

CODE	Power	A / max running	A / max at departure	Dimensions H x L x P	flow	Weight
	V - Hz	A	A	mm	m ³ /h	Kg
CF - P/300	230 - 50 / 60	1,3/1,4	9,8	443x324x206	164-195	17
CF - P/300/1	115 - 60	2,9	18	443x324x206	195	17
CF - P/500	230 - 50 / 60	1,4/1,6	7,5	642x313x223	195	23
CF - P/800	230 - 50 / 60	2,7	20	642x313x223	356	27
CF - P/1100	230 - 50 / 60	3	20	912x410x248	540-580	44
CF - P/1500	230 - 50 / 60	4,3	28	912x410x248	580	46
CF - P/1500/4	400/460-2PH-50/60	2,6	110	912x410x248	580	53
CF - P/2000	230 - 50 / 60	5,5	34	1005x409x263	580	48
CF - P/2000/4	400/460-3PH-50/60	2,7	10	1005x409x263	930	48
CF - P/3000	230-3PH-50 / 60	5	35	1217x511x347	930	75
CF - P/3000/4	400/460-3PH-50/60	3	19	1217x511x347	890-930	80
CF - P/4000	230 - 50/60	9,4	42	1217x511x347	1300	80
CF - P/4000/4	400/460-3PH-50/60	3,5	18	1217x511x347	1300	85

ACCESSORIES

CF - P - Wall Mounted Air Conditioners

Description:

- Structure in RAL 7035 painted sheet metal, complete with self-adhesive
- Gasket and alternative hermetically sealed compressor with thermo-amperometric protection, operating with ecological R134 refrigerant (HFC)
- Centrifugal or axial condenser fan on ball bearings, with internal thermal protection
- Centrifugal or axial evaporator fan on ball bearings, with internal thermal protection
- Mechanical thermostat for adjustment, calibrated at 35° C, field of adjustment 20 ÷ 45 °C, differential 4° C
- Synthetic air filter in 6 mm thick polyurethane, 5 ppi inside the protection grill
- Condensation dissipater in models larger than 800 W
- 3 m long power cable

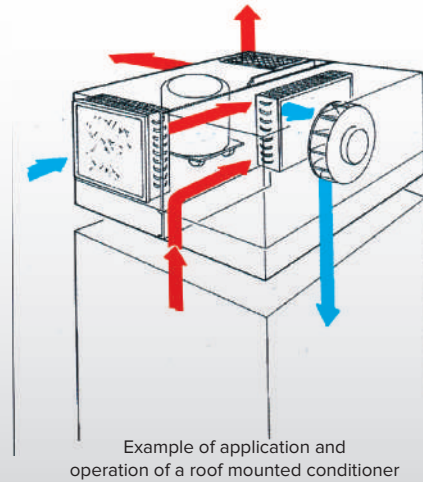
Available on request:

- Signalling device, free from voltage, dirty filter
- Cabinet temperature display
- diagnostics panel with visual signals and free from voltage for: dirty filter, cabinet temperature alarm, cabinet temperature display
- Frame for semi-embedding of conditioner; non-standard painting (It is possible to request customised painting, by indicating the code VER/COND.)

All conditioners are equipped with a self-cleaning system for the condenser, which makes cleaning of the air filter unnecessary, eliminating ordinary maintenance. There are five assembly templates for the entire range and an ecological condensation dissipater has also been incorporated for the codes from CF - P/1100 fino a 4000.

