



CRE Tech Talks

Episode #9: A Systems Approach to Total Building Design & Operations



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Scott: Thank you for that warm introduction. Welcome to this episode of the 2016 CRE Tech Talk Podcast series. Again, I am Scott Sidman from Building Engines, and your host for today.

I'm going to start off by stating that I don't think I'd get much of an argument besides perhaps a place to sit. Comfort and water are probably at the top of the list of essential needs for any occupant of any building. Shut the water off, deliver dirty water, don't provide enough water to keep primary systems operating, and see how long it takes for the phones to start ringing and the revolt to begin in your building.

As providers and consumers of real estate technology, we are collectively just a little preoccupied with the newest shiny toy, the newest shiny tech toy in particular, to think much about this fundamental need and the tremendous pressure on this resource coming from many different directions. And wait for it, the technology behind it all.

Fortunately, we have a terrific guest today to help us with all of that and elevate our understanding of the forces at work and of a concept called the "Systems Approach to Total Building Design and Operations." I'm pleased to welcome to the podcast, and joining us from Chicago, Mark Handzel.

Mark is the Vice President of Product Regulatory Affairs and Director of HVAC Commercial Buildings at Xylem Inc. Welcome, and thanks for joining us on the podcast, Mark.

Mark: Thanks very much, Scott.



Scott: Great to have you with us. We're going to talk about a lot of the things, I think, that are perhaps a little bit different for us in this podcast and unique to our audience and certainly relevant and important, so I'm really excited for the conversation.

But maybe we can get started with just talking about you first and finding out a little bit about your professional background. And as always on the podcast, as we talked about in our preparation for the discussion here, we always like to find out something a little interesting and unique about our guests that you can share with the audience.

Mark: Thanks very much, Scott. Just to give you some background, I'm a degreed engineer. I got my degree in Mechanical Engineering from the University of Illinois. But basically, I'm a sales and marketing professional, so I have a technical background. But really, I focus on helping people solve problems and how do we get products to market that do that for them.

Probably, the most unique experience I've had in my life is I had the opportunity to serve on a U.S. Department of Energy Working Group. It actually shaped and formed some regulation that will impact the pump industry, basically starting in 2019 and going from there on out. So it was a very unique experience for me and something that I'll treasure for the rest of my life.

Scott: That's terrific, so you got a little look at behind the scenes of how policy is made and how things affect our day-to-day lives.

Mark: Exactly. Obviously, we all hear about elections and debates and things like that, but I really got a behind-the-scenes look at how these things are shaped and formed and how Washington operates.

I met with senators and their aides, and congressmen, and just talked to them about issues facing the industry, issues facing building owners, and how they can help shape the future as well. It was quite fascinating.

But probably, one of the things from my background, I'm really unique in the sense that I've been with Bell and Gossett, which is our primary brand for manufacturing products that go into buildings, for 33 years. I am an old dog, I guess you might call me. I think of myself as young, but I've got a lot of background.

Scott: That's great. That's perfect segue into talking about the company. So tell me about Xylem, and give us the background on the company and the products and what you do for the market.

Mark: Xylem is a leading global water technology provider. Basically, what we do is we enable customers to transport, treat, test, and efficiently use water. We're involved in lots of different water related businesses, public utility, for example. We own water and waste water, like how you get water at your home or in your office.

Also, residential and commercial buildings are a huge part of our business. We also do a lot of industrial process, and even agricultural irrigation, which is obviously key towards raising a lot of food. Xylem itself does business to more than 150 countries.



The thing that's unique about us, and I already mentioned it, but we go to market using product brands. Bell and Gossett is the product brand that we use to serve the residential and commercial buildings. These are old companies.

So Bell and Gossett is celebrating its 100th anniversary this year. It's a long, long time provider and innovator in the building's business. They were acquired corporately in 1963 by our former parent, ITT Corporation.

Xylem itself is relatively new. We're just over five years old. Just to give some background on the name, the name itself is derived from classical Greek. And basically, what it's describing is the tissue that transports water in plants. It really directly relates to us, because it focuses on the best water transportation of all, which occurs in nature.

A plant can't live without water just like people can't live without water. So Xylem, it's really a unique name, because it has such a strong connection.

Scott: That's interesting. In company size, how large is the company in public, private?

Mark: The Company is publicly traded on New York Stock Exchange. We do business all over the world, so 150 countries. We're a global company that does business just about everywhere.

