

# How to Use Watlow's Wattage Calculator

By: - June 02, 2020



(abcimg://Engineer%20using%20wattage%20calculator)

Calculate your wattage and BTU/hr requirements for your advanced thermal products today with our wattage calculator. Discover how you can use this convenient tool to size your heater and power and temperature controllers to your specific heating needs.

## Step-by-step wattage calculation

As a design engineer, you need a quick reference tool to find the precise heating solution necessary for your manufacturing process. Watlow's wattage calculator allows you to quickly calculate the power needs of a thermal system, so start with this helpful tool.

### Startup power vs. continuous power

Once you go to our [\\_\(<https://www.watlow.com/resources-and-support/engineering-tools/wattage-calculator>\)wattage calculator \(<https://www.watlow.com/resources-and-support/engineering-tools/wattage-calculator>\)](https://www.watlow.com/resources-and-support/engineering-tools/wattage-calculator), the first step is to determine whether you need to calculate your startup or continuous power needs. This will affect the final calculation, but you can switch between the two calculations regardless of where you start.

### Start with either “Heat to Raise” or “Heat to Melt”

Use this section to determine what type of application is required – heating or melting.

### Input Heat to Raise

Identify whatever material you wish to heat. Choose one of our preselected material options or input a custom material with your own predetermined volume, weight and density. Once your material is chosen then enter the following application information:

- Volume of material to be heated
- Weight of material to be heated
- Specific heat
- Starting temperature
- Final desired temperature
- Available time

Our wattage calculator will immediately estimate the startup or continuous power required as well as the total system power required for your application. Use this information when selecting one of our heating products for your application. You may adjust any of the information at any time and see how it affects your wattage needs.

### **Input Heat to Melt**

Another helpful way to use our calculator is to determine the heat required to melt a specific material. Select this category and input the material you wish to melt. Enter the volume and our calculator will generate the specific density, weight and latent heat of your chosen material. Select the desired time required to melt and see your power needs expressed in watts. This calculation tool is particularly useful for design engineers in <https://www.watlow.com/industries-we-serve/energy-processes> various forms of process heating and manufacturing industries.

### **Choose conduction losses**

Next, determine the wattage needed to accommodate for conduction losses. Your controller will provide the additional wattage required to adjust for losses in the operating temperature, so input the following information to find the necessary wattage:

- Material to be heated
- Heat transfer surface area
- Thickness of material
- Temperature difference
- Exposure time

### **Include the safety factor**

The final step within our calculator is to adjust the safety factor. We automatically set the safety factor at 20% for many of our heating products, but you can adjust the safety factor to accommodate for any of the unknown variables in your calculation.

## **Estimate your heating needs today**

At Watlow, we offer various [heat calculation](https://www.watlow.com/blog/posts/how-much-heat-do-you-need) [services](https://www.watlow.com/blog/posts/how-much-heat-do-you-need) to assist you in choosing other heating products for your industry such as power and temperature controllers and sensor products. [Contact us](https://www.watlow.com/contact-us) [to learn more about our products and to order the optimal thermal solutions for your manufacturing needs.](https://www.watlow.com/contact-us)