Note: for detailed information on the cut outs for the fixing of these products see page (pag. 204)

CODE	Power return L35 L35	Power return L35 L50	Power absorbed L35 L50	Limit of work enclosure °C	Limit of work environment °C	Side protection enclosures IP	Noise dB(A)
	W	W	W	°C	°C	IP	dB(A)
CF - P/300	330	270	240	25 ÷ 45	20 ÷ 55	IP 54	60
CF - P/ 300/1	330	270	240	25 ÷ 45	20 ÷ 55	IP 54	60
CF - P/400	500	410	324	25 ÷ 45	20 ÷ 55	IP 54	65
CF - P/800	850	620	415	25 ÷ 45	20 ÷ 55	IP 54	65
CF - P/1100	1050	840	506	25 ÷ 45	20 ÷ 55	IP 54	65
CF - P/1500	1400	1170	939	25 ÷ 45	20 ÷ 55	IP 54	65
CF - P/1500/4	1400	1170	630	25 ÷ 45	20 ÷ 55	IP 54	65
CF - P/2000	2000	1700	1146	25 ÷ 45	20 ÷ 55	IP 54	65
CF - P/2000/4	2000	1700	1012	25 ÷ 45	20 ÷ 55	IP 54	65
CF - P/3000	2700	2300	1450	25 ÷ 45	20 ÷ 55	IP 54	70
CF - P/3000/4	2700	2300	1450	25 ÷ 45	20 ÷ 55	IP 54	70
CF - P/4000	4000	2900	1800	25 ÷ 45	20 ÷ 55	IP 54	75
CF - P/4000/4	4000	2900	1780	25 ÷ 45	20 ÷ 55	IP 54	75



Example of application and operation of a roof mounted conditioner

CODE	Power	A / max running	A / max at departure	Dimensions H x L x P	Weight
	V - Hz	A	A	mm	Kg
CS - T/300	230 - 50/60	1,4	5	180x476x324	17
CS - T/300/1	115 - 50/60	2,8	10	180x476x324	17
CS - T/600	230 - 50/60	1,8	16	330x600x320	30
CS - T/600/4	400/440 - 50/60	1	7,7	330x600x320	37
CS - T/900	230 - 50/60	2,7	15	330x600x320	38
CS - T/1400	230 - 50/60	4,3	17	350x604x448	45
CS - T/1400/44	400/440 - 50/60	2,9	9,8	350x604x448	53
CS - T/2000	230 - 50/60	5	22	350x604x448	44
CS - T/2000/4	400/440 - 50/60	2,75	13	350x604x448	56
CS - T/2800	230 - 50/60	8	38	487x804x480	81
CS - T/2800/4	400 - 50/60	2,3	16	487x804x480	85
CS - T/4100	230 - 50/60	9	38	487x804x480	84
CS - T/4100/4	400 - 50/60	3,8	17	487x804x480	86
CS - T/4100/44	400-3-50/60	4,8	25	488x908x554	105

ACCESSORIES

CS-T - Roof Mounted Conditioners

Descrizione:

- Structure in RAL 7035 painted sheet metal, complete with self-adhesive
- gasket and alternative hermetically sealed compressor with thermo-amperometric protection, operating with ecological R134 refrigerant
- Centrifugal or axial condenser fan on ball bearings, with internal thermal protection
- Centrifugal or axial evaporator fan on ball bearings, with internal thermal protection
- Mechanical thermostat for adjustment, calibrated at 35° C, field of adjustment 20 ÷ 45 °C, differential 4° C
- Synthetic air filter in 6 mm thick polyurethane, 5 ppi inside the protection grill
- Condensation dissipater in models larger than 800 W (excluded in CS - T / 356)
- 3 m long power cable

Available on request:

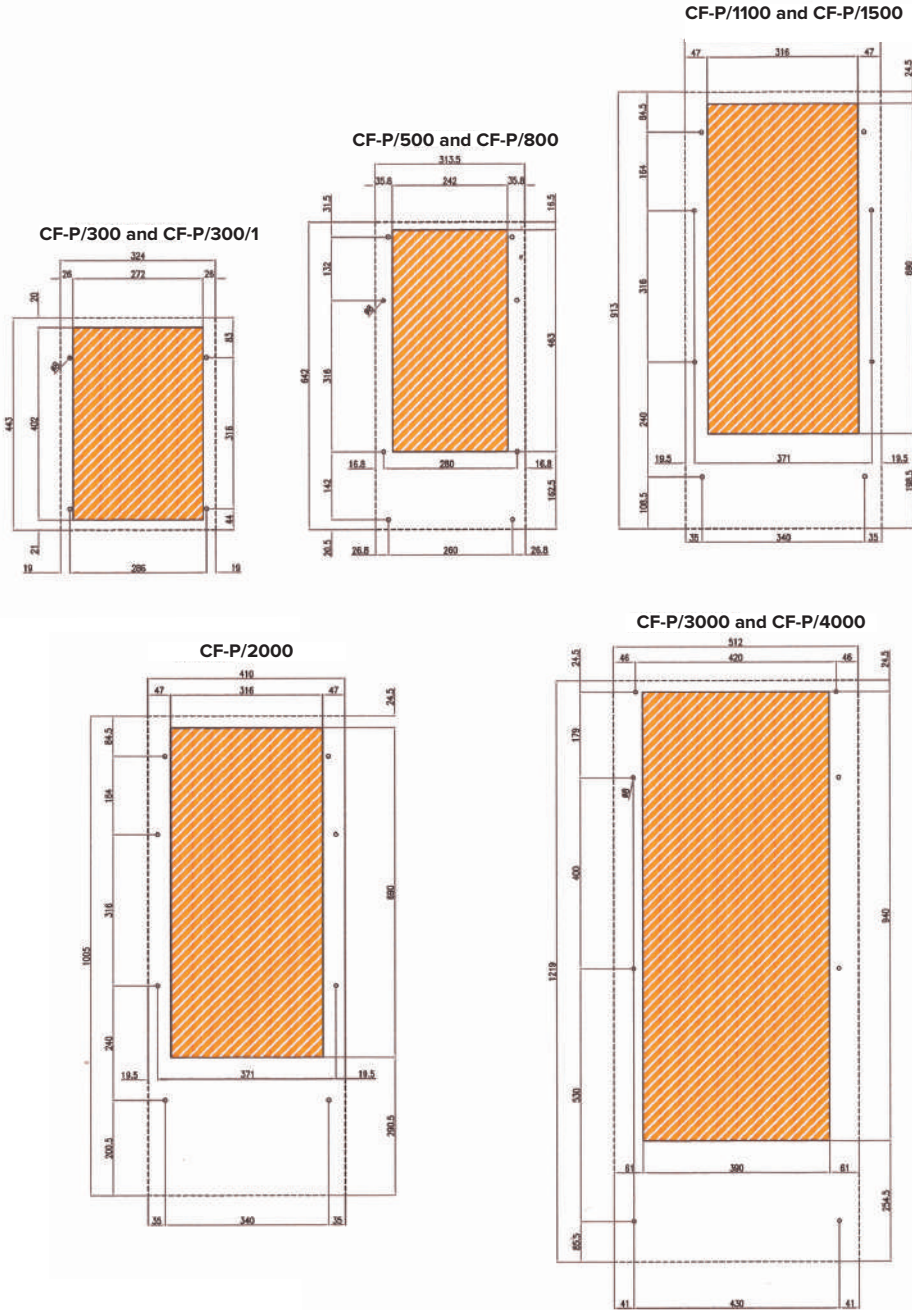
- Signalling device, free from voltage, dirty filter
- Cabinet temperature display
- diagnostics panel with visual signals and free from voltage for: dirty filter, cabinet temperature alarm, cabinet temperature display
- Frame for semi-embedding of conditioner; non-standard painting (It is possible to request customised painting, by indicating the code VER/COND.)

All conditioners are equipped with a self-cleaning system for the condenser, which makes cleaning of the air filter unnecessary, eliminating ordinary maintenance. There are five assembly templates for the entire range and an ecological condensation dissipater has also been incorporated for the codes from CS - T/1100 fino a 4100.

