.05
L	4.2 + 0.2 m~
P	2.2
H	2.6

EACH-140



ECO COOLER	
Dimensions(m)	
L'	1.05
L	5.25
P	2.2
H	2.6

EACH-150-170

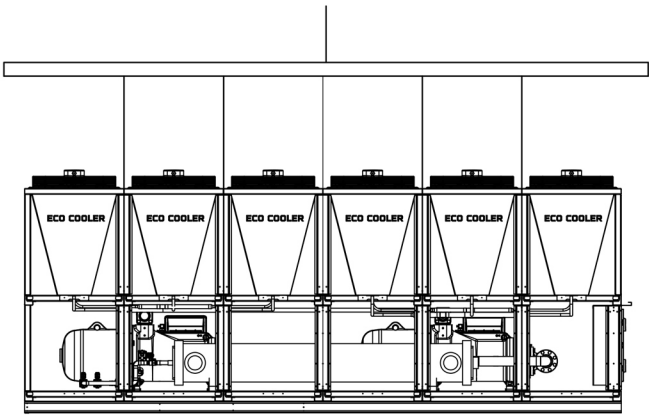
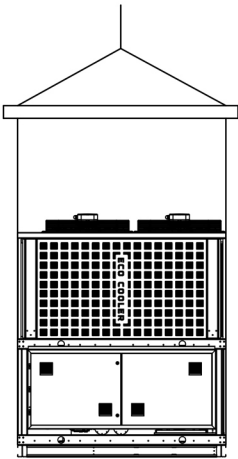
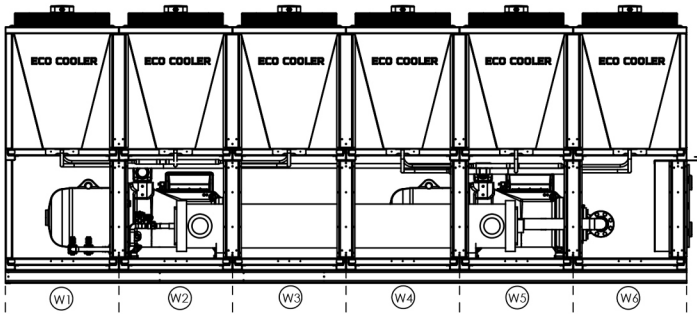
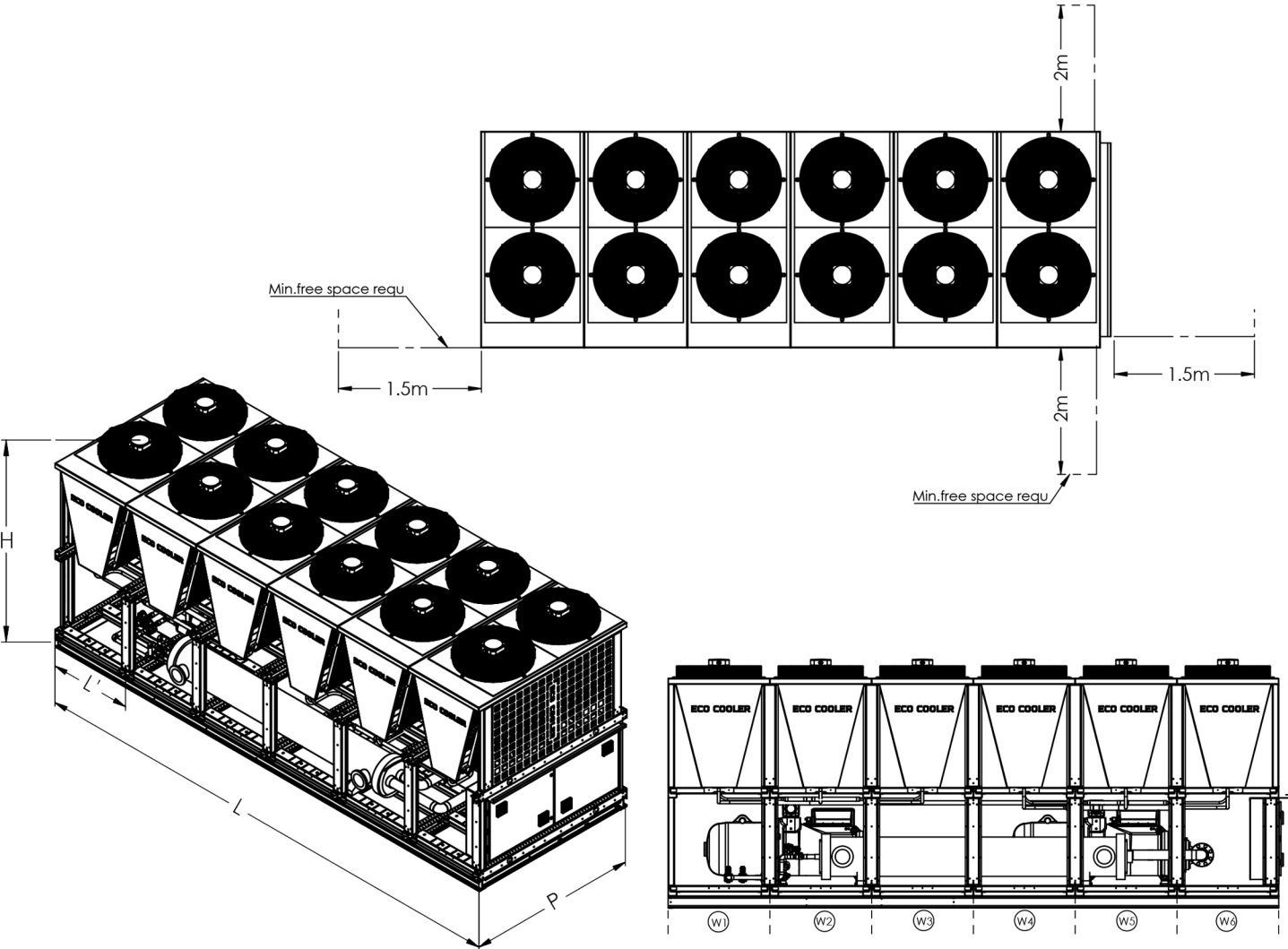
ADVANCED

