

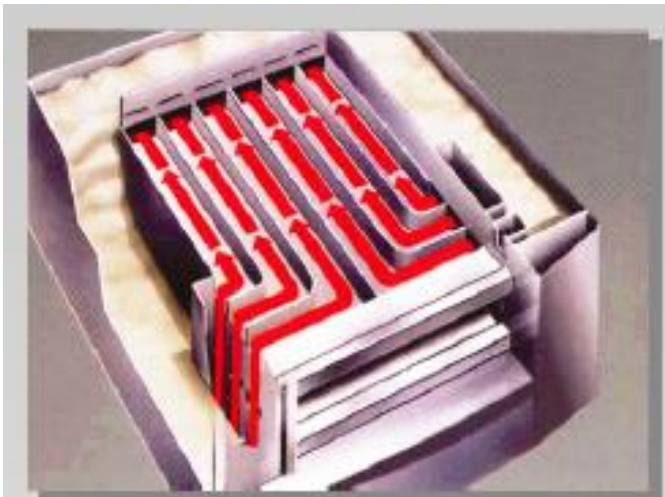
A COMPARISON of DECK OVEN DESIGNS



As you look for an oven to meet your production requirements and reduce your fuel usage in making hearth products, there are often many questions as to what is the “right” type of oven to purchase. Today, most bakers are finding that a stone hearth deck oven can **DRASTICALLY** reduce fuel consumption (up to 75%) and provide unsurpassed bake quality. Some have no moving parts, and because they require no external steam boiler, costly maintenance is greatly reduced as well. When used with a semi automatic or automatic loading/unloading system, these ovens also require less skilled labor and make it much easier to handle many type of breads.

Here are various types of gas/oil fired, stone hearth deck ovens to consider. While they may appear the same from the outside, each has its own baking characteristics and advantages. **The major differences are how the heat is distributed to the decks and the type of materials that are used in the construction.** Another important difference will be how they generate their steam for the baking process.

1. CICLOTHERMIC

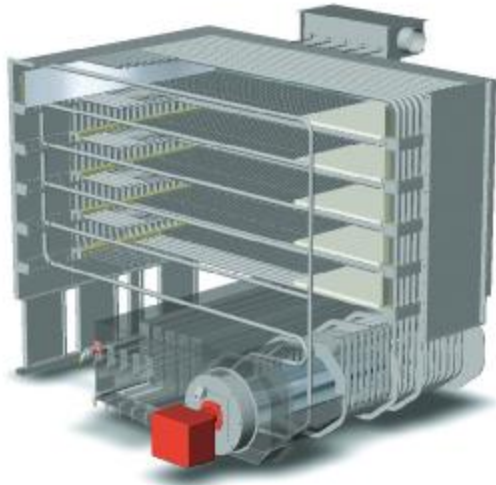


This type of oven circulates hot gasses between and around the decks either through a heat exchanger or directly from the burner. The air is circulated by means of a powerful fan, usually located at the rear of the oven. Other than the baking surface, these ovens are typically all steel construction with mineral wool type insulation. The advantage of the ciclothermic is the ability to change

temperatures rapidly. Also some have the ability to regulate the temperature on the top 1 or 2 decks to a different temperature than the bottom decks to accommodate various products at the same time.

VAPOR TUBE

A Vapor Tube oven circulates its heat through the use of a series of independent tubes, approximately 1 inch in diameter. A small quantity of purified water is placed in each tube which is then welded and sealed tight. Each tube, stacked vertically, surrounds the oven and has cross-pipes running between the decks. The water inside the tubes is heated by the burner section until the water inside boils and turns to steam. At that point the steam circulates through the pipes, radiating its heat as it goes, eventually turning back into water and returning to the bottom section where the entire process begins again. Because these ovens utilize no moving parts or fans to distribute the heat, they are noted for their evenness of baking from deck to deck and from side to side. They also provide excellent baking quality since the tubes remain hot and are not subject to the start and stop of the airflow like the Ciclothermic. The three most common versions of this oven are:

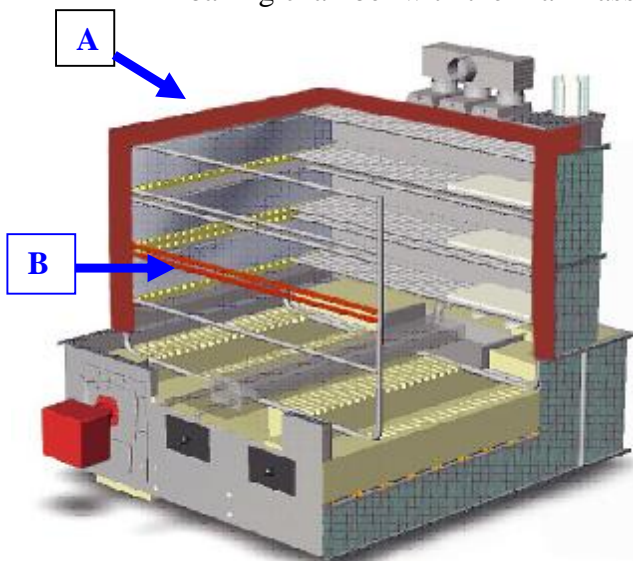


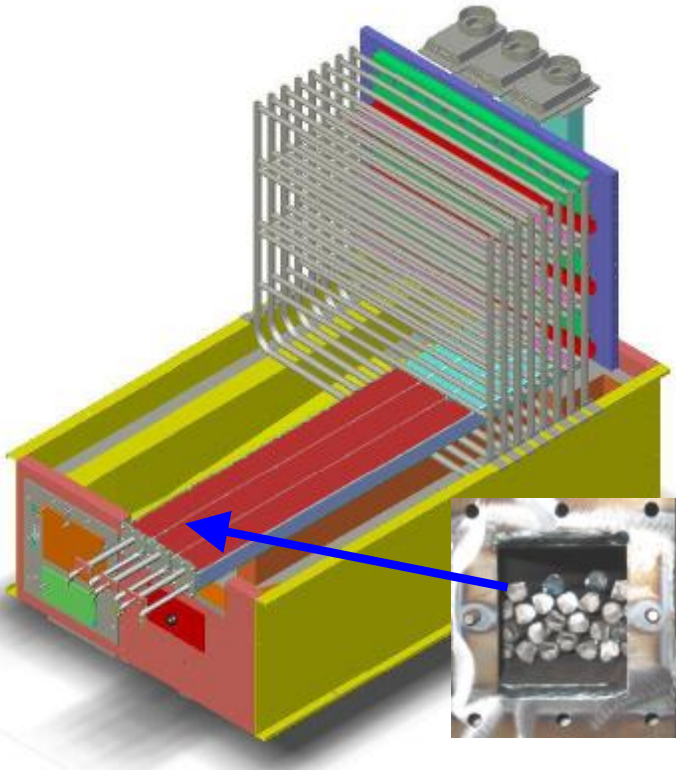
A: All Steel “Ring Tube” models: These ovens utilize vapor tubes that wrap around an all steel heat exchanger. They are the easiest to install and move, and allow change of temperature more quickly than other designs. As flexibility becomes more of a factor in the baking industry, these models are becoming more popular. Locating the steam generators in the base, (the hottest part) of the oven assures they will recover rapidly allowing a consistent supply of steam to the baking chamber.

B: Cement Lined Vapor Tube Ovens: For the ultimate in “brick oven baking” and maximum fuel efficiency, many bakers prefer models with cement-lined walls and roof panels. (A) Filling the walls and roof panels with cement (and thereby surrounding the entire baking chamber with thermal mass) retains the greatest amount of heat. This greatly increases

fuel efficiency and is preferable for baking large or heavy breads and for heavy production schedules. (This is the same principal that makes a brick oven bake so well). In addition, this style oven utilizes two pipes running between each deck (B); one for the top of the deck below and one for the bottom of the deck above

The additional cement in these models provides the ability to store a greater amount of heat and therefore do not depend on the burner to immediately supply the heat needed. This gives a baking characteristic, similar to a traditional brick oven. In addition, there is always sufficient heat retained to properly reheat the steam generators between bake cycles. Most bakers, that wish to closely simulate an actual brick oven, prefer the cement and brick design.





Baking Steam (steam in the baking chamber for color and crust)

is usually generated from the same heat source as the baking heat, the burner. The major difference in deck ovens will be where the steam generating units are located and their ability to produce consistent steam in rapid cycles to accommodate the constant loading of the oven in high production situations. The best application is to have heavy duty steel boxes filled with a heat retaining material, such as construction grade steel bars (rebar) directly in the hottest part of the heat production system. In a vapor tube oven this will be under the bottom deck. As an alternative, some manufacturers place troughs on the side of each deck, but it is generally thought that in mid to large size ovens this is not as effective and does not have the ability to “recover” quickly enough bake after bake. Some ovens offer dual generators for each deck in order to compensate for a lack of heat retention.

In any system, it is important that the steam system be accessible for cleaning and occasional decalcifying, if necessary.

When deciding on a deck oven, it is important to keep your goals and requirements in mind. Will you need to vary temperature frequently? Will you be baking load after load and require higher heat retention or is flexibility in temperature more critical to your operation? Taking these and other factors into consideration before you buy will save you money and assure your long term satisfaction.

No matter what type of deck oven you choose for your hearth products, it will provide you with superior bake quality and tremendous fuel savings over other types of ovens, and your best bet will be to consult with a knowledgeable and qualified supplier who can help you evaluate your needs and recommend the appropriate oven.

**For more information on any of these types of ovens, contact
EMPIRE BAKERY EQUIPMENT
800-878-4070 info@empirebake.com
www.empirebake.com**