Chapter 4

The SR Core System

Hybrid vs. Cast Core, venting configurations, and options

Two Ways to Build: Hybrid Core vs. Cast Core

Every SR masonry heater is built around one of two core system types. Both deliver identical radiant heat performance. The difference is in the materials, the build time, and the kit cost.

SR Hybrid Core: Uses approximately 230 firebricks as the primary structural material with 18 cast refractory slabs. More economical kit cost with additional build time. Best for experienced builders, owner-builders comfortable with brickwork, or projects where kit cost is the primary consideration.

SR Cast Core: Uses approximately 40 firebricks with 55 precision refractory castings that fit together with minimal cutting. Fastest and least technically demanding system to build. Higher kit cost is typically offset by reduced labor time. Best for first-time builders, contractors without masonry backgrounds, or projects where speed and simplicity matter most.

Every kit ships with all materials needed to build the heater core: firebrick, refractory mortar, refractory slabs, insulation, gasketing, expansion material, and your SR doors. Also included: full course-by-course 2D SketchUp blueprint drawings in PDF format, 3D elevations, and custom architectural facade design services through our AIA-certified architect.

Design and Venting Configurations

We select the appropriate configuration for each project based on your floor plan, chimney placement, desired options, and heating goals. You do not need to choose this yourself.

Finnish Contraflow: Gases travel from the firebox through or around the oven into a channel above, then down both side channels evenly before venting. Highly efficient, especially with a 3-sided heated bench and side chimney connection. Our most popular configuration.

J-Loop Design: Gases travel down one side, under the firebox, up the opposite side, and out through a top chamber. Strong, versatile performer across a wide range of floor plans.

Swedish 5-Run Design: Most compact design. Gases travel through five runs within a small footprint. Works well where horizontal footprint is a concern.

Russian Bell Design: Uses a large upper chamber into which hot gases rise and collect before cooling and descending. Produces very even, sustained heat output. The only design that readily accommodates a black bake oven on the side of the heater.

German/Austrian Kachelofen and Grundofen: Full calculated designs with extraordinary design freedom. Every channel, every dimension, and every material specification is calculated for maximum thermal performance before a single brick is laid.

Bake Oven Options

Black Oven (Direct Fire - Most Recommended): Flames and hot gases pass directly through the oven chamber before entering the heat exchange channels. During fire: exceeds 1,000 F. Two hours after fire: approximately 650 to 700 F (pizza). Three hours after fire: 400 to 500 F (hearth bread). Eight or more hours after fire: 350 F (slow roasting). Twelve hours after a 65 lb fire: still near 250 F.

White Oven (Indirect Fire): Hot gases travel around the outside of the oven chamber rather than through it. Oven interior stays completely clean - no ash or soot. With one fire per day: 250 to 350 F. With two fires per day: 500 to 600 F. Ideal for roasting, casseroles, slow baking.

Heated Benches

We design heated benches into approximately 85 percent of our heaters. The bench becomes part of the heater's thermal mass. Additional gas channels run through the bench structure, slowing exhaust gases and extracting more heat from the same fire. Bench surface temperatures typically run between 100 and 140 degrees Fahrenheit - warm enough for comfortable seating or therapeutic use, but not hot enough to burn. Heated bench pricing: $250 per linear foot.

Cook Stove Integration

A steel cook top integrated directly above the firebox uses the same fire that heats your home to heat your cooktop surface. Available in SR-13 and SR-18 firebox sizes. Bake oven and heated bench options can be incorporated.

Domestic Hot Water

A stainless steel heat exchanger coil installed in the firebox can contribute to preheating your domestic hot water supply during the heating season. All domestic hot water systems must be engineered and installed by a licensed steam fitter. Important: a masonry heater will not adequately drive a glycol in-floor radiant system as a primary heat source.

SR DIY masonry heater kits: https://solidrockmasonry.com/solid-rock-diy-masonry-heater-kits/

View completed heater gallery: https://solidrockmasonry.com/gallery/
