Checklist — Selecting the Proper Duct Heater, *continued*

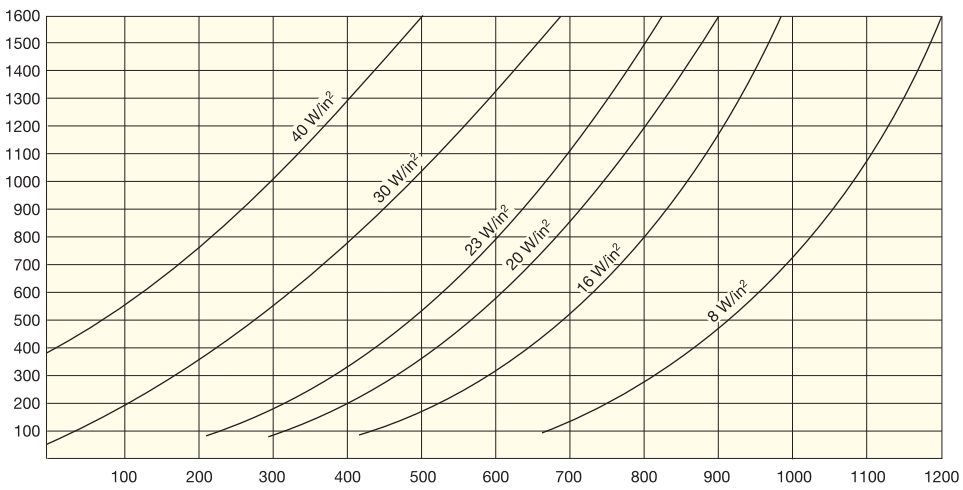
☑ Element Watt Density vs. Air Temperature and Air Velocity

Use graph (English or Metric) to plot

Outlet Air Temperature vs. **Outlet Air Velocity** to determine **Element Watt Density**

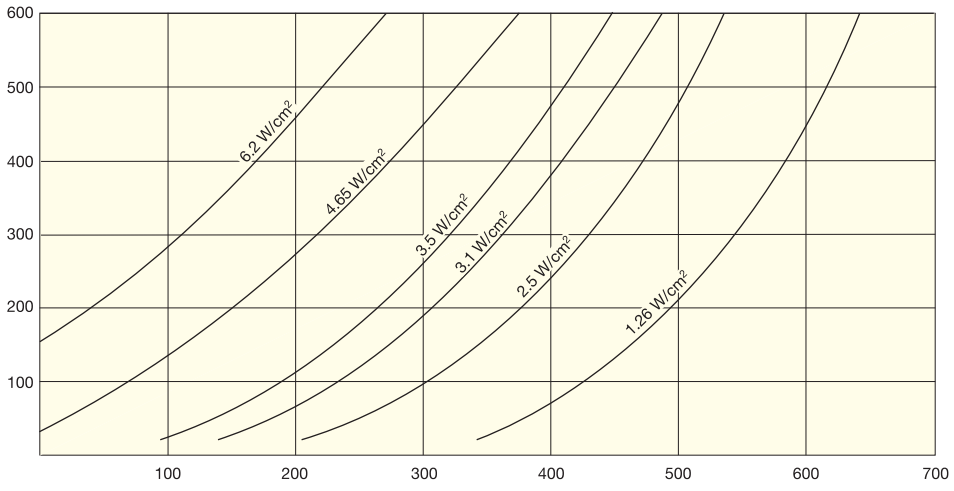
The recommended watt density is based on a maximum element sheath temperature of 1400°F (760°C). Air and other gases that are poor conductors of heat require watt densities matched to the velocity of the gas flow to prevent element overheating. Selecting a lower watt density for the heating elements will extend heater life expectancy.

English



Process Temperature °F — Approximate Sheath Temperature 1400°F

Metric



Process Temperature °C — Approximate Sheath Temperature 760°C

Element Watt Density is the wattage dissipated per square inch of the element sheath surface and is calculated with the following formula.

$$\text{Watt Density} = \frac{\text{element wattage}}{\pi \times \text{element dia.} \times \text{element heated length}}$$