Wisconsin Oven Corporation

By offering standard and custom-designed ovens to a wide spectrum of industries around the globe, Wisconsin Oven Corporation is a world-class supplier of thermal processing equipment.

By Kenneth Carter

MOST ORDINARY PEOPLE MAY NEVER REALIZE THE IMPACT Wisconsin Oven has on every aspect of their daily lives.

But from the time they pull themselves out of bed in the morning to the time they climb back into it at night, Wisconsin Oven probably has had a hand in almost everything they come in contact with.

Wisconsin Oven, owned by Thermal Product Solutions, was formed in 1973. It is a leading manufacturer of custom industrial ovens used for heat treating, finishing, drying, curing, heat treatment, and many others.

"We like to say you're never more than 10 feet away from something processed in a Wisconsin Oven," said Mike Grande, sales manager and senior application engineer for Wisconsin Oven Corporation.

But almost everything? Hyperbole, right?

Well, maybe not.

"You're lying on your mattress before you even get out of bed; we've supplied ovens to process millions of mattress springs," Grande said. "Every single fully assembled box spring and mattress before the cloth gets put on is tempered at 450 degrees for between 4 and 12 minutes. That gives the spring its springiness."

But that's just the start.

"You go get your clothes on, and in your closet, you grab a pair of pants, and if you wear non-wrinkle pants, the way that's done, it's processed in an oven," Grande said. "They take the fabric, and they embed a certain proprietary chemical in it. It's heated up, and it sets the fabric, so it's more resistant to wrinkles."

And that doorknob you twist to leave the house? It ended up in an oven, too.

"Doorknobs are usually covered with lacquer or some sort of coating, and those are processed in ovens," Grande said. "There's been millions of them processed through Wisconsin Ovens."

HUNDREDS OF USES

The hoses and pistons in a car engine. The interior of the car itself. Office ceiling tiles. Refrigerators. Washing machines. The list goes on. Hundreds of everyday items have seen the inside of a Wisconsin Oven product.

Wisconsin Oven, located in East Troy, Wisconsin, offers a variety of standard ovens that are pre-engineered, but it also has the ability to custom-design ovens for any application, according to Grande.

Its ovens are mostly electric or gas heated, but alternatives such as steam or oil are also available. The ambient temperatures possible with an oven range from about 100 degrees to 1,400 degrees Fahrenheit.

An oven's size can vary as well.

"Hundred-feet-plus long is not unusual as far as the longest dimension you might see," Grande said. "And the smaller ones are maybe as large as your refrigerator at home."

Many of the standard ovens offered by Wisconsin Oven are of the walk-in batch design.

"We sell a high volume of them," Grande said. "It's amazing how many people buy those things."

But when there's not a predesigned oven that can get the job done, Wisconsin Oven will design and construct one that will.

CUSTOM MADE

"We did one for a company that makes tanker trucks," Grande said. "After they weld all that steel to make the tank, they have to temper it, so it doesn't crack over time. The oven itself was 50 feet long to handle a 40-foot load, and it had a huge top load — kind of like a coffin — with a hinged top door. And the whole thing opens up, and they lower this tanker truck tank into the oven, close it up, and run it up to 1,200 degrees."

The oven ended up with a heating chamber 50 feet long, 13 feet wide, and 12 feet high.

"It took 40 weeks — close to a year — to design and build," he said. "And we had to achieve ±10 degrees Fahrenheit temperature uniformity."

Customers often require a tight temperature range in an oven. The tanker oven went through a lot of testing

and a lot of adjusting, according to Grande. The oven had to be certified at 40 points. In order to achieve that, thermocouple probes had to be installed at every 5-foot interval in the oven to verify the temperature stayed between 1,190 degrees and 1,210 degrees Fahrenheit.

"Uniformity is very important," Grande said. "That's what everyone wants — the aerospace, the automotive, the composite people, the wind-power people."

A recent oven designed and created for wind-turbine blades actually achieved a uniformity of ±1 degree Celsius, he said.

"It performed better than they expected," Grande said. "That's the kind of things that people are demanding these days, so we try to accommodate them."

OEM ROOTS

Wisconsin Oven's desire to offer the perfect product goes back to the company's roots where it initially served as an OEM manufacturer.

"We built ovens for other companies with their nameplate, and that was the core of our business for many years," Grande said.

As the years passed, Grande said people would see their ovens in the field with its customers' nameplates on them, and they would discover they were manufactured by Wisconsin Oven.

"We had set high standards, and we had to put good quality processes in place and have quality people, and that really got us off to a good start in the industry," he said.

And now, even the sky isn't a limit to Wisconsin Oven and its products.

AEROSPACE APPLICATIONS

"On the really exciting side, the composite manufacturers, the people who make rockets and aircraft, are really big into curing using ovens," Grande said. "So we manufacture some of the largest ovens in the world that are used for rocket parts."

A 40-foot rocket body with a 5-foot diameter has to be rolled into an oven. Those rockets use the latest technology in composite materials such as carbon fiber or Kevlar.

"Our customers are household names in the field of private space exploration," Grande said.

Those companies invest a lot of money into their products, and, because the parts such as rocket bodies are so expensive to make, they expect to reuse them. So the oven they commission from Wisconsin Oven need to perform flawlessly.

As an example, a part going into a huge oven larger than a building may cost $200,000, according to Grande.

"They spare no expense in making the oven top quality in every possible way to make sure they won't have a failure while they're processing their load, or it'll cost them $200,000," he said.

ADVANCED SYSTEMS

In making sure it is able to offer its customers the latest technological advances,

Wisconsin Oven is constantly updating and advancing its products.

A lot of that advancement is evident in the control systems that run the ovens.

"That's where the technology is getting more advanced," Grande said. "Our clients want more and more sophisticated controls. In the old days, it was kind of considered a new thing where a manufacturing engineer could sit at his desk and check the temperatures on his ovens and make sure they're operating properly from his PC. That's routine now."

Now, an oven's control system is connected by Ethernet to a company's network, according to Grande.

"It allows them to keep an eye on things, and if there's an alarm of some sort or if there's a failure or if something stops, they can get a message or an error signal sent directly to their computers, so they're not down for a long time," he said. "It's pretty common to have messages texted or emailed to the engineer, also."

And, of course, there's an app for that, too.

"The latest thing is there are apps where you can use your smartphone and monitor what's going on that way," Grande said.

Precision equipment and service has helped make a name for Wisconsin Oven in industries that include automotive, aerospace, building construction, plastics, medical, home appliances, weaponry, and military use.

ENERGY SECTOR

Wisconsin Oven products also are used in the oil and gas industry where coatings on the inside of oil pipes are cured to prevent corrosion and shipped all over the world.

The wind-energy industry also has a growing need for Wisconsin Oven.

"They use a lot of ovens to cure the wind-turbine components, heat treat the gearsets, and cure the blades," Grande said. "Last year, we sold 20 ovens for that industry."

Overall, Wisconsin Oven might ship more than 200 ovens a year of varying sizes, he said.

Much of that success is highlighted by a five-year warranty on its standard ovens, the longest in the business, according to Grande.

"We are able to back the equipment with a five-year warranty, which really blows everyone away," he said. "We found we don't lose money on it. Our ovens easily last a lot longer than five years. And it's very much appreciated by our customers. It allows us to impress upon them that we'll always be there for them."

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