Trusted Performance



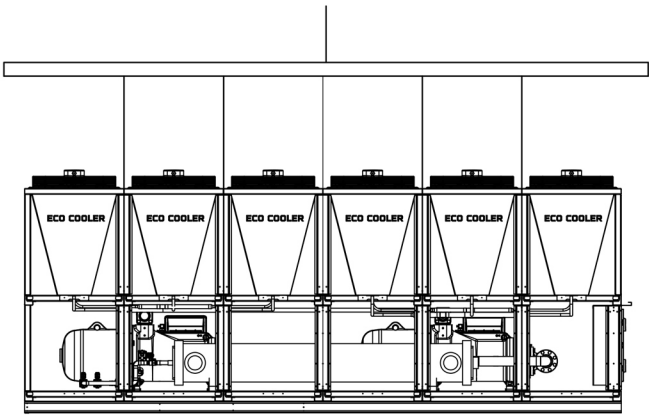
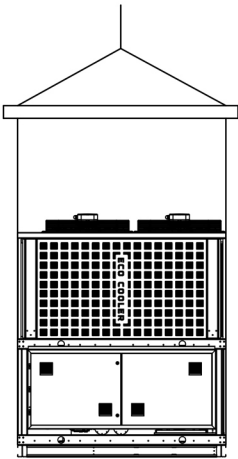
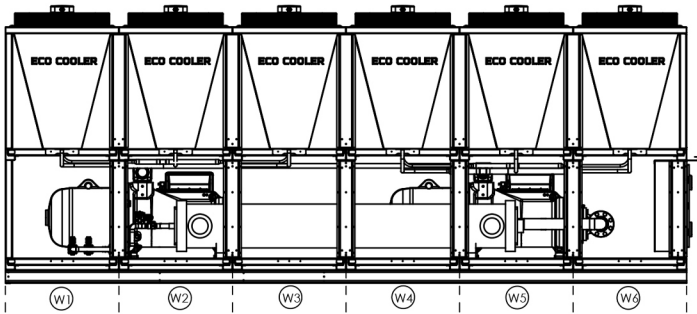
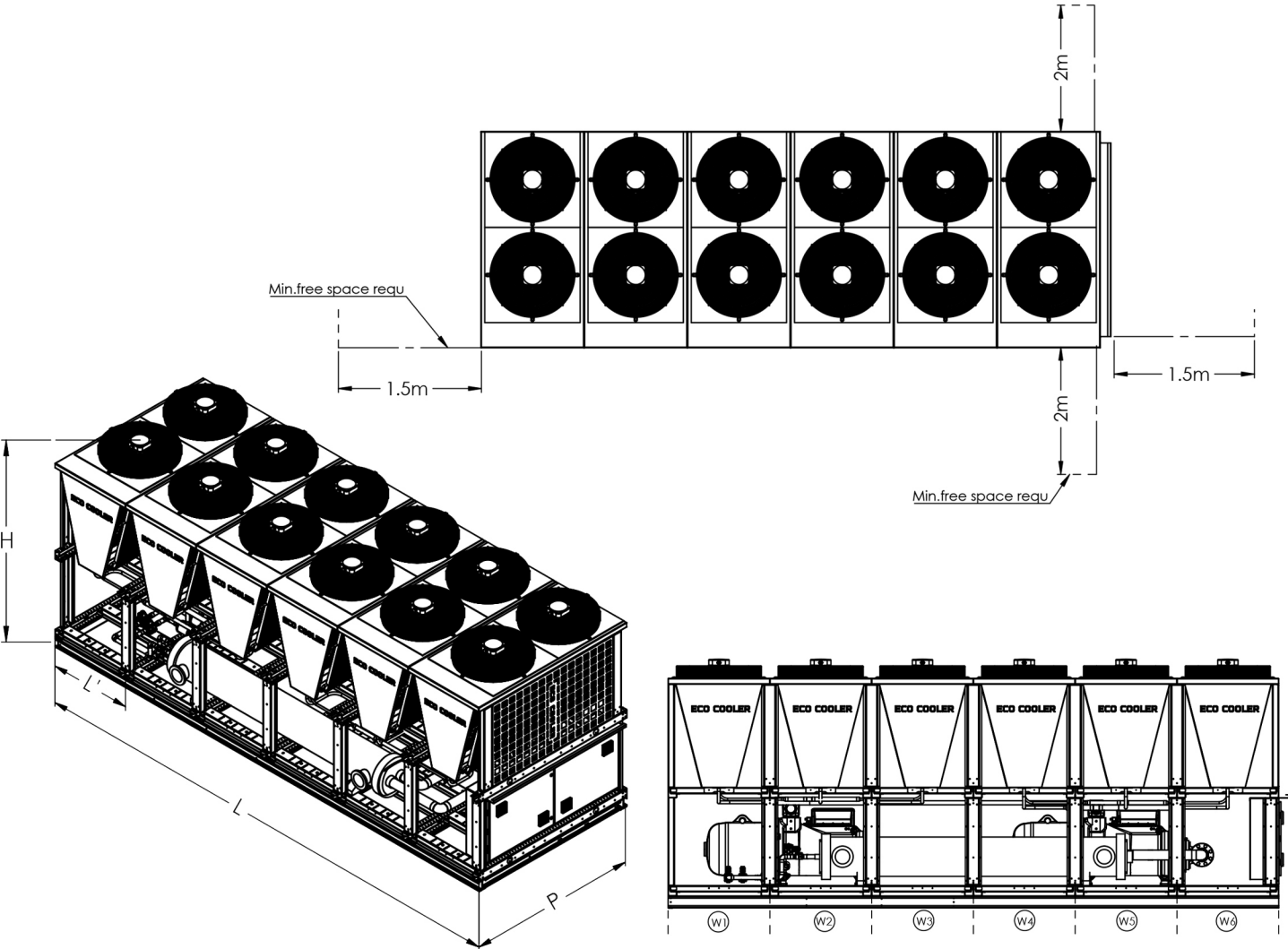
TECHNOLOGY,