Scott: As you said, it's a relatively new company. But certainly, from a product name perspective, Bell and Gossett is a name that I'm certainly familiar with, and I think most people in the commercial market space is as well. Really good product set there, and it's exciting to learn more about what you do.

I think, from my perspective, water is one of those things you just take for granted. I assume it's going to be there and that we'll never have an issue with it. As I mentioned in the beginning, in the opening, it's certainly critical to what we do, but we just expect that it's there and available, and we don't have any problems with it.

But I'm sensing that's not quite the case, so let's talk and jump right into the discussion stay and talk about some of the current challenges that you see in the marketplace both for the built environment and for new development, because I think our customers represent both spectrum. You can talk to me about what you're seeing out there right now.

Mark: Definitely, the biggest trend when it comes to buildings is owners focusing on efficiency. How do they save energy? In many parts of the country, it's actually being regulated by local cities. New York, Chicago, Atlanta, all those cities have regulations that are focusing the owners on how much energy do you use now, and how can you cut it? How can you reduce that?

Some of these cities have significant goals, 20 percent reductions, 30 percent. It's sizable in effort. It's something clearly that has to be on the owner's radar screen, because they have to figure out to make their buildings more efficient.

Water is a key, as you said, because it's essential for life for one. I think the one thing that a lot of people don't realize is that water is the most efficient conductor of heat or cooling. How do you remove BTUs from a hot building, or how do you add them to a building that needs heat?



That's the thing that's so special about water. People, unless they have a technical background in how a building is constructed, they may not understand that water is behind many of those systems just because of how efficient it is in transferring those BTUs.

Scott: Interesting. I assume that so many of the issues that we hear and talk about are really connected. Growth of cities, climate change, the sustainability push, I imagine these were all the key drivers. I don't think we necessarily make the connection between water conservation; or water use and energy reduction. Can you talk a little bit more about that and what the relationship is there?

Mark: All the climate change, the carbon emissions, all those things, the amount of power consumed by a building, there's all sorts of estimates out there in how significant that consumption is. All of the effort to improve energy efficiency of buildings is specifically to try to reduce carbon emissions. All the things that we hear about every day in the world today.

What's going on is two-pronged, because there is a new building approach that focuses on new building construction code and raising the level of water efficiency in those buildings by mandating it by code.

There's also the installed base of buildings, which is you go to any city, and the number of buildings already there is enormous. That's where there's an enormous opportunity for building owners when they upgrade systems to improve their energy efficiency by putting in more efficient products, re-looking at the way the systems were designed originally, adopting more conservation standards as they invest in those buildings for the future.

Scott: Those are some of the regulatory challenges. I imagine that there is also a benefit to the buildings and to the ownership and developers themselves by putting in some of these measures. Are you seeing a rise in the voluntary standards that companies are placing on themselves as well?

Mark: Probably one of the bigger opportunities in new building construction is just to build to what's called "Green Standards." Those standards are controlled by a lot of different agencies, but much of it's voluntary. Basically, there's groups like the U.S. Green Building Council that put out standards saying, "You can design your building to this baseline, or you can improve it and get a Green Building rating."

Interestingly enough, there's a strong preference among tenants to actually say, "We do business in this Green Building." They're willing to pay more rent. They're willing to focus on buildings that have conservation in place.

I think that's the thing for owners to focus on. It's just realizing there is a great deal of appreciation for their efforts behind the scenes. You let your tenants know that this design saved this much energy, or by walking stairs you can save this much energy versus running the elevators. How much water can you save by putting in water-efficient fixtures or those types of things?



That's the thing that the owners have to key on, that there is an enormous desire among all of consumers to contribute.

Scott: You mentioned, on the regulatory examples you were providing, about some of the cities that are placing these demands on builders and developers and operators of properties. Are the regions of the country or the world where the demands or challenges are greater?

And obviously, I'm thinking of areas like the West Coast and the drought that they've been going through. Are they appreciably different, or is it pretty consistent across the country?

Mark: There's obviously regional issues like the West Coast drought and things like that. In general, building codes, they try to stay aligned across all parts of the U.S. But obviously, they are regulated by states, so it takes time to implement change and to put a code into place.

Clearly, issues and opportunities like the West Coast drought are driving local regions to focus more on, "How can we put in landscapes that doesn't require irrigation? How can a building conserve water more? How can we collect rain water to be able to use it for irrigation sometime in the future?"

All those things, while they may have a starting point, say in California, they eventually migrate outside those regions and get a broader acceptance.

Scott: Great. Natural transition point for us. We talked about what the challenges are and some of the drivers for what's going on in the marketplace.

