Transcript from Pollution Engineering podcast with Bob Keibler of Nacah Tech

SARAH HARDING:
Welcome. This is Sarah Harding, publisher of Pollution Engineering. Today I'm speaking with Bob Keibler, President of Nacah Tech, about industrial air pollution control. Nacah Tech is a custom-designed firm providing thermal oxidizers and other air pollution control solutions for difficult applications. Since 1984, Bob has worked in the combustion industry, and combines unique technical expertise with creative problem solving, often partnering with customers and subcontractors from concept through start-up to provide an optimized, workable system. Welcome, Bob.

BOB KEIBLER:
Thank you. It's a pleasure to be here.

SARAH HARDING:
Q: Thank you. Bob, with regulations constantly changing, can your products be adjusted to meet new requirements, or is it just better to replace the equipment?

BOB KEIBLER:
A: It often depends on what the goal of the customer is. We've been involved with many sealed installations and retrofits, whether they were Nacah Tech units or other suppliers' units. We've been asked to upgrade them, depending on whether they need to meet new emission regulations, like you said, but oftentimes, they just want to upgrade based on their operating changes. So if they are going to make some process changes, then they probably are looking at possibly replacing equipment. But it all depends on whether the existing unit is actually going to fit what they are intending to do. Some things will need to determine if the equipment needs to be replaced or not is also whether there is a major return on efficiency. If they do want to improve their efficiency, then there are things that we can look at. They may want to consider heat exchangers or waste heat boiler additions and things like that if it's a sustainability issue. Sometimes on efficiency it is important to review some outdated pieces of equipment. One application I was hired by as more of a consultant rather than a equipment supplier, I went to visit several plants of a refractory supplier. Many of their plants had kilns and combustion equipment throughout their plants and all over the U.S. I was hired really to take a look at their existing equipment to see what kind of upgrades can be done. I don't think they intended to replace all their kilns (their kilns might be hundreds of feet long) but they can be upgraded, and as it turned out, I had several recommendations to the Vice President for Engineering and Operations for every plant that I visited. Sometimes it could be to upgrade the thermal oxidizer; sometimes it could be to reduce the excess oxygen in the system. If it is an operating change that they're trying to look at, then maybe it's just how we can meet the emissions with their operating changes. Or if it's fuel efficiency that they're looking at, trying to be more sustainable, then we can look and see how we can best upgrade the existing pieces of equipment. And on those cases where I did go out and see these kilns, I made a couple of recommendations, one of which was at one of their plants with their maintenance engineer whom they had hired. I often looked at these kilns, and when I went in there and I saw a few things, I made a recommendation: "Whoa, boy, you have a leaky flange here, and your combustion air is not getting to your burner which is shown by the length of the lazy flame." And of course, he being there most every week, thought that couldn't be the case, but when we actually looked at it and he grabbed a handful of dust, threw it in the fan, the fan ducting went to the burner, but before it got to the burner, all the dust and dirt came out the openings that I had seen. So, he was a little doubtful, but it turned out that yes, he realized that he was going to have to take some steps to improve his current operation

through the maintenance of some of the existing ductwork. So whether it is changes that are due to regulations or it's just efficiency, oftentimes it can be addressed with the existing equipment. We usually have to go out and look at it, but we can take some measures or stop and see what can be done and then go through kind-of a list of items that we would usually think are the reasons for combustion not being as efficient as possible, so we can determine whether they need a new system or go with some kind of replacement or upgrades like the items mentioned – oxygen analyzer or ducting or new burners, or…

SARAH HARDING:

Q: Why is it important to have a relationship with a supplier, and what does that mean?

