ilmed IMPIANTI

40 cooling towers since 1981

Since 1981

ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO

SERIES IC³-AC

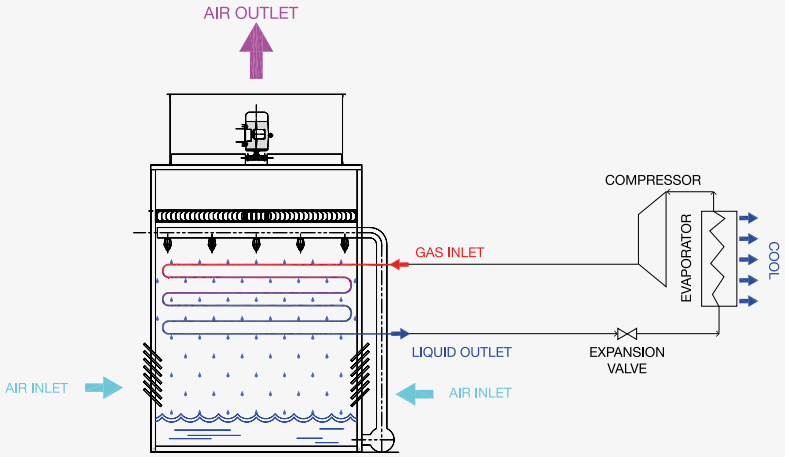
ILMED COOLING CLOSED CIRCUIT

AXIAL EVAPORATIVE CONDENSER

COOLING TOWERS

> INTRODUCTION

The evaporative condenser is a cooling machine that condenses a gas “contained” inside a coil isolated from the outside: the gas condensation is achieved directly spraying water on the exchanger by means of a distribution system.
On the other side, the water cooling occurs by its own evaporation, fostered by a constant air flow, guaranteed by an axial fan installed on top of the tower.



> ADVANTAGES

• Condensation efficiency	The gas condensation through water ensures **greater efficiency** than an air condenser and provides **more stable performances** even with external conditions variation
• Water and air as secondary fluids (depending on ambient conditions)	**Water and power saving**
• Wet bulb temperature as lower cooling limit	**Cooling** of the fluid even **below the outside dry temperature**
• A cooling tower and a condenser integrated within the same machine	**Simple plant solution**, with **minor overall dimensions** and **lower initial costs** compared to a solution consisting of a cooling tower + water exchanger

> MANUFACTURING FEATURES

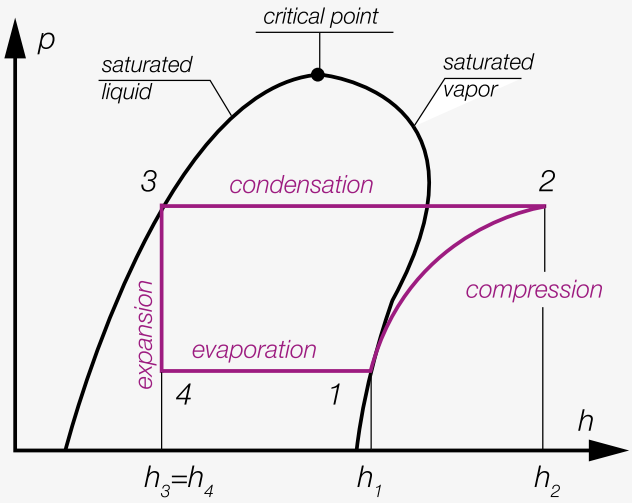
This series includes modular cooling towers that can be used in all industrial application.
Each module consists of three sections:
- ✓ Water collection basin with air inlet section;
- ✓ Cooling section;
- ✓ Fan group.

> STRUCTURE

- ✓ The main structure is manufactured in hot dip galvanized steel. Different materials can also be used upon request.
- ✓ Steel truss structure: simple, light and very strong.
- ✓ Flat walkable fan deck.
- ✓ Glass fiber sound absorbing walls, with expanded polystyrene internal insulation and high resistance to temperature changes.

> ILMED IC^3-AC

Evaporative condensers are mainly used in industrial refrigeration cycles to liquefy gases after their compression.
In these cases it is extremely advantageous to use cooling water to speed up the condensation process. This effect is more evident during summer, when ambient temperatures are higher. Evaporative condensers are efficient and simple. With the installation of a coil inside a cooling tower, they combine in a single machine the condenser of a refrigeration cycle with a water
cooling tower.



ILMED IMPIANTI has developed its series of closed circuit evaporative condensers “IC^3-AC” with axial fans, with standard sizes ranging from the smallest E-11-08- CONT unit to the largest L-44-12 one: the range of closed circuit “IC^3-AC” towers covers a thermal power (heat load) between about 80 kW and 3900 kW. Several modules can be also placed side by side to provide the required heat load output, so that they can be used in any application.