Let's talk about how you help companies meet those challenges and what you do. One of those things you talk about is the total systems approach to building design and operations. Can you talk a little about that and explain what that means?

Mark: Absolutely. Whenever you have a water distribution system, regardless of what the application is, and I say the application, so one application for pumps in a building is water distribution -- that water that you turn on in a faucet, that water you use to flush the toilet, the water you get out of a drinking fountain.

What we try to focus on is not just put a pump in to boost the pressure to ensure that you have adequate pressure on the higher floors but to look at the total system, to ensure that the areas that require more water get that water, and to focus on how do we save energy either by shutting the pump off when it's not needed or reducing the speed of it to save energy.

We look at the whole system and not just the product itself. That also translates into heating systems.

I'll just tell you, today in Chicago, I drove in this morning, the temperature was -4 degrees Fahrenheit on my car thermometer. Today is clearly what we would call a design day, which means that heating systems are operating at their peak load. They are working hard to try to raise that differential temperature up to a comfortable environment for the building occupants.



Any sort of a pumping system using water, it's going to be running full speed. It's going to be trying to supply as much BTUs as possible to the building. But I'll tell you, by Friday it's supposed to be in the 40s here. What can happen is that, that's not the design day. The system doesn't need to supply the full BTUs that it needs so that the pumps can slow down.

By putting in a system approach and looking at it across the board in the system, you can actually reduce the energy consumed, because we're not at design conditions.

Scott: That's interesting. We're going to come back to that term and approach in a little bit more detail, but I want to talk a little bit about how you work with your customers. How do you typically engage with a commercial real estate firm, either on the operations or design build phase, and who are the people you speak with and work with at those companies?

Mark: It's complicated, Scott. I just want to be upfront. Clearly, the process of building a building or servicing an existing building, there are many different partners that serve those building owners.

For us, we certainly engage those firms directly. For example, a large firm may have its own in-house engineering firm where they're constantly looking at, "What are our challenges in the building related to water?"

We would come in. We provide training. We provide solutions and software. We provide education overall just to help them solve their problems.

We also have partners of ours. If a firm didn't have its own in-house engineering, they may consult outside. They may go to what are commonly referred to as a consulting engineer or mechanical engineering firm.

All of those firms, we also engage and have the same education available, the same software tools, the same product documentation, but also the system design knowledge. We would work either of those engineering angles to assure that they are the most knowledgeable and understand what Bell & Gossett can bring to them.

Scott: You cover a lot of markets, as you mentioned earlier, really large company. Do you have focused-specific business units for things like real estate and design, or are you cross-functional with your teams?

Mark: Where we focus is primarily using the Bell & Gossett brand, which I mentioned is our primary brand of products that's documented and well-known in that building space. We distribute our products through local representatives.

They work in a geographic area for us, but they are our local people, so they would call on those engineering firms I mentioned, whether they're part of a CRE firm or just an engineering firm. They would also work with the mechanical contractors in the area who could be hired by a building to actually make the equipment switch or do service and do maintenance and even with any type of facility operator.



Many of your firms may have operators that actually run those systems. This local rep, then, would be coming in and making sure that their properly trained, that they understand the equipment that they own.

Scott: Great. I assume, much like us, although we always wish that we operated in a business that there were no other competitors, I'm sure that you have people doing things similar to what you do. How do you position the product and the company and the service that highlights your differentiators and the things that make you unique?

Mark: Absolutely. I don't think there's virtually any business that's competitor-free anymore. The way that we differentiate Bell & Gossett and their products is really the system-selling approach.

We don't just speak it, we do it. We ensure that our sales people have the highest level of training and knowledge that can go beyond just a product. We focus on experiencing them in troubleshooting, because one of the best ways you can help people is help them solve their problems.

People think Bell & Gossett, they think of our schoolhouse. I'll just mention that now. I mentioned a lot of education and training, but the thing about Bell & Gossett is that we have had what we call our "Little Red Schoolhouse." For 61 years we've been providing training to all of that engineering community, all of the contractors, our own people.

It's a unique kind of training. We don't teach about products, we teach about systems. We teach about how do you install a system properly, how do you fine-tune it, how do you troubleshoot it, how do you fix things when they go wrong. It's a very unique kind of training that is just not available anywhere else in the world.

We have a reputation that we've trained the industry. When we talk about the industry, that's all of those consultants. They come to us for knowledge. They send their new employees to us.

That's probably our largest differentiator. It's that the investment that we make in the industry through training is just above and beyond where anybody else is at this point.

