CALCULATING HEAT LOAD ESTIMATES

Below are two formulas that can be used to calculate heat load estimates. Depending on the variables and how critical the job is, use the one with the most conservative rating. In most cases, calculating the load both ways and averaging the two will be close to meeting the needs of most jobsite requirements.

Formula #1

Table 1 - BTUH/CU.FT Building Volume Multiplier

Type of Building	Masonry Wall				Insulated Steel Wall		
Indoor Temperature (°F)	50	60	65	70	60	65	70
4 Walls Exposed	2.5	2.7	2.9	3.1	1.7	1.9	2.1
3 Walls Exposed	2.2	2.3	2.4	2.7	1.5	1.6	1.7
2 Walls Exposed	1.8	1.9	2.1	2.2	1.3	1.4	1.5

Table 2 - Correction Factors

Outdoor Temperature	+30	+20	+10	0	-10	-20	-30
Multipilier	.53	.69	.84	1.0	1.15	1.2	1.46

How to use the tables:
1. Determine the BTUH/Cu. Ft. volume from table 1 based on the desired indoor temperature, wall construction, and number of walls exposed to the weather
2. Correct for an outdoor temperature using the table 2 correction factors
3. Using the gross building volume, estimate the heat loss

Example:
- 66,000 square foot building with a 12 foot celing height
- Ouside air temperature is 30°F
- You want to maintain an inside temperature of 60°F
- The building is masonry (sealed) with 4 walls exposed to the weather

66,000 * 12 * 2.7 * .53 = 1,133,352 BTUH of heat loss. Divide this by the 1 million BTUH of Maxi-Heat output = 1.13 total units. In this case, one Maxi-Heat should adequatelly heat and maintain the desired temperature in this building.

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Formula #2

Square Footage x Ceiling Height x △T x Type of Building

△T = Desired Temperature F (inside) - Outside Temperature

Multipliers for type of building structure:
.135 Sealed Building
.145 Non-Sealed Building
.160 Tent or Similar

Example:
- 66,000 square foot building with a 12 foot celing height
- Ouside air temperature is 30°F
- You want to maintain an inside temperature of 60°F
- The building is masonry (sealed) with 4 walls exposed to the weather

66,000 * 12 * 30 * .135= 3,207,600 BTUH of heat loss. Divide this by the 1 million BTUH of Maxi-Heat output = 3.2 total units. In this case, three Maxi-Heat should adequatelly heat and maintain the desired temperature in this building.

As you can see, Formula #2 is by far the most conservative rating of the two. In order to get as close as possible to an accurate sizing, average the two examples from above and you come up with two Maxi-Heat units to heat and maintain the desired temperature in this building. This load averaging technique has been successful in most cases; however, in cost critical jobs, always error towards the conservative side since there are many other factors affecting the heat load estimate including: ventilation, insulation, rooms, etc.

If you have any questions, contact the Allmand service department: (800) 562-1373