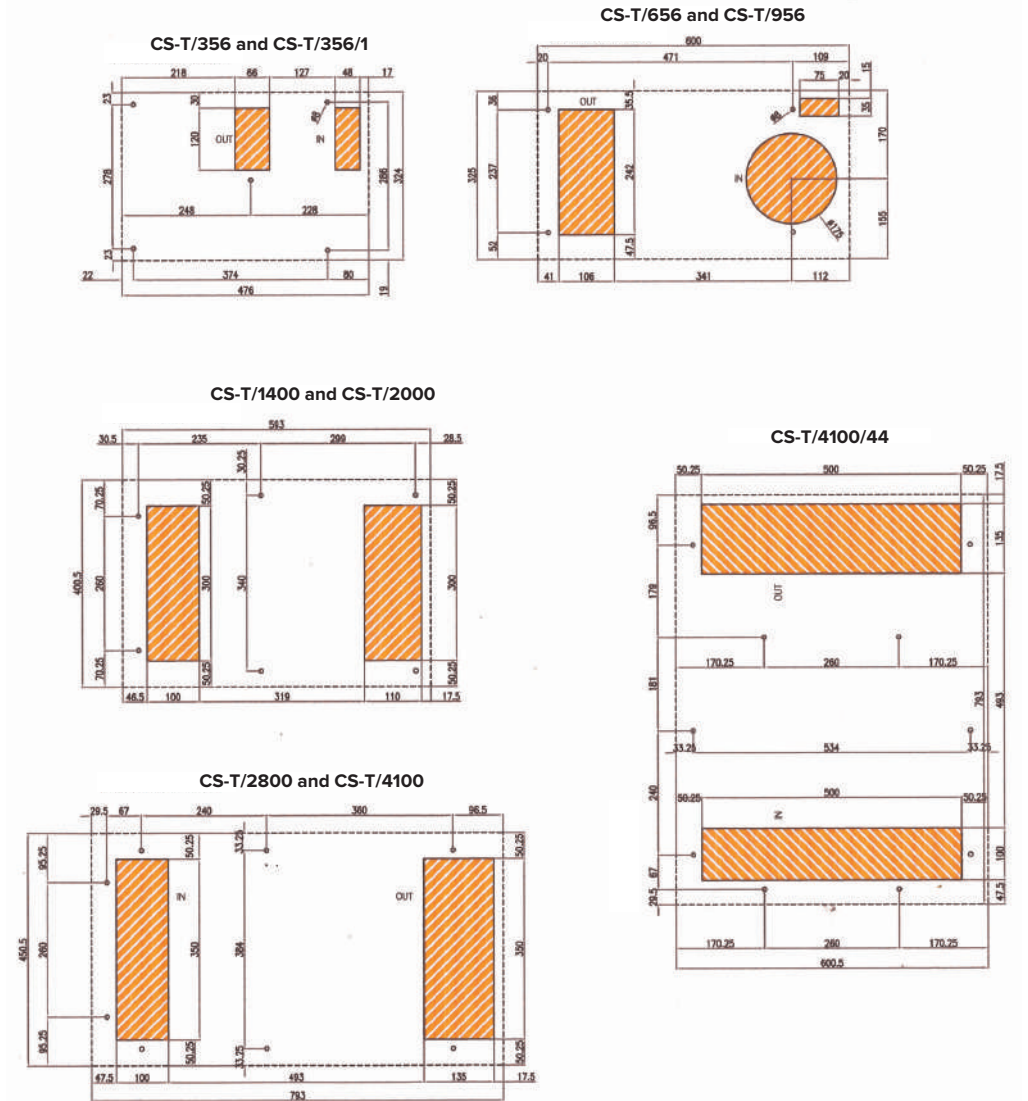
Note: for detailed information on the cut outs for the fixing of these products see page (pag. 205)