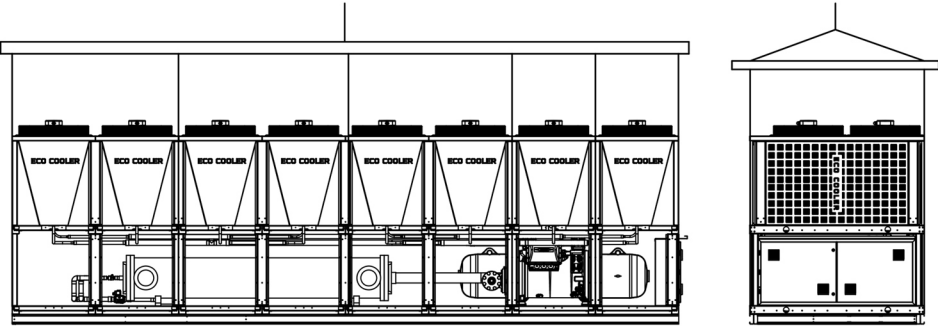
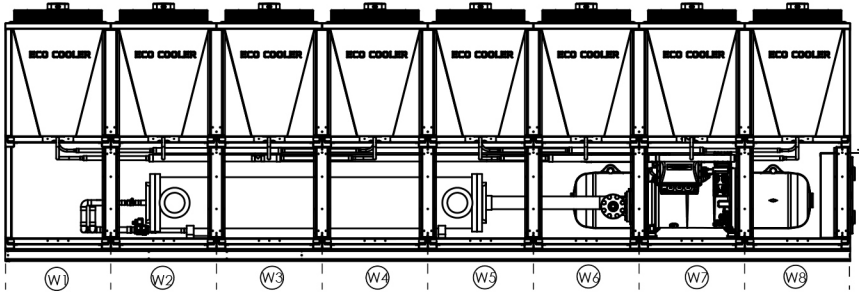
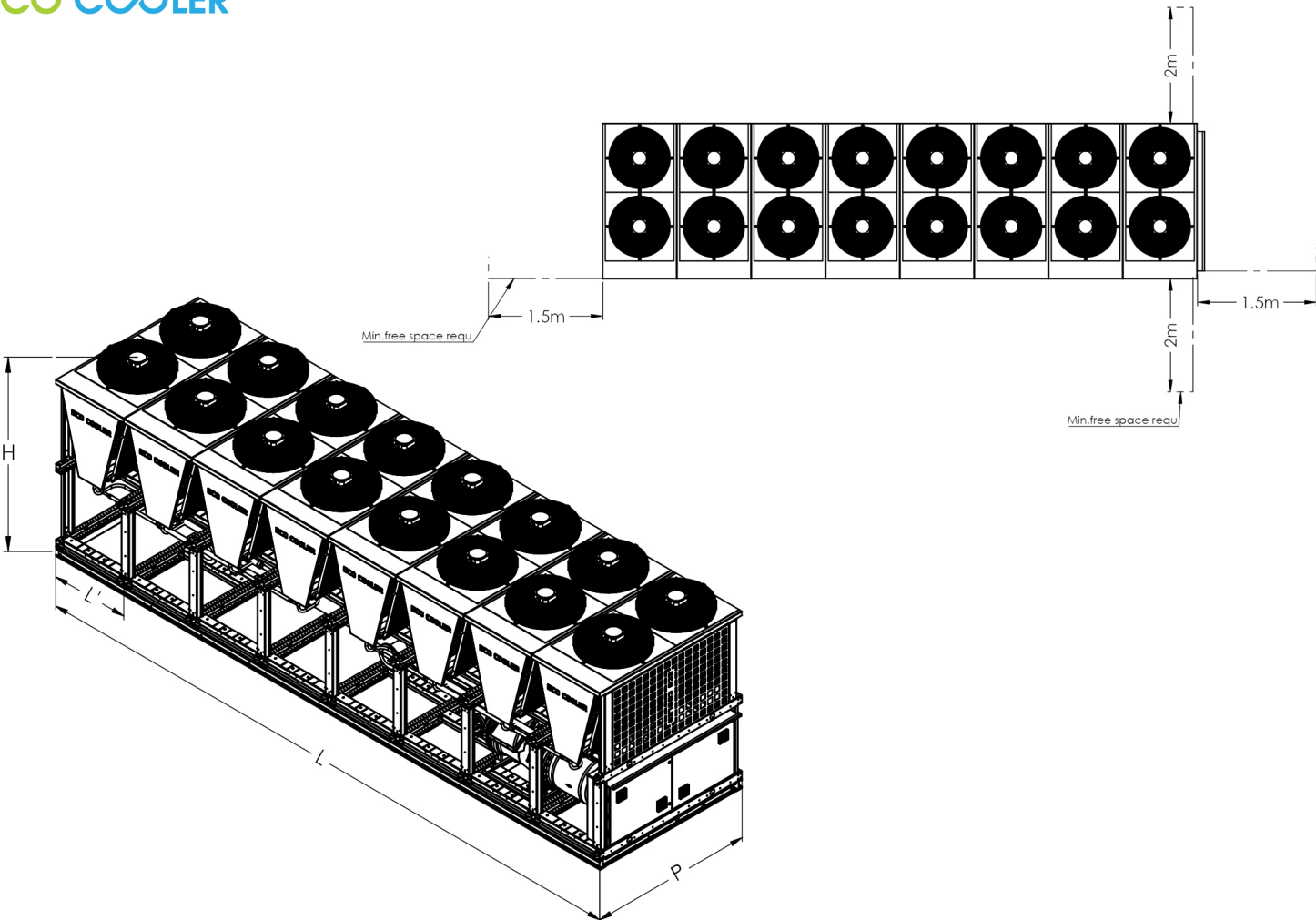
ECO COOLER	
Dimensions(m)	
L'	1.05
L	6.3
P	2.2
H	2.6

