

Complete Thermal Processing Solutions, Consulting and Technical Services for Producers of Advance Materials Needing Customized Furnace, Kiln and Oven Systems



Thomas Kittell
CEO
Harper International

CEOCFO: Mr. Kittell, what is Harper International?

Mr. Kittell: Harper International is a small but extremely technical company of about 100 employees located in Buffalo, New York. We specialize in thermal processing systems (furnaces, ovens and kilns) for researching and manufacturing advanced materials. We help customers take ideas for new materials, refine and improve the thermal processing steps, and then custom engineer equipment for producing it.

CEOCFO: What does the process consist of? What equipment do you customize?

Mr. Kittell: Our largest business segment is the engineering of systems for carbon fiber production. Carbon fiber is used in everything from golf clubs to race cars to airplanes. Its high strength and lightweight are driving it into more widespread consumer applications like everyday cars. Carbon fiber starts its life as a filament very similar to an acrylic fiber. Each manufacturer has its own particular blend – it's their secret sauce. The fibers are run through a series of progressively hotter ovens and furnaces, and at the end of the line, you have a thin fiber- a very tightly knit, interlocked chain of almost pure carbon. A production line includes multiple ovens, each about the size of a two-story house, several furnaces, and other material tensioning, treatment and winding equipment. A production line would be about 1000 feet in length. Carbon fiber, in addition to being strong and light -weight, is very flexible. They weave and then form it with resins into virtually any shape imaginable. With increased use of carbon fiber in mainstream applications, companies are constantly trying to reduce the cost and improve the properties. Our expertise is innovating complete, integrated production lines for each customer's specific needs. In addition to carbon fiber, we make specialized furnaces for a whole world of other advanced materials from ceramic powders to metal oxides to nuclear fuels. The word "furnace" may lead you to believe that we just heat stuff up when really our world is chemistry. Our systems affect materials on a molecular level. In the strictest sense of the word, we make chemical reactors.

CEOCFO: When a customer comes to you, are they counting on you to tell them what they need? Do they supply their own materials or ask you what materials should be used to get the ideal product? What are the terms of the engagement?

Mr. Kittell: Typically, a customer would come to us with some kind of material that they are developing. It could be a small startup, a government research lab, or even multinational corporation. They might have only a thimbleful of this new and improved material. Their end goal is large-scale production, possibly tons per day, and they need an optimized system that will be capable of producing it. What we will do is match their needs with our internal experts. We have half a dozen PhDs and dozens of engineers - people with decades of practical experience making all kinds and types of materials. The customer has already figured out the basic process, so we will help prove out their concept in our lab. Then we help them scale it up, de-risk it, and make it commercially viable. We work with their engineers, sometimes through multiple rounds of testing, to provide a system that meets their needs, and in the best-case scenario significantly improves their process as well.

CEOCFO: Does the company contract with you before you go through the development process?

Mr. Kittell: We have a sales engineer at the front end of our process that has been in thermal processing virtually all of his life. Besides being completely charming, he is very good at figuring out what they are trying to do and if there is a match with Harper's capabilities. He powers through hundreds of leads each year, and about 10% of the customers that we talk to on the front end are a good match with us.

CEOCFO: *How are potential clients finding Harper?*

Mr. Kittell: I would say reputation, whether it is through referrals or past customers who know Harper and the value we bring. A close second would be web searches. We just signed a deal for a system with ANSTO (Australian Nuclear Science and Technology Organisation). They found us on the internet years ago and then through other channels learned of our reputation. They manufacture a synthetic rock material used for the disposal of nuclear waste. The nuclear material is literally chemically bound within this rock. Unlike containers, it can't leach out or leak from cracks. So we had discussions with them back then to understand what they were trying to do, and at the time, did not think we were a good match for the type of equipment they were looking for. Fast forward a couple years. They are further along in their development process and have come back to us. After working with them for several months, we are now under contract to provide them a custom engineered, horizontal, rotary furnace.

CEOCFO: *Do you work directly with international customers? Do you work through distributors and partners around the world?*

Mr. Kittell: It is a combination of strategies. Many customers have dealt with us for decades so we already have a lot of direct relationships. We also have representatives in many foreign countries, including India, Turkey, Russia, Korea, Taiwan, Germany and Poland to name a few. Harper even has an office in Beijing, China. We are also at many domestic and international trade shows where we can establish direct relationships.