Scott: 61 years, that's pretty amazing. You guys have been at the forefront of thought leadership or maybe providing thought leadership before it was actually a marketing buzzword. That's great.

Mark: Exactly, Scott. I can't tell you, with Bell & Gossett in its hundredth year, I look at the decisions that were made by my forefathers in leading this company, and they were brilliant. They made investments. They invested in their employees and their sales reps and in the products, and they did it in a manner that nobody has really been able to duplicate.

It was a big investment for them, but they sustained it 61 years, and it's just so interesting for me when I sit and look back at company history and say, "I wonder if they really realized how insightful that decision was when they made it."

Scott: That's terrific to hear. In terms of what's going on now with the company, where do you see the growth and opportunity for your products and services coming from, in particular?



Mark: It all comes back to that energy focus. It's been interesting watching the market evolve to this focus on energy efficiency. There are many, many different ways to heat and cool a building. What we're finding is that owners are now looking for sustainability. They want long-term investment, and they want it to last. They want it to be green. They want it to be environmentally-friendly.

All of that opens up the focus on, "How do we make these systems operate as efficiently as possible?" It's no secret, there has to be a lot of flexibility in a heating system to handle a day like today. There has to be ways to save energy when you don't need it running at full operations.

That's really where we're focusing. We're focusing on, "How do we control better? How do we make sure the engineers design better? How do we give them tools that they can monitor actual system operation and see, how is that system really performing?"

Scott: That relates directly to my next question, which is jumping into the technology part of our conversation, our discussion here. You mentioned a couple of things earlier. You talked about the design-day concept, which leads right into how you manage for that. You talked about software.

So when I think about a company like Bell & Gossett and the product line, I'm thinking physical items. The pumps, the tools, the things that people actually install into the buildings. It sounds like there's a pretty big technology component to what you do. Perhaps you can talk a little bit about that from the software and applications and the things that you're doing.

Mark: Absolutely, Scott. It comes in a lot of different places. I think for a theory from clearly having confidence that the product that they're putting into their buildings is thorough, well-designed, most efficient possible.

One of the things that we've been able to take advantage of is today, we can do product design in such an efficient manner using computer technology and simulation. Just the ability to build graphic prototypes. It's allowing us to develop more efficient pump products.

We're able to use more advanced materials. We're able to hold tolerances tighter. So tighter tolerances means more efficiency, better materials means longer lasting efficiency.

On the product side, what's available to us today is just incredible. Simulation software that just allows us how will this product operate in a system? Those advances, those are the inherent ones in a product that an owner may not see, but they're in the stuff that we're showing today.

On the outside, how do I actually monitor that system? How does my building operator know how the system is operating? What percentage is it running at?

We're doing a lot of different things where we're incorporating motor technology with our pumps. We're actually supplying very efficient motors and embedding within those the ability for remote monitoring either on a smartphone or on a tablet just so that you can see what exactly is that system doing.



It helps people understand where their system has inefficiencies. It understands where there might be a problem, where can set alarms. The ability to monitor and focus on your energy consuming product in your building is, I think, probably the area that we're focusing on the most.

Scott: Interesting. I assume coming out of that with the monitoring, you're providing data and analytics to the end users as well? Is that a fair...?

Mark: Yes. Exactly. This is the thing about building design. I've already mentioned the design day comes. You can imagine, for a heating system, there may only be 5 to 10 design days a year here in Chicago. Obviously, that's going to be less if you went down to Miami. It would be more focused on the cooling side there, obviously.

In between all those non-design days, how do you ensure that you're getting the maximum energy savings that you can get? How do I make sure, though, that I ensure comfort? You can't not provide enough heat to a certain area of the building. My office can't be at 72, and on the far side of our building, engineers they can't be at 58. They're not going to work efficiently if they're worried about staying warm.

Scott: Interesting. It sounds like most big manufacturing companies or product companies today, you've had to apply technology and software to your products and deliver what people are expecting there to make them even more usable and more helpful in terms of understanding what they do, so that's great to see.

I think the phrase that people talk about where software is eating the world certainly applies to you guys as well.

Mark: Absolutely. Obviously, with any type of mechanical equipment involved in providing heating and cooling comfort, the primary driver are motors. That's what consumes the energy. That motor drives the pump.

How can you efficiently control that motor? How can you ensure that it's the most efficient motor design possible and pair all that with the most efficient pump possible?

Bell & Gossett, we focus on what we call efficiency islands, which basically is ensuring that the pump is going to vary in operating point, but what we're trying to ensure is it stays in the most efficient energy islands possible.

