

## Comfort Heating

For complete building and space heating applications, it is recommended that a detailed analysis of the building construction heat losses (walls, ceilings, floors, windows, etc.) be performed using ASHRAE guidelines. This is the most accurate and cost effective estimating procedure. However, a quick estimate of the kW requirements for room and supplemental heating or freeze protection can be obtained using the chart to the right.

**Problem** — A warehouse extension measures 20 ft long x 13 ft wide x 9 ft high. The building is not insulated. Construction is bare concrete block walls and an open ceiling with a plywood deck and built-up roof. Determine the kW required to maintain the warehouse at 70°F when the outside temperature is 0°F.

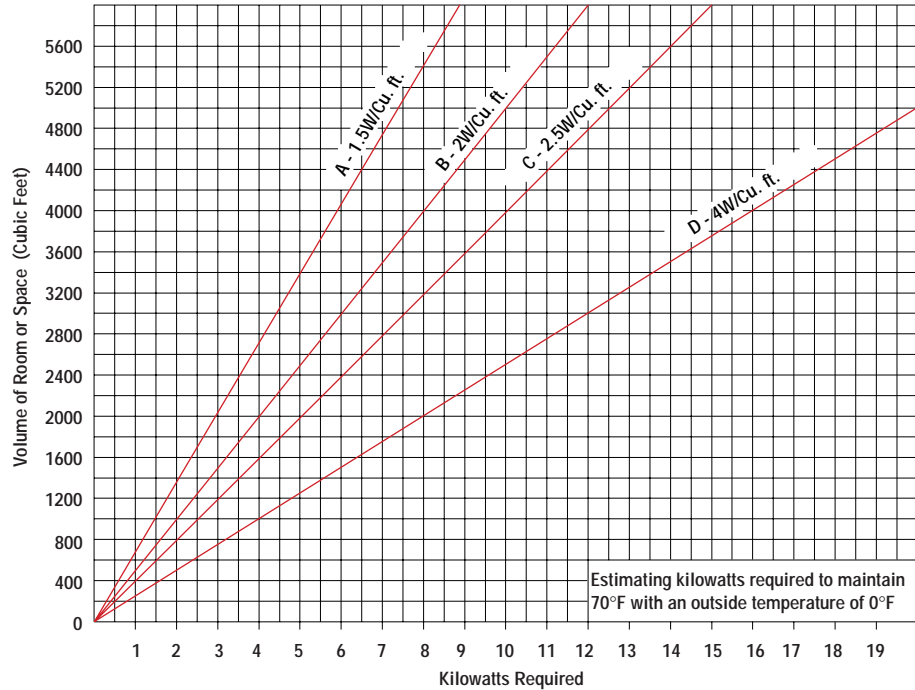
**Solution** —

1. Calculate the volume of the room.

$$20 \text{ ft} \times 13 \text{ ft} \times 9 \text{ ft} = 2,340 \text{ ft}^3$$

2. Refer to the chart, use Curve D which corresponds to the building construction.
3. Find the intersection of 2,340 ft<sup>3</sup> with curve D. The kilowatts required are 9.3 kW. Suggest using a 10 kW unit blower heater.

## Comfort Heating Chart



- Curve A** — Rooms with little or no outside exposure. No roof or floor with outside exposure; only 1 wall exposed with not over 15% door and window area.
- Curve B** — Rooms with average exposure. Roof and 2 or 3 walls exposed, up to 30% door and window area. But with roof, walls and floor insulated if exposed to outside temperatures.
- Curve C** — Rooms with roof, walls and floor uninsulated but with inside facing on walls and ceiling.
- Curve D** — Exposed guard houses, pump houses, cabins and poorly constructed rooms with reasonably tight joints but no insulation. Typical construction of corrugated metal or plywood siding, single layer roofs.

**Note** — If the volume of the room is larger than the chart values, divide by 2, 3, 4, etc. until the trial volume fits the curve. Then select heater from this volume. Multiply heaters selected by the number used to select the trial volume.