All models of “IC^3-AC” axial condensers have been designed and developed by ILMED IMPIANTI in order to have dimensions compatible with road shipping; each model also has its own containerized version (“CONT” models) for seaworthy shipping.

In a refrigeration cycle, the gas to be condensed is normally under pressure. Therefore, all coils of ILMED machines are certified according to the Directive 2014/68 / EU (PED), ensuring the safety of the machine even with high pressure gases: the "IC^3-AC" condensers are suitable for any type of refrigeration cycle and the materials used are compatible with the main fluids used in this industral application.

> WATER COLLECTION BASIN

- ✓ Painted or galvanized fully welded sheet metal frames.
- ✓ Inclined bottom for simple and complete basin water drains.
- ✓ The absence of water stagnation prevents bacterial growth.
- ✓ Water recirculation pump on a steel structure directly connected to the basin.

> LOUVERS

- ✓ PP air inlet grilles with double change of air flow direction.
- ✓ Internal protection from light and debris.
- ✓ External protection from accidental water leakages.
- ✓ Easy maintenance (louvers are manually removable).

> HEAT EXCHANGER

- ✓ Shell and pipe bundle made with carbon steel.
- ✓ Diameter, thickness and pipe geometry optimized for the specific application according to ILMED IMPIANTI studies.
- ✓ Hot-dip galvanized exchanger surface for corrosion resistance high performances.
- ✓ Compatibility with all major refrigeration fluids, at different working pressures.
- ✓ Certification according to Directive 2014/68 / EU (PED).
- ✓ Stainless steel (AISI 304 or 316L) heat exchangers available for special application.

> COOLING WATER DISTRIBUTION SYSTEM

- ✓ PVC piping to uniformly distribute cooling water on the outside of the exchanger.
- ✓ Low clog PPG nozzles easily replaceable in case of maintenance.
- ✓ Connecting pipes between the circulation pump and the internal PVC distribution system, easily removable for cleaning purposes, according to the latest (anti-legionella) sanitary regulations.

> FAN GROUP (ELECTRIC MOTOR + FAN)

- ✓ Axial fans with high efficiency aluminum or PPG blades, manufactured with suitable components for cooling towers.
- ✓ Galvanized steel protection grid above the fan.
- ✓ Electric motor designed and manufactured according to ILMED IMPIANTI specifications.
- ✓ Electric motor terminal box located outside the fan stack.

> DRIFT ELIMINATORS

- ✓ Reduced water entrainment by the airflow.
- ✓ PVC or PP made, on request.
- ✓ Divided into several parts for easy maintenance or inspection.

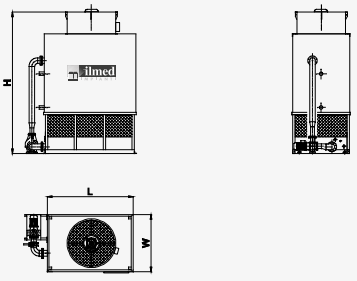
> OTHER MANUFACTURING FEATURES AND OPTIONALS

All towers are equipped with a large removable inspection door.
Upon request, all towers can be provided with a number of options, such as:

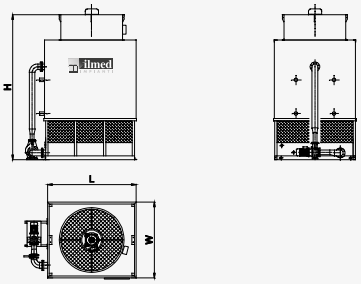
- ✓ Ladders to reach the fan deck;
- ✓ Fan deck protection railings;
- ✓ Safety switches to prevent high vibrations (vibraswitch);
- ✓ Automatic water make-up or purging systems;
- ✓ VFD electrical control panel;
- ✓ Automatic dosing system for the secondary circuit;
- ✓ Basin heaters for low temperature applications;
- ✓ Basin level switch.

Depending on needs, specific models with low acoustic emission and/or high electrical efficiency can be supplied.

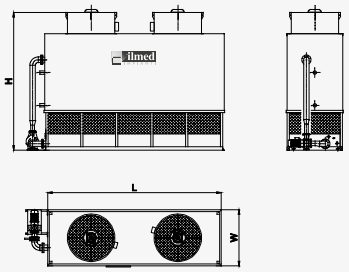
EQUIPMENT MODEL	AIR FLOW	N° OF FANS	N° OF COILS	FAN POWER	N° OF PUMPS	PUMP POWER	DIMENSIONS		
	m3/s	-	-	*kW*	-	*kW*	*W [mm]*	*L [mm]*	*H [mm]*
IC3-AC-E11-08	6,1	1	1	3	1	1,1	1220	1890	3440
IC3-AC-E11-10	6,1	1	1	4	1	1,1	1220	1890	3610
IC3-AC-E11-12	6,1	1	1	4	1	1,1	1220	1890	3780
IC3-AC-E11-08-CONT	5,3	1	1	3	1	1,1	1100	1890	3440
IC3-AC-E11-10-CONT	5,3	1	1	3	1	1,1	1100	1890	3610
IC3-AC-E11-12-CONT	5,3	1	1	4	1	1,1	1100	1890	3780