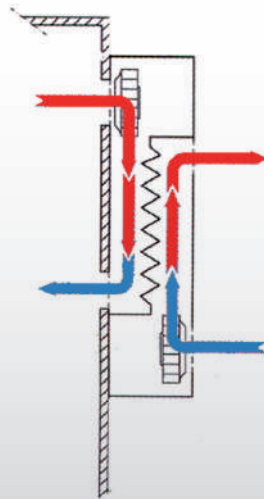
CODE	Power return L35 L35	Power return L35 L50	Power absorbed L35 L50	Limit of work enclosure	Limit of work environment	Side protection enclosures	Noise
	W	W	W	°C	°C	IP	dB(A)
CS - T/300	330	270	240	25 ÷ 45	20 ÷ 55	IP 54	60
CS - T/300/1	330	270	240	25 ÷ 45	20 ÷ 55	IP 54	60
CS - T/600	600	510	455	25 ÷ 45	20 ÷ 55	IP 54	65
CS - T/600/4	600	510	455	25 ÷ 45	20 ÷ 55	IP 54	65
CS - T/900	900	760	468	25 ÷ 45	20 ÷ 55	IP 54	65
CS - T/1400	1400	1170	840	25 ÷ 45	20 ÷ 55	IP 54	65
CS - T/1400/44	1400	1170	840	25 ÷ 45	20 ÷ 55	IP 54	65
CS - T/2000	2000	1700	1100	25 ÷ 45	20 ÷ 55	IP 54	65
CS - T/2000/4	2000	1700	1100	25 ÷ 45	20 ÷ 55	IP 54	67
CS - T/2800	2700	2300	1350	25 ÷ 45	20 ÷ 55	IP 54	67
CS - T/2800/4	2700	2300	1350	25 ÷ 45	20 ÷ 55	IP 54	75
CS - T/4100	3800	2700	1700	25 ÷ 45	20 ÷ 55	IP 54	75
CS - T/4100/4	3800	2700	1450	25 ÷ 45	20 ÷ 55	IP 54	75
CS - T/4100/44	5200	4100	3300	25 ÷ 45	20 ÷ 55	IP 54	75

Drilling templates for wall conditioners CF-P

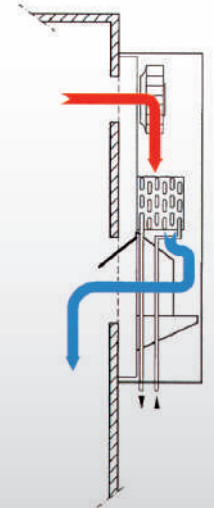


Drilling templates for roof air conditioners CS-T





Example of operation of an air-to-air heat exchanger, when the external temperature is lower than the temperature inside the cabinet.



Example of operation of an Air to Water heat exchanger.

ACCESSORIES

SC-A - Air-To-Air Heat Exchangers

Description: a simple and economic alternative to air conditioners, when the internal temperature of the electric panel is greater than the outside temperature, is the air-to-air heat exchanger. The structure is in RAL 7035 painted sheet metal, complete with a self-adhesive gasket suitable for application on the wall; exchanger pack with aluminium fins, radial or axial ventilators on ball bearings, with internal thermal protection; 3 m long power cable.

CODE	Power	Dimensions H x L x P	Weight
	V - Hz	mm	Kg
SC - A / 16-1 (*)	115 - 50/60	410x204x110	4,6
SC - A / 16-2	230 - 50/60	410x204x110	4,6
SC - A / 35-1 (*)	230 - 50/60	780x252x86	7,5
SC - A / 35-2	230 - 50/60	780x252x86	7,5
SC - A / 50-1 (*)	230 - 50/60	780x311x86	9,5
SC - A / 50-2	230 - 50/60	780x311x86	9,5
SC - A / 80-2	230 - 50/60	1250x311x106	20