"I see all of the technical things that this company does and it's such a small organization with such brilliant people. I am excited to be a part of that." - Thomas Kittell

CEOCFO: *What are the challenges in transporting such large pieces of equipment?*

Mr. Kittell: It's not really that difficult. We engineer systems from the start so that they fit in standard, shipping containers. The two-story house sized ovens, for instance, are made in a modular fashion. They are disassembled only as far as they need to be, so when they arrive on the customer's site, they can be reassembled and put into production as quickly as possible.

CEOCFO: *How do you oversee projects that are so far away?*

Mr. Kittell: We have a great group of people who volunteer to fly all over the world and live for a couple of weeks or even months to supervise the installation. During the design and manufacturing phases, we work with our customers to develop a commissioning plan. This guides them as they select welders, riggers and electricians who will work under our supervision during the installation and start up. In addition, we have a strong operations and engineering team that provides our field crews with around the clock technical and logistics support.

CEOCFO: *What needs to be in place on the customers end?*

Mr. Kittell: The physical site needs to be ready. It is not uncommon that the customer is building a brand new facility to put their production line in, and sometimes we will get there and construction is not complete - the floor is not poured or foundations are not leveled. Depending on where it is, we might have our international representatives go check it out in advance and make sure it's ready. One thing we need is to ensure that they have riggers available to move the containers or equipment, as well as overhead cranes in their facility. These are just some of the logistical challenges we have to work around. We had a customer not too long ago that was looking for a replacement furnace in their production plant. We had to design it so that the sections would be small enough to get through the existing aisles in the facility. The alternative would have been to remove part of the roof and lower it in to place.

CEOCFO: *How is business now?*

Mr. Kittell: We are doing well. We are coming out of a very strong 2015, and 2016 is also shaping up nicely. We have a good backlog. We have a number of good inquiries coming in. We keep tabs on market dynamics and economics to stay informed and ready. In the world of carbon fiber for instance, there are so few manufactures that if someone is expanding, everybody in the industry knows that it is going to happen. Plenty of good future expansions are soon to come. We are looking forward to that.

CEOCFO: *Is it easy to find people with the knowledge? Is it difficult to attract people to the industry or to Harper?*

Mr. Kittell: Attracting people to Buffalo might be the hardest part if we can't find local talent, and ours is such a unique industry that it's tough to find people with relevant experience. Usually what we look for is pretty much what everybody looks for, smart, self-starting people who can learn fast. Then we teach them.

CEOCFO: *Would you explain your enthusiasm for what Harper has accomplished? It shines through!*

Mr. Kittell: Harper is such a unique, highly technical business that it never ceases to fascinate me. I had driven by this place hundreds of times and I never even knew it existed. Then when I walked in the door and learned that I have probably flown on aircraft made with carbon fiber that was produced in Harper furnaces, it just amazed me. Right here in Buffalo! I see all of the technical things that this company does and it's such a small organization with such brilliant people. I am excited to be a part of that. Also, shortly after I started, Harper became employee-owned. There are not many ESOP (Employee Stock Ownership Plan) companies in the U.S. which also makes us unique. Now that we are a few years into it, people are starting to get fully vested, and we are seeing a decided shift from "I go to this company for a paycheck" to "I am an invested owner". There is a cultural aspect to all of that which I find very attractive. Our diverse group of employees is a lot of fun to work with too.

CEOCFO: *Why choose Harper International?*

Mr. Kittell: When I look at the value proposition to our customers, we sometimes kid that we are the little company that can. I have seen our folks go toe to toe with materials scientists from some of the biggest companies on the planet. We have many people who are very passionate about innovation and designing something that no one else would touch. They like to innovate on their own time, and love to do it for customers. Companies will come to us after striking out with our competitors or after they have tried a home-built system and can't get it to work. We will work with them to find a better way to run the process and more effective equipment to do it with. Once our customers buy Harper equipment we partner with them for decades.

Interview conducted by: Lynn Fosse, Senior Editor, CEOCFO Magazine



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