These designs that I mentioned that we can simulate, that's what we can do with modern technology. It's ensure that those efficiency islands are broad and carry the majority of the pump operating time.

Scott: Do you get a sense in the marketplace that one of the things that operators, and managers, and owners struggle with is the amount of information that comes at them with regard to sustainability and a little bit of analysis paralysis of not knowing where to start first?

Mark: Absolutely, Scott. I think the bigger issue in the world today is information overload. There's just too much information out there. Our expectations just continue to grow on output for employees and things that we expect that they can do.



Certainly, I think that's part of our challenge. It's how do we get people to respect the energy consumption of their HVAC system. How do we get them to understand that they can make a few simple changes that can have a significant impact?

How do we do that? That's a tough one, Scott, because it's training, and that's an investment that owners have to make. It's a challenge for all of us, and how do we deliver an efficient message to people that they can comprehend and do it in a reasonable amount of time?

Scott: It sounds like your commitment and your investment in education, certainly, is going to help a lot of people and provide resources that they may not have otherwise thought of.

Let's do some takeaways to the audience and talk about some things that are involved in building operations or building design should think about and pay attention to is to read their inner design or operating phase, and maybe some things on the horizon that they should be aware of. If you can share with us some of those thoughts and some key takeaways, that would be great.

Mark: Things that I would suggest on takeaways, two or three points. First and foremost is to ensure that your building system operators are knowledgeable and understand the systems that they're operating.

I can't tell you the number of times that an owner has paid to upgrade and put in energy efficient equipment, and we come into the facility to make a visit and find that the operator doesn't understand how that technology is supposed to work. He's essentially bypassed it, and he's shut down the energy saving features.

Somebody complained about something, so he thought this was the solution. But he doesn't quite understand the impact on the power bill that the firm has to pay, so investing in training is probably one of the more critical aspects that I would suggest [inaudible 25:11] focus on.

The second thing, when you're looking to make an investment in your building, take a look at the HVAC system. Because it sometimes is the last thing on the list, because people view it as complex, and they don't want to mess with something that is working.

They need to focus on where the building is consuming the most energy. No matter what, heating and cooling is one of the top areas for energy consumption, so don't neglect it.

The last thing is consider equipment upgrade. If a pump's running, we joke about what's the best kind of pump, it's one that's forgettable. If you don't remember it, that's the opportunity that you're missing in terms of energy savings. You could upgrade that pump, put in more efficient controls, and have the same reliability along with the energy savings.

Scott: That's great. Great advice and guidance, and I think things that people can easily apply. With that, let's talk about the best way for people to learn more about the company, about your products, and a good starting point for them.

Mark: We have tried to continue our legacy of education by providing a Bell & Gossett website. It's a educational tool. The URL, just to get to it, is www.bellgossett.com. I'll just spell it. It's B-E-L-L-G-O-S-S-E-T-T dot com.



Bellgossett.com, it has information for every type of user. Whether it's the building owner, the building operator, the consulting engineer, the mechanical contractor, there's something there for everybody. It's designed to be an educational resource. We're not trying to sell you stuff. Of course, we'd love it if you buy things. But certainly, we understand that you have to have a place to go to have a resource.

A visitor has the opportunity to submit questions, so they can reach our technical people. They can request somebody come see them locally to help them troubleshoot problems. Again, it's a resource that's there for everybody.

Scott: That's terrific. We'll make sure we put that in the show notes as well along with Mark's contact information in case you want to reach out to him directly.

Mark, it's been a lot of terrific insights. I learned a lot here. Again, I think it's one of those things that people take for granted, first of all. I think that a heightened awareness certainly helps us all in terms of thinking about things -- where water comes from, how it's used, are we being as efficient as we possibly can?

It sounds like you're serving the marketplace really well there. Terrific information, and I thank you for joining us today.

Mark: Thanks very much, Scott. I'll just mention, too, if anybody is ultra-technology user, you connect to us on Twitter or Facebook as well. We're always trying to put out information that could help an owner. For example, on a cold day like today.

Scott: We'll put those links in the show notes as well. Again, I want to thank our guest Mark Handzel from Xylem, and from Bell & Gossett, obviously, their product line in the space for joining us today.

Again, please join us on future episodes of CRE Tech Talks. We have more terrific guests lined up and coming your way. We've really enjoyed today's conversation. I want to thank Mark again, and we'll see you next time.

Mark: Thanks, Scott.

QUESTIONS FOR THE HOSTS?

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