(*) - Heat exchangers marked with an asterisk have UL certification

Characteristic data for the design

CODE	Specific yield	Power absorbed	Flow rate fan	Current consumption	Limit of work enclosures	Limit of work environment	Side protection enclosures	Noise
	W/°K	W	m³/h	A	°C	°C	IP	dB(A)
SC - A / 16-1	16	40	100	0,6	-5 ÷ 55	-5 ÷ 55	IP 54	58
SC - A / 16-2	16	64	100	0,6	-5 ÷ 55	-5 ÷ 55	IP 54	58
SC - A / 35-1	35	160	575	0,72	-5 ÷ 55	-5 ÷ 55	IP 55	76
SC - A / 35-2	35	160	575	0,72	-5 ÷ 55	-5 ÷ 55	IP 55	76
SC - A / 50-1	50	140	575	1,24	-5 ÷ 55	-5 ÷ 55	IP 55	76
SC - A / 50-2	50	160	575	0,72	-5 ÷ 55	-5 ÷ 55	IP 55	76
SC - A / 80-2	80	170	860	1	-5 ÷ 55	-5 ÷ 55	IP 55	76

Esempio: The power yield is a function of the difference in temperature it is desired to obtain, expressed in centigrade degrees (i.e. if the internal temperature is 35° C and the external temperature is 25° C the power yield of an SC-A / 35 is 350 W). [see table above]

Notes: the templates for the exchangers are supplied on request

ACCESSORIES

SC-AH - Air To Water Heat Exchangers

Description: if the temperature inside the cabinet is less or equal to the outside temperature, it is possible to install an Air to Water heat exchanger, but connection to the water mains is necessary in this case. The structure is in RAL 7035 painted sheet metal, complete with a self-adhesive gasket; the system of condensation recovery and control; exchanger pack with aluminium fins and copper tubing, radial or axial fans on ball bearings, with internal thermal protection and a 3 m long power cable.

Available on request:

Adjustment thermostat with water electro valve

CODE	Power absorbed	Power	Current consumption	Dimensions H x L x P	Weight
	W	V - Hz	A	mm	Kg
SC - AH/0656	35	230 - 50/60	0,21	404x308x114	9
SC - AH/1556	80	230 - 50/60	0,36	925x400x205	20
SC - AH/2556	80	230 - 50/60	0,38	925x400x205	21
SC - AH/5050	155	230 - 50/60	0,7	1101x501x300	39
SC - AH/10056	310	230 - 50/60	1,4	2000x800x400	90
SC - AH/10050-4	310	400/440 - 50/60	0,8	2000x800x400	90
SC - AH/14000	170	230 - 50/60	0,78	2000x800x600	90
SC - AH/14000-4	170	400/440 - 50/60	0,5	2000x800x600	90

Notes: the note relative to power yield is the same in CF-P and CS-T conditioners, with the difference that the specific yield in the table shown below refers to a temperature difference of 25°, respectively, between the cabinet temperature and the temperature of the water intake.

Characteristic data for the design

CODE	Resa specifica	Flow rate fan	Water flow rate	Water pressure	Water side pressure drop	Water connection	Cabinet work limit	Protection side enclosures	Noise
	W	m³/h	l/h	kPa	kPa	inch	°C	IP	dB(A)
SC - AH / 0656	870	330	150	500	2	3/8	10 ÷ 50	IP 55	58
SC - AH / 1556	2200	575	150	500	2	1/2	10 ÷ 50	IP 55	58
SC - AH / 2556	3100	860	500	500	63	1/2	10 ÷ 50	IP 55	58
SC - AH / 5050	6700	1450	860	500	40	1/2	10 ÷ 50	IP 55	58
SC - AH / 10056	12500	2900	1440	800	90	3/4	10 ÷ 50	IP 54	60
SC - AH / 10050-4	12500	2900	1440	800	90	3/4	10 ÷ 50	IP 54	60
SC - AH / 14000	17500	2365	2520	600	121	3/4	10 ÷ 50	IP 54	76
SC - AH / 14000-4	17500	2365	2520	600	121	3/4	10 ÷ 50	IP 54	76