BOB KEIBLER:

A: Well, it's of utmost importance to have a relationship with suppliers, because it helps both our partners, which are our suppliers, and also in turn, helps our customers. When we get a request for a quotation, we review it and then we look at, OK, what are we going to do to help this customer on this application? And usually that entails consulting or conferring with some of our suppliers. They could be a burner company. For instance, we had a recent application that had a low BTU gas. And we had to determine whether this low BTU gas can be fired through a burner, or do we need to put it in a thermal oxidizer through its own open plenum. So we talked with our supplier, or in this case burner manufacturer or their agents or reps, and determined whether we should design a burner specifically for this low BTU gas, or do they have a burner that can help us out in this regard? So sometimes it's a matter of OK, how are we going to best tackle the problem that we have? And with a good relationship with these suppliers, then we can be sure to come up with the best solution. Sometimes it could be a design that turns out to be most efficient for the operating parameters. So once the customer gives us their parameters, then we can determine with our suppliers how best to approach the problem. One of those applications was with a low NO_X and low CO requirement too, and it drove us to maybe, oh, say, I don't know, 20 suppliers for a particular burner, because the low NO_X and the low CO combination was really difficult to meet, but we kept coming back to one of our original first reps that we had approached because we had been working well with them. And we finally both got online with a burner manufacturer that he reps and came up with the solution and proposed it to them to use flue gas recirc to meet both the NO_X and the CO. Then in that case, the burner manufacturer ended up actually agreeing. So through that good relationship we had, we now have a solution for that client, so it's helping both the supplier, us and the supplier who is able to get the order. We have a solution to offer to the client, and in turn we got the purchase order for that difficult application. And we like those difficult applications. I was reminded by that question of a book that I had read, Beyond World Class. It's a book emphasizing how important relationships are to a business. The manufacturing and engineering business, in particular, is what we're in, and it does espouse the need to have good relationships. If you have good relationships with your customers you'll be keeping your customers, you'll be sustaining your suppliers, keeping them in business. Also, we have a good way of, if we're keeping everybody happy, keeping our company employees in business and happy as well. So relationships with those suppliers it's building companies, it builds character, has relationships, and in turn, those relationships are profitable. They turn a profit for everyone.

SARAH HARDING:

Q: What is the first step after meeting with a client in designing an air pollution treatment system?

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BOB KEIBLER:

A: Well, the first step is we really need to have the answers that we're looking to design around. We have a questionnaire that we usually send out to customers, and that questionnaire has most of the important questions that we need to know to begin that first step. When we have those answers, we can determine what the priorities are for the customer. Usually it's emissions. Coming from an engineering background, I'm thinking immediately what the technical challenges are in each application. So I usually try and jump right to the emissions. But in a recent application, it was obvious when we had met with the customer, that this mega semi-conductor company had safety as their first priority. So we had to make sure that our shops were in compliance with all their safety requirements. Being that we subcontract and we have relationships with fabricators, we had to choose carefully which shop that we knew that would be able to meet this customer's priorities. So it's a matter of OK, where are the customer concerns? Also in that case, they made it evident that the thoroughness and their engineering review team was going to take a lot of our time. And so we recognized that and again we drew in some of our partners. So we partnered with an engineering firm to put the customer at ease that this large company was going to be dealing with a smaller company (Nacah Tech), but we have all the capabilities of any company they need to build a thermal oxidizer. This is a two-way street. We now have an engineering firm that we're going to have helping us. Turned out that the engineering company also became familiar with Nacah Tech and has since asked us to help them build thermal oxidizers or supply thermal oxidizers for one of their customers. So this is a two-way street. We're talking about what we need to do first after the meeting. We have lots of options, but we're really trying to determine through constant close contact with the customer, what that new project priority is, and then after that, usually it's a technical issue with us or with me, but it could be some other issues. I usually think, OK, now that we have close contact with the customer which is what I try to hold as a priority, that we need to determine the layout. There was a job in West Virginia we completed and started up last year, that it was important that we get the right design to do the proper heat recovery. Heat recovery was their priority and was going to help the plant be most efficient. So we needed to determine whether, OK, should we use spoilers, should we use heat exchangers to recover some of the heat? What should we do? We ended up using a hot oil. So we provided them hot oil that they in turn could make steam with, or they could heat their asphalt or holding tanks – their flux tanks. So that was a very important item, once we started the initial design, that we were in close contact with them to make sure that our design was modified to meet the plant's requirements. That way we don't get too far away from their priorities. One other thing on that project: we started that project probably at least six months before we ever got an order to build equipment, because we were helping them with their permit on their air side, and once we got the air side taken care of, we realized that they may have some chlorine in their catalysts, so we had to come up with some answers for them to tell the municipalities on the water consumption and what kind of discharge they might have. So that first step is very important, but we like to keep in close contact with the customer to make sure that we're both aware of what the process is going to be and what kind of arrangements they need to account for, as far as what kind of steam they're going to get or what kind of discharge water or air regulations they're going to meet. The first step for me is usually to run the calculations. Like I said, for a technical person, it is to run calculations to see how we're going to handle that process. And then if it is a let's say a lean stream with lots of high flow, it's going to be handled one way. If it's a rich stream, lots of heating value in that stream, we're going to handle it perhaps through a burner or a different way. There is an article that I've written on different types of thermal oxidizers and carbon systems, and which ones apply to different applications. And that is usually the first step – we take what the customer's priorities are and then go into that first

