Chapter 3

Designing and Sizing Your Masonry Heater

Heat loss, model selection, and floor plan considerations

Start With a Heat Loss Calculation

Before selecting a masonry heater model, you need a reasonable estimate of how much heat your home requires. We recommend LoadCalc.net for initial planning. It is free and gives you the numbers you need.

> *Important: The BTU/hr figure from a heat loss calculation is peak demand - the worst-case hour on the coldest night of the year. A masonry heater's output is not measured in BTU/hr the way a furnace is. The heater stores heat and releases it over 12 to 24 hours. Compare the heater's total daily BTU output to your home's total daily heat demand, not the peak hourly figure. If you size a masonry heater against a peak BTU/hr number, you will overbuild every time.*

Free heat loss calculator: https://www.loadcalc.net/

Volume-Based Sizing

Square footage alone does not tell the full story. The volume of heated space - length times width times ceiling height - is a more accurate starting point. A 1,500-square-foot home with 8-foot ceilings has a heated volume of 12,000 cubic feet. The same footprint with a 14-foot vaulted ceiling has a heated volume of roughly 21,000 cubic feet - 75 percent more air to heat from the same floor area. Vaulted ceilings are one of the most common reasons a homeowner ends up needing a larger heater than the square footage would suggest.

Climate Zone

A home in northern Minnesota, northern Wisconsin, or the Upper Peninsula of Michigan has a significantly higher heat demand than the same home in Tennessee or North Carolina. For homes in heating degree day zones above 8,000 (northern Minnesota, the Dakotas, northern Wisconsin), we size conservatively and often recommend the next model up if the home has any unusual heat loss factors.

Open Floor Plans Perform Best

Masonry heat travels in straight lines like sunlight, warming everything in its direct path. An open floor plan allows radiant energy to reach more of your living space directly. Closed rooms behind walls and doors will be somewhat cooler. A bedroom behind a wall will typically run 5 to 8 degrees cooler than the main living area - which many clients find perfectly comfortable for sleeping.

Selecting the Right SR Core Model

We offer three standard firebox sizes: the SR-13, SR-18, and SR-22. All three are available in both Hybrid and Cast configurations and support the full range of design options, oven choices, and heated bench

additions. Heating area estimates assume 8-foot ceilings and Energy Star rated construction.

SR-13 (13" x 18" firebox): Covers approximately 1,000 to 1,200 square feet. Finished dimensions with 4" veneer: ~43" W x 32" D x 80" H.

SR-18 (17" x 18" firebox): Covers approximately 1,500 to 1,800 square feet. Finished dimensions: ~48" W x 32" D x 80" H.

SR-22 (22" x 18" firebox): Covers approximately 1,800 to 2,000 square feet. Finished dimensions: ~53" W x 32" D x 80" H.

For most new construction homes between 1,500 and 2,000 square feet, the SR-22HBO - the SR-22 with a black bake oven - is the model we recommend most often. It handles the heating load comfortably, adds the functionality of the oven, and is well-suited to Midwest and northern climates.

When One Heater Is Not Enough

A single masonry heater can typically heat 1,000 to 2,000 square feet of well-insulated living space depending on the model, climate, and ceiling heights. For larger homes, two masonry heaters or a heater-plus-in-floor-radiant combination is typically the right answer. Two SR-18 heaters can adequately heat a well-insulated 3,000 to 3,500 square foot home with proper floor plan design.

SR masonry heater systems and design: https://solidrockmasonry.com/masonry-heaters/