Calculation of the heat loss inside enclosures

In this page the method for calculating the most suitable system for cooling in any circumstance is shown. The following data are necessary:

- it [°C] = highest temperature allowed inside the enclosure;
- et [°C] = highest external temperature;
- Dt [°C] = it-et
- s [m²] = uncovered surface of the enclosure;
- IP = IP degree of protection of the enclosure;
- Pti [W] = power dissipation of the equipment installed;
- Pte [W] = power dissipation absorbed by the enclosure or the external environment;
- Pt [W] = Pti ± Pte = total power to be absorbed.

IP54 or lower and it > et:

- Natural heat loss (GFT 100 or FLT)
- Forced heat loss (GFTV 200 or GFV)

Natural heat loss is caused by the different temperature between the air inside the enclosure and the external environment. If the internal temperatures higher of the external one, the inner heat will be lost to the external environment. If the internal temperature is lower of the external one, the heat will be absorbed by the inner part.

Power "Pte", lost or absorbed by the surfaces of the enclosure, is calculated in the following way:

$$Pte = s \times Dt \times 5,5 \quad [W]$$

With GTFV 200 or GFV ventilation systems, it is possible to obtain a cooling effect only when the environment is colder than the inner temperature, the calculation in this case is as follows;

$$Pt = Dt \times V \times 0,348 \quad [W]$$

"V" is the efficiency of the ventilationsystem [m³/h], taking into consideration the the loss caused by the inner equipment and filters of the enclosure, which after some time can be obstacles to the circulation of air.

IP 54 or higher and it > et:

- Air to air heat exchangers (SC - A);
- Air-conditioners, (CF- P o CS - T);
- Air to water heat exchangers (SC - AH).

This is the case when the internal air is hotter than the external. The air to air heat exchanger utilises the same cooling system of the natural heat loss. The heat exchanger has a specific capacity, "spf", which indicates the heat loss capacity of the system according to the difference in temperature "dt".

The heat loss of the heat exchanger is calculated in the following way:

$$Pti = spf \times Dt \quad [W]$$

The total power "Pt", that the heat exchanger will have to absorb, will be equal to the power produced by the equipment "Pti", without the "Pte", absorbed naturally by the enclosures:

$$Pt = Pti - Pte \quad [W]$$

IP 54 or higher and it = et:

- Air conditioners(CF -P o CS -T);
- Air to water heat exchangers (SC - AH).

In this case, when the temperatures are equal, there is no loss nor absorption of heat from the outside (Pte). The air conditioner will necessarily have a cooling capacity equal or higher than the power "Pti", lost by the equipment inside the enclosure.

$$Pt \geq Pti$$

The choice can be made on the base of the power efficiency of the air conditioner. In case of a heat exchanger SC-AH, the choice has to be made on the base of the performances, according to the difference in temperature between the cooling water and the required temperature inside the enclosure.

IP 54 or higher it < et:

- Air to water heat exchanger (SC-AH)

In this case, the power to be absorbed is equal to the one generated by the equipment "Pti", with the power absorbed by the enclosure, "Pte":

$$Pt = Pti + Pte \quad [W]$$

Tabella per laseelta del sistema di ventilazione o condizionamento

Degree of protection of encl.	Ti>Te	Ti=Te	Ti<Te
IP<54	Natural ventilation: GTF100-FLT Forced ventilation GTFV200-GFV	-	-
IP<54	Air conditioners CF-P or CS-T Air to air heat exchangers SC-A Air to water heat exchangers SC-AH	Air conditioners CF-P or CS-T Air to water heat exc SC-AH	Air conditioners CF-P or CS-T Scambiatori Aria/Acqua SC-AH