step of calculations that would tell us, based on the process, how to start the design of the system to meet the customer's requirements.

SARAH HARDING:

Q: Tell me about, how can a customer be assured that a Nacah Tech design is sufficient to meet the permit requirements?

BOB KEIBLER:

A: Mainly, it is Nacah Tech's experience – like you said, I've been in the business since 1984 – and we've had guarantees, and we've never have failed to make a guarantee. We will, based on that experience, design a system to meet a destruction rate efficiency or emission requirement that the customer needs. Based on the experience that we have, we will come up with a design that meets their request – if they have 95% destruction rate efficiency, or 99.99% destruction efficiency – based on those different DRE requirements, we will have a different thermal oxidizer design. That entails, OK, we need a certain diameter for a thermal oxidizer, or length, or how we introduce the process gas or the waste gas. Should we have refractory for particulate that's going to be in there, so it needs to be hard refractory? You might have erosion, or is there HCL that needs acid resistant refractory? All those things come into play, and those are usually from experience. Also, as we said before, working with suppliers to make sure if we have something that – OK, how are we going to do this – that a supplier is called in or conferred with to give us the right answers. So really, our big advantage is the technology through our experience and working with the suppliers. One of those recent applications that we've had, it required a very complicated design that not only had selective catalytic reduction for low NO_X, but we did SNCR, and it was a thermal oxidizer with liquids, that was getting to be very complicated, so we were concerned about the mixing, so one of the things that we can do is do a computational fluid dynamics analysis. We do a CFD study, and that can also help the customer. If they're really concerned on large jobs, we can do a CFD analysis to show them that, yes, the mixing is going to be good on their design that we have, and that the emissions will be met. So, we have these guarantees. We have always met them through our experience – and the experience is key – but if the customer would like, we can still do CFD analysis to help them understand that yes, it's going to work as we said it's going to work. And like I said, on the past projects, we have successfully met all the guarantees, and that includes Nacah Tech since 2002. This being our 10th year, we have many, many customers that we enjoy working with. We enjoy those relationships with not only the customers, but the suppliers, as you said, and we really enjoy personally working with those customers. So once we do get the job, and of course they're going to be concerned, "Is the permit requirement going to be met?" but by the time we're actually out in the field, we've become friends, and we really want to see that person succeed as much as our own pieces of equipment. So we really work with the clients to make sure that everything that Nacah Tech supplies and has designed is going to meet their permit, so everyone's happy.

SARAH HARDING:

I've been speaking with Bob Keibler, President of Nacah Tech, about industrial air pollution control. Thank you, Bob, for your insight and your time today.

BOB KEIBLER:

You're welcome. Thank you.

SARAH HARDING:

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I'm Sarah Harding, publisher of Pollution Engineering. Thank you for listening.