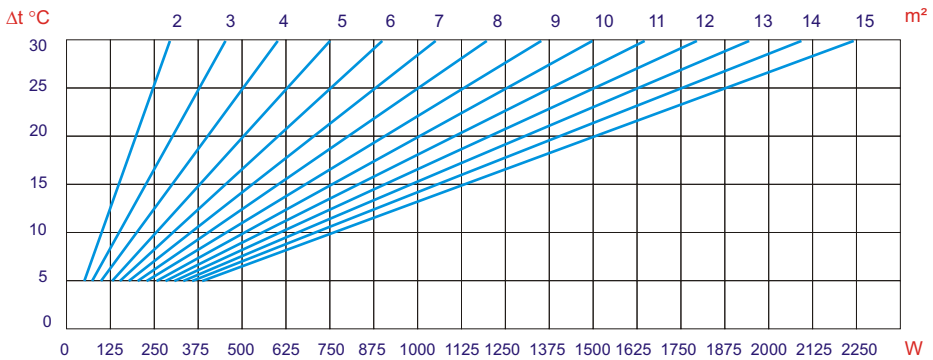
One help for your future choices...

A conditioned enclosure absorb or dissipate heat through its walls according to its material, dimensions and the difference between internal enclosures and ambient temperature (t). This value is determinate by a simple calculation (m^2 x t x5)W, (as assuming the enclosure made in steel, transfer coefficient = 5), see the selection chart below for a quick reference:



First question to ask in order to select the appropriate cooling equipment is: “Can the internal enclosure temperature be higher than the external ambient temperature ?

If the answer is NO, we will choose between an air conditioner and a water to air heat exchanger. In this case, the heat absorbed by the enclosure, at specified limit conditions, has to be added to the heat dissipated by the internal components. Using an air conditioner can be maintained constant the internal enclosure temperature, independently from the variation of outside ambient temperature. If an air conditioner is used, it is suggested to keep the internal temperature to a minimum of 30°C to avoid condensate water production when an operator will open the enclosure door. Temperatures lower than 30°C may cause the installed components to be covered of condensate water when warmer external air enter in the enclosure.

If the answer is YES, we will choose an air to air heat exchanger or a forced ventilation system, that uses filtered primary air. In this case the heat absorbed by the enclosure, at specified limit conditions, has to be removed from the heat dissipated by the installed components. Air to air heat exchanger cooling capacity is measured in W/K, this value indicates how many Watt the heat exchanger can remove for every degree of temperature difference between internal enclosure temperature and external ambient temperature. For example, a 30 W/K cooling capacity heat exchanger can remove 450W of heat, if ambient temperature is 35°C and internal enclosure temperature is 50°C (i.e. 50-35 = 15 difference of temperature x 30 = 450W).

Only as an indication, heat dissipation by components can be calculated using the below table:

transformers	from 2 to 5%
drivers, PLC, numerical controls , inverters	5%
suppliers	10%
moving-coils relay, contactors	3%
incandescent lamps	100%
heaters	100%

Above table only give approximate values for components. Particular attention should be given to high power components and it is suggested to consult the component's manufacturer in order to obtain an accurate value and to avoid wrong calculations of heat dissipation.

AVAILABLE POWER SUPPLIES	
A	230 1 50
B	230 1 60
C	230 1 50 / 60
D	110 - 115 1 50 / 60
E	440 - 480 3 60
L	415 3 60
T	400 - 415 3 50
P	400 2 50
Q	400 2 60
R	440 - 480 2 60
V	24 V DC
W	48 V DC