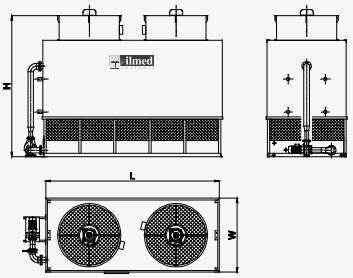
EQUIPMENT MODEL	AIR FLOW	N° OF FANS	N° OF COILS	FAN POWER	N° OF PUMPS	PUMP POWER	DIMENSIONS		
	m3/s	-	-	*kW*	-	*kW*	*W [mm]*	*L [mm]*	*H [mm]*
IC3-AC-L12-08	18,4	1	2	7,5	1	2,2	2420	2780	3790
IC3-AC-L12-10	18,4	1	2	11	1	2,2	2420	2780	3970
IC3-AC-L12-12	18,4	1	2	11	1	2,2	2420	2780	4100
IC3-AC-L12-08-CONT	16,1	1	2	7,5	1	2,2	2200	2780	3790
IC3-AC-L12-10-CONT	16,1	1	2	7,5	1	2,2	2200	2780	3970
IC3-AC-L12-12-CONT	16,1	1	2	11	1	2,2	2200	2780	4100
IC3-AC-N12-08	20,5	1	2	11	1	3	2420	3080	3850
IC3-AC-N12-10	20,5	1	2	11	1	3	2420	3080	4030
IC3-AC-N12-12	20,5	1	2	11	1	3	2420	3080	4200
IC3-AC-N12-08-CONT	18,0	1	2	11	1	3	2200	3080	3850
IC3-AC-N12-10-CONT	18,0	1	2	11	1	3	2200	3080	4030
IC3-AC-N12-12-CONT	18,0	1	2	11	1	3	2200	3080	4200
IC3-AC-Q12-08	24,8	1	2	15	1	4	2420	3680	4020
IC3-AC-Q12-10	24,8	1	2	15	1	4	2420	3680	4190
IC3-AC-Q12-12	24,8	1	2	15	1	4	2420	3680	4340
IC3-AC-Q12-08-CONT	21,7	1	2	15	1	3	2200	3680	4020
IC3-AC-Q12-10-CONT	21,7	1	2	15	1	3	2200	3680	4190
IC3-AC-Q12-12-CONT	21,7	1	2	15	1	3	2200	3680	4340
IC3-AC-R12-08	27,6	1	2	15	1	4	2420	4200	4030
IC3-AC-R12-10	26,8	1	2	15	1	4	2420	4200	4200
IC3-AC-R12-12	26,8	1	2	15	1	4	2420	4200	4380
IC3-AC-R12-08-CONT	24,1	1	2	15	1	4	2200	4200	4030
IC3-AC-R12-10-CONT	23,4	1	2	15	1	4	2200	4200	4200
IC3-AC-R12-12-CONT	23,4	1	2	15	1	4	2200	4200	4380



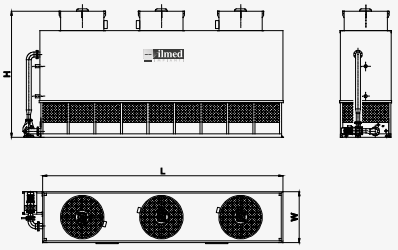
EQUIPMENT MODEL	AIR FLOW	N° OF FANS	N° OF COILS	FAN POWER	N° OF PUMPS	PUMP POWER	DIMENSIONS		
	m3/s	-	-	*kW*	-	*kW*	*W [mm]*	*L [mm]*	*H [mm]*
IC3-AC-E21-08	12,1	2	1	3	1	2,2	1220	3680	3590
IC3-AC-E21-10	12,1	2	1	4	1	2,2	1220	3680	3760
IC3-AC-E21-12	12,1	2	1	4	1	2,2	1220	3680	3910
IC3-AC-E21-08-CONT	10,6	2	1	3	1	1,5	1100	3680	3590
IC3-AC-E21-10-CONT	10,6	2	1	4	1	1,5	1100	3680	3760
IC3-AC-E21-12-CONT	10,6	2	1	4	1	1,5	1100	3680	3910