EACH-200



ECO COOLER	
Dimensions(m)	
L'	1.05
L	6.3
P	2.2
H	2.6

EACH-230



ECO COOLER	
Dimensions(m)	
L'	1.05
L	8.4
P	2.2
H	2.6

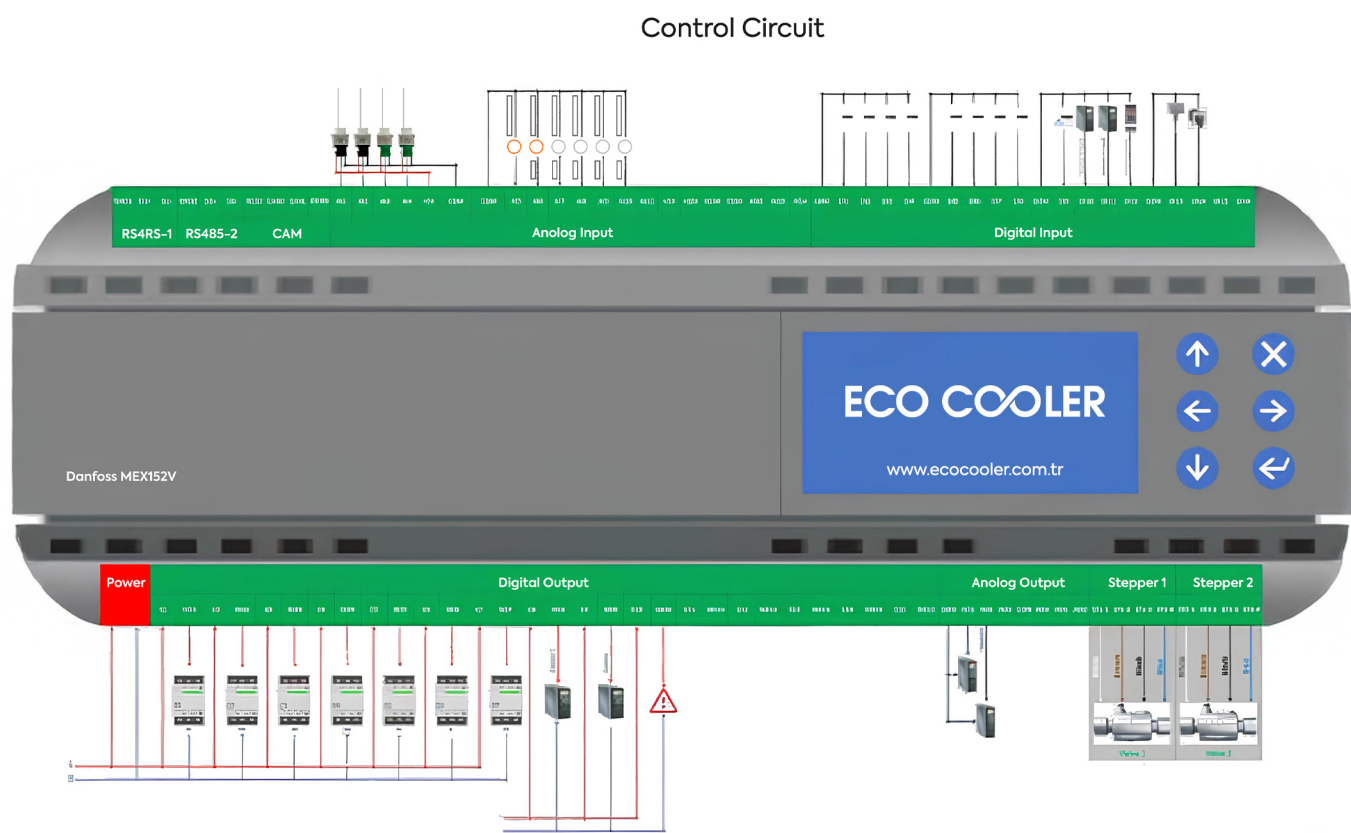
EACH-270-300

The diagram illustrates the electrical architecture of a refrigeration system. It features a central horizontal busbar system with multiple digital input and output lines. Key components include:

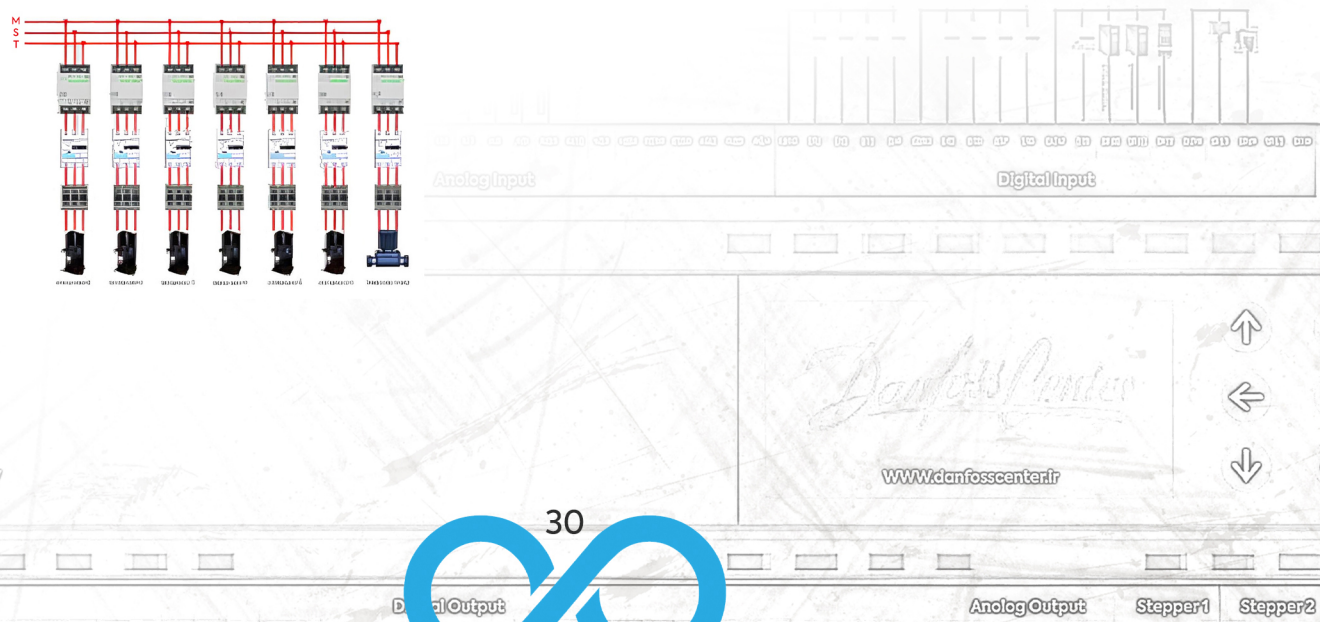
- Compressors:** Labeled as Compressor 1 Y1, Compressor 1 Y2, Compressor 1 Y3, Compressor 2 Y1, Compressor 2 Y2, Compressor 2 Y3, Compressor 2 Y4, and Compressor 2 Y5. Each is connected to a specific digital output line.
- Inverters:** Labeled as Inverter 1 and Inverter 2, connected to digital output lines.
- Pumps:** Labeled as Manual Pump Down 1 and Manual Pump Down 2, connected to digital input lines.
- Relays and Contactors:** Various relays (e.g., -U101 to -U115) and contactors (e.g., -U121 to -U127) are shown, each with its own set of terminals and connections.
- Digital Inputs/Outputs:** The system has 16 digital inputs (Digital Input 1-16) and 16 digital outputs (Digital Output 1-16). These are connected to various sensors and actuators.
- Power Supply:** The system is powered by a 24VDC supply, with ground connections (GND) and a common ground (GND).
- Wiring:** The wiring is color-coded: red for power, blue for ground, and green for signal. The diagram shows a complex network of wires connecting the components to the busbar system.

Typical Electrical Wiring Diagram

Ventilation systems rely on advanced electrical circuits to maintain a comfortable environment and promote healthy airflow. This diagram provides a detailed overview of all system connections. The control circuit manages system operations, while the power circuit ensures the necessary energy flow. The harmonious operation of these components is essential for an efficient and safe ventilation system.



Power Circuit





Thank you

FOR CHOOSING US FOR CLEAN AIR AND COMFORTABLE LIVING SPACES.

We will always strive to provide the best for your health.

ECO COOLER

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