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### **What do you do at Honeywell?**

I’m part of Honeywell Thermal Solutions. We’re a group of companies that Honeywell has acquired over the last couple of decades that included some larger companies in the industrial combustion arena such as Maxon Corporation of Muncie, Indiana; Eclipse Combustion that was based in Rockford, Illinois; Kromschroder out of Lotte, Germany; and Hauck Manufacturing that was out of Pennsylvania. As Honeywell Thermal Solutions, we supply safe, efficient, and sustainable thermal solutions for industrial applications. Just about any industrial process that needs heat, that’s where we fit.

My role at Honeywell Thermal Solutions is applications engineering manager. I tell people that my job is to keep the company out of trouble. My group advises our sales engineers, engineering group, as well as our customers on the application, design, and control of thermal systems to achieve the required goals. We supply a hundred different type burners for a lot of different applications from high to low temperature.

### **There’s been an industry-wide drive to lower carbon emissions.**

#### **What is Honeywell doing to contribute to that goal?**

We are doing a lot, actually, and this is in many different divisions of Honeywell as well. From a Honeywell Thermal Solution side of it, we’re looking at how our burners can utilize alternate fuels like hydrogen and other alternate fuels that don’t have any or as much carbon as say natural gas or oil to reduce CO<sub>2</sub> from the combustion process. We offer products, burners, and systems to fire more efficiently, so they reduce the amount of fuel use that’s not only reducing the customer’s fuel bill, but it’s reducing the carbon going out the stacks.

From an overall organization, there are divisions of Honeywell involved in the development of catalyst systems to drive down the cost to produce green hydrogen as well as carbon-capture technologies and even low carbon sustainable aviation fuels. Honeywell has a commitment to be carbon neutral by 2035, as have many large companies.

### **How can you reduce pollutants without sacrificing quality and performance?**

There is a variety of ways to reduce emissions in thermal processes from burner design, burner control, fuel choice, and overall system design. Depending on the temperature of the process, there are different burner techniques and technologies to reduce emissions like NO<sub>x</sub> that not only reduce emissions but maintain or even enhance performance. NO<sub>x</sub> reduction has been one of the biggest focuses of a lot of industry for a long time, and it’s getting stricter all over the world. Some of the techniques that are used there are high temp such as staging technologies as well as flameless, where with lower temperature, we can use premix and excess air to reduce those emissions.

Certainly, carbon reduction or neutrality is the focus of almost every industry today. The reduction of CO<sub>2</sub> is only done by reducing the consumption of carbon-based fuels or carbon capture and sequestration. Whatever we can do to reduce that ensures we’re running the system more efficiently. We’re using less fuel. That happens with self-recuperative burners or using waste heat to preheat the combustion air via heat exchangers to the combustion system. You don’t take as much energy to raise the product’s combustion up from cold air to the process temperature. That’s less energy required, so less fuel used, less emissions coming out on both NO<sub>x</sub> on a pounds per hour as well as your CO<sub>2</sub>. You can also fire the burners in different control methods that can be more efficient, even if you’re using a different fuel.

### **What innovations has Honeywell developed to help deal with this challenge?**

It’s looking at total emissions, where Honeywell has developed innovations to help with the emissions with more advanced self-recuperative type burners and controls. These are smaller, multiple burners on, say, heat-treat furnaces that preheat the combustion air in a nice package so you don’t have to deal with hot air piping and maintenance.

Different designs are getting us lower NO<sub>x</sub>, but also during the development, they are tested with alternate fuels — fuels that are byproducts of different processes — as well as hydrogen, which has, of course, gotten a lot of talk because it is carbon free. But hydrogen is going to just take you just so far depending on availability, which will continue to increase and cause the price to decrease. Other innovations are control technology as well as connectivity. We’ve got devices that can be connected and remotely tuned, but also can remotely monitor the health of a customer’s burner system or their furnace and can alert them to possible issues. What we see in the industry is less and less combustion expertise/experience at the customer/end-user level, so we see it as an opportunity to assist those customers in maximizing their uptime and therefore profits.

### **How has Honeywell been able to help your customers obtain this reduction in pollutants such as NO<sub>x</sub>?**

Really it is working with them to learn their processes and applications. Honeywell Thermal has hundreds of years of combustion knowledge and expertise, and this is an advantage to our customers. We can take a consultative approach to their processes. It’s our job to work with these customers, to know their applications. This is an exciting time in the thermal processing industry and we will continue to develop and innovate to lead the market and deliver to our customers. ♣

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