EQUIPMENT MODEL	AIR FLOW	N° OF FANS	N° OF COILS	FAN POWER	N° OF PUMPS	PUMP POWER	DIMENSIONS		
	m3/s	-	-	*kW*	-	*kW*	*W [mm]*	*L [mm]*	*H [mm]*
IC3-AC-L22-08	37,5	2	2	7,5	1	5,5	2420	5480	4030
IC3-AC-L22-10	37,5	2	2	11	1	5,5	2420	5480	4210
IC3-AC-L22-12	37,5	2	2	11	1	5,5	2420	5480	4380
IC3-AC-L22-08-CONT	32,8	2	2	7,5	1	4	2200	5480	4030
IC3-AC-L22-10-CONT	32,8	2	2	7,5	1	4	2200	5480	4210
IC3-AC-L22-12-CONT	32,8	2	2	11	1	4	2200	5480	4380

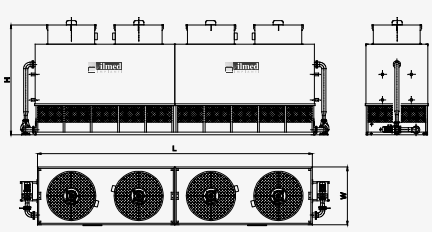


EQUIPMENT MODEL	AIR FLOW	N° OF FANS	N° OF COILS	FAN POWER	N° OF PUMPS	PUMP POWER	DIMENSIONS		
	m3/s	-	-	*kW*	-	*kW*	*W [mm]*	*L [mm]*	*H [mm]*
IC3-AC-D31-08	14,9	3	1	2,2	1	2,2	1220	4400	3450
IC3-AC-D31-10	14,9	3	1	3	1	2,2	1220	4400	3640
IC3-AC-D31-12	14,9	3	1	3	1	2,2	1220	4400	3830
IC3-AC-D31-08-CONT	13,1	3	1	2,2	1	2,2	1100	4400	3450
IC3-AC-D31-10-CONT	13,1	3	1	2,2	1	2,2	1100	4400	3640
IC3-AC-D31-12-CONT	13,1	3	1	3	1	2,2	1100	4400	3830
IC3-AC-E31-08	18,7	3	1	4	1	2,2	1220	5480	3490
IC3-AC-E31-10	18,7	3	1	4	1	2,2	1220	5480	3670
IC3-AC-E31-12	18,7	3	1	4	1	2,2	1220	5480	3840
IC3-AC-E31-08-CONT	16,4	3	1	4	1	2,2	1100	5480	3490
IC3-AC-E31-10-CONT	16,4	3	1	4	1	2,2	1100	5480	3670
IC3-AC-E31-12-CONT	16,4	3	1	4	1	2,2	1100	5480	3840



EQUIPMENT MODEL	AIR FLOW	N° OF FANS	N° OF COILS	FAN POWER	N° OF PUMPS	PUMP POWER	DIMENSIONS		
	m3/s	-	-	*kW*	-	*kW*	*W [mm]*	*L [mm]*	*H [mm]*
IC3-AC-Q24-08	49,5	2	4	15	2	4	2420	7400	4170
IC3-AC-Q24-10	49,5	2	4	15	2	4	2420	7400	4340
IC3-AC-Q24-12	49,5	2	4	15	2	4	2420	7400	4490
IC3-AC-Q24-08-CONT	43,3	2	4	15	2	3	2200	7400	4170
IC3-AC-Q24-10-CONT	43,3	2	4	15	2	3	2200	7400	4340
IC3-AC-Q24-12-CONT	43,3	2	4	15	2	3	2200	7400	4490
IC3-AC-R24-08	55,2	2	4	15	2	4	2420	8400	4180
IC3-AC-R24-10	53,5	2	4	15	2	4	2420	8400	4350
IC3-AC-R24-12	53,5	2	4	15	2	4	2420	8400	4530
IC3-AC-R24-08-CONT	48,3	2	4	15	2	4	2200	8400	4180
IC3-AC-R24-10-CONT	46,8	2	4	15	2	4	2200	8400	4350
IC3-AC-R24-12-CONT	46,8	2	4	15	2	4	2200	8400	4530

EQUIPMENT MODEL	AIR FLOW	N° OF FANS	N° OF COILS	FAN POWER	N° OF PUMPS	PUMP POWER	DIMENSIONS		
	m3/s	-	-	*kW*	-	*kW*	*W [mm]*	*L [mm]*	*H [mm]*
IC3-AC-L44-08	75,0	4	4	7,5	2	5,5	2420	10960	4180
IC3-AC-L44-10	75,0	4	4	11	2	5,5	2420	10960	4360
IC3-AC-L44-12	75,0	4	4	11	2	5,5	2420	10960	4530
IC3-AC-L44-08-CONT	65,6	4	4	7,5	2	4	2200	10960	4180
IC3-AC-L44-10-CONT	65,6	4	4	7,5	2	4	2200	10960	4360
IC3-AC-L44-12-CONT	65,6	4	4	11	2	4	2200	10960	4530



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