The Ibex Long-Life Muffle with Radiance Ring™

The muffle is the heart of any porcelain oven. It determines how the heat will be distributed within the chamber area and how your porcelain will be fired. Conventional wisdom would have us believe that the Quartz Muffle, wherein the heating element is surrounded by a quartz tube, provides vastly superior firing results over muffles where the heating element is set into refractory material or mounted to a ceramic ring. It is my belief that the superior results purported by manufacturers of quartz muffles are more a function of superior salesmanship and marketing skills than any inherent firing superiority over the open wire muffle. (For more detailed information regarding this argument please read my article "The Myth of Quartz.") The Ibex Long Life Muffle with Radiance Ring™ takes a major leap forward in muffle design. The Ibex muffle achieves in the clear visual results of your porcelain what other oven manufacturers claim to provide you in their sales pitches and clever marketing campaigns, but ultimately fail to deliver.

The Ibex Long Life Muffle with Radiance Ring™ is far superior to anything else on the market. It provides unparalleled consistency of even firings regardless of where on the tray the work has been placed, firing after firing. Combine the ability of this muffle with today's cutting edge electronics, and you have the Ibex Summit Porcelain Furnace. What makes the Ibex Long Life Muffle with Radiance Ring™ far superior to every other design?

There are two aspects in the construction of the Ibex Long Life Muffle that makes it superior, with the construction of the muffle itself setting the stage. The refractory material used in the heating element is unique in that while rigid in form, it has the ability to expand and contract over and over without producing cracks, assuring that the heating element will remain in its proper place over thousands of hours of operation. The muffle uses the highest quality heating element made by one of the leading manufacturers of heating elements. It is set in a coil form that provides accurate placement of the coils to within .020"(1/50 of an inch). Combined, these features produce an open wire muffle that has an even radiance pattern relative to each individual coil turn in the muffle. It is as even a pattern of energy as what any new quartz muffle is capable of producing. In other words, the radiant energy emitting from each coil turn is very even.

However, as with all muffles, open wire or quartz, it is the gaps between the coil turns and the relative position of the gaps with respect to the work being fired that create uneven radiance patterns. It does not matter if the coil is wrapped by a quartz tube or not, the gaps will emit non-uniform patterns of radiant energy. It is this non-uniform emission of radiant energy that causes the hot and cold spots in a porcelain furnace.

The second feature of the muffle, the Radiance Ring™, addresses the problem of uneven radiant energy. The ring is made from a special high-temperature resistant metal, and is precisely situated next to the heating coils, allowing its outer face to absorb the coils' radiant energy. Through the metal's relatively low thermal transfer coefficient, the energy distributes itself evenly over the entire ring and finally is re-emitted, or radiated, through the inner surface of the ring, hence the term "Radiance Ring". The reemitted energy is now a smooth, homogenous band that is even throughout the entire surface. This homogenous band of energy now bathes the porcelain evenly from all directions. From a single crown to ten crowns to an eight unit bridge, the energy is even throughout, no matter where work is placed on the platform.

You will see the difference in work fired in the Ibex Summit on your first firing. To verify what you have just read, Ibex Dental Technologies has created a simple test, called the Ibex Star test. The purpose of the Ibex Star test is to show how uniformly your current furnace is capable of firing in various areas of the tray, how the radiant energy emitted from your muffle treats the porcelain and how these results compare to the Ibex Summit.

To conduct the Ibex Star test you will need to make a set of test tabs. Making five test tabs per set would be the minimum number to use; however, more tabs, up to 21 - 25 per set, will produce a far more convincing test. Place the tabs in a star pattern on a honeycomb tray and fire them. Compare the depth, translucency and color fidelity from tab to tab. Are they even throughout? Compare the tabs you fired to the tab sets on the Ibex web site. Again, compare the depth, translucency and color fidelity from tab to tab. Are they even throughout? Notice that the Ibex fired tabs are uniform in all areas, regardless of their position (they were all fired at the same time and in the same positions as shown). The Ibex Star test stands up to digital scrutiny and shows conclusively the far superior firing ability of the Ibex Summit Porcelain Furnace over competing porcelain furnaces within its price range.