

## Q&A /// INTERVIEW WITH AN INDUSTRY INSIDER



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***“All of our XLE furnaces come with many options so they can be used for multiple different applications.”***

### **What makes the L&L model XLE214 floor standing box furnace ideal for the aerospace industry?**

L&L Special Furnace has grown to establish a major presence in the aerospace industry, and L&L has the ability to provide required uniformity for critical aerospace processes. Most aerospace specifications are written around a temperature uniformity specification along with strict thermal guidelines, and L&L prides itself in having high uniformity box furnaces. So, basically, what makes our furnaces ideal for the aerospace industry is temperature control and uniformity.

We used nickel chrome elements in this furnace just to help with the outgassing byproduct of this process. These elements are more resistive to many contaminants.

Then, we put heat shields on the case so the outside case temperature remains safe to touch. The furnace is sealed from inside out for use with inert atmospheres. What that does is displace all the oxygen that's within the furnace by using an inert gas, such as nitrogen. The nitrogen pushes all the oxygen out of the chamber. It gives us a better oxygen-free environment, thus giving better strength to the part and the coating, because there's less oxygen impregnation into the parts.

Oxygen basically equals weakness in that type of process. A manual inert flow panel controls the gas flow into the chamber.

### **How is the XLE214's curing and bonding process beneficial to aerospace parts?**

It provides durability. It's more of a strengthening process for when there's friction between the parts. The bond goes on the metal to provide extra strength in parts that require it, and the advantage of putting a ceramic coating on a metal part is it provides abrasion resistance.

Basically, parts see fatigue over time, and this coating helps prolong the life of the part. So, they take an assembly, and coat it with proprietary ceramics. It provides overall strength to the whole assembly, especially where any wear or friction could be occurring.

Companies can use the furnace for curing and bonding a ceramic coating to steel bodies. The XLE214 furnace can provide extra-strength areas to parts that are subject to various heats and stresses under normal operating conditions.

### **Could you describe the XLE214's effective work zone?**

The effective work zone is the area within the furnace where we will have the uniformity specified. In other words, we specify a work zone and then the required uniformity in the work zone. The XLE214's effective work zone is 22 inches wide by 16 inches high by 20 inches deep. These dimensions are slightly smaller than the actual inside of the chamber. What that allows us to do is to move the work zone

around a few inches if needed to get the ultimate effective work zone.

### **Is that something unique to this model furnace?**

Each model furnace has a unique effective work zone. That's what makes the XLE series so versatile; L&L manufactures models from as small as 2 cubic feet up to 72 cubic feet.

### **How does the Eurotherm program control work with the furnace?**

The program control contains 10 individual programs with 24 segments. There are also outputs from the program control that would turn the Venturi evacuation system on and off as needed through the cycle. The Venturi system basically removes any outgassing that's occurring from the parts and has a motor control to adjust the speed at which the effluents are removed.

### **Can the XLE214 be tailored to specific thermal needs?**

Yes. All of our XLE furnaces come with many options so they can be used for multiple different applications. The XLE is L&L's most popular model series, and is the most versatile of all our furnaces, that's for sure, as far as options that can be incorporated and processes that can be used in conjunction with various options to meet specific process needs.

### **Does L&L offer other furnaces equipped with pyrometry packages?**

Yes. In an effort to keep in line with ASM 2750F, all L&L furnaces can be equipped with pyrometry packages. 📡

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