

## 034 - Art of Engineering - Christa Myers

**Denise:**

Welcome to the Art of Engineering, where we speak with some of the top women in engineering about their processes, principles, and personal stories. I'm Denise McIntosh, CEO of custom powder systems, the containment company. And today I have the special privilege of having [Christa Meyers from CRB](#) that I've been trying to get on this podcast since we started three years ago. Krista,

**Christa:**

That's fantastic.

**Denise:**

And you are a chemical engineer from NC State, I think that's the Wolf Pack.

**Christa:**

That's right. Correct. Let's go pack, go Wolf Pack.

**Denise:**

Okay. And your title is Invested Business leader, aseptic and Sterile Products Vertical Market leader. So I wanna start with what does vertical market mean? Because I always try to pick something that someone might not recognize or know what is.

**Christa:**

Sure. So when we start looking at vertical markets in our company, it's really how a drug product gets out to market. And so for the, for CRB lingo, it is really a business unit. I lead an aseptic and sterile products business unit, which means that we are looking at all of the innovations and all of the aspects of projects that happen around the aseptic and sterile products types of products in the world. And so almost everything that you see that goes through the pharmaceutical industry, particularly by the biotech side, ends up either in a vial, a cartridge, or a syringe somewhere. And so that aseptic market is really what's putting those products through those vials and in those syringes and in those cartridges so that when it comes to you and you get that injection or infusion, you don't get sick.

**Denise:**

And you've been doing this work, I'm not gonna say how long because date, both of us, but at least 20 years.

**Christa:**

Yeah. So it's one of the things I'm actually pretty proud of Denise. So we've been talking about it in our company here recently. So I've been at CRB for 28 years, but I've been in the business over 30. And to me what that really means is I've seen a lot of great stuff go through the industry and even from the early days, it hit my passion point and I love it.

**Denise:**

So let's start at the beginning because I'm always curious about how people get into engineering and what influences who influenced what you might have done in your childhood that led you there?

**Christa:**

Oh, that's a great question. So growing up, sitting around the dining room table mom was a operating room nurse and dad was a chemist, was textile chemist. And so technical conversations just happened in our household. Mom would talk about the mastectomy that she scrubbed in on that day, and how many layers of muscle and tissue and how different scalpel types are used for each of those. And dad would talk about anion dyes and, and cationic dyes and what that meant for how at, at the time the shag carpets of the seventies were dyed and how you get got all those funky colors. And so we had, you know, what my parents taught us mainly was, no matter what you do, you're gonna have to work hard for it and you can do anything. There are no limitations on you. And so that's really the way we grew up with that whole concept of drive forward and, you know, go after what you're gonna want to do.

**Denise:**

I grew up with on a farm with three other sisters and no brothers and, you know, we just automatically got to try everything there was to do. 'cause There wasn't anybody else to do it.

**Christa:**

Absolutely. So we came from, my parents were not in farming, but both of my grandparents were. And so same thing girls worked just as hard as the boys did. And so there were not these limitations on gender set up that I, when I was a kid. And nowhere around me did I get any kind of limitation on that, except, I'm gonna say this one except when I was in high school school, I had a, I had one chemistry teacher that was fantastic, that taught me love for the chemistry,

**Denise:**

Uhhuh

**Christa:**

And then I had one teacher that says, Chris said, the one chemistry teacher that said, girls can't be engineers.

**Denise:**

Oh.

**Christa:**

And so, you know, if you wanna stick a firebrand into somebody and make 'em do something, you tell 'em you can't, they can't do it.

**Denise:**

Yes. Yes. That wouldn't have sat well with you. I can imagine. Even in high school,

**Christa:**

Didn't go over very well. No. And so you know, it was something I was determined to go do and find and, and it, it, you know, as I found my way into the background, into my college classes and into my first jobs, it really paved a way for me. And it, you know, it was, it was an absolute blessing.

**Denise:**

So did you encounter any of that any bias of any kind when you actually got into chemical engineering in college?

**Christa:**

So in college, the funny thing is, okay, so even today, the entries into engineering in general is still below 15% for most women, for, for women for most programs. Wow. But when you look at chemical engineering, chemical engineering at my, in my time was at about 30%. And these days is at about 50%.

**Denise:**

Wow.

**Christa:**

So for some reason, women go into chemical engineering and tend to make fantastic chemical engineers, and more so than many of the other chem, many of the other engineering types like mechanical and civil and structural, although I know some brilliant women that do all of those.

**Denise:**

Wow. I had no idea.

**Christa:**

Yeah. It's fascinating. And so I don't, we've tried to kinda discern why, and I don't know that we've ever come up with exactly why, but my dad's commentary was that baking, so women grow up baking and that baking is nothing but chemistry.

**Denise:**

Absolutely.

**Christa:**

And when you, when he would hire people into his chemical lab, he noticed that women were better at it, at the feel of chemistry of what might work more so than some of the men

**Denise:**

Ahuh.

**Christa:**

So I don't know if that's a creativity or if that is a, seeing the you know, seeing the possibility. I don't know quite what that is. It's always fascinated me.

**Denise:**

Maybe the, maybe the curiosity of experimenting.

**Christa:**

Maybe. So, maybe so that's a good, good way of putting that

**Denise:**

Because I, I struggle with following a recipe. I,

**Christa:**

I don't follow a recipe well, at all. I, I

**Denise:**

Just a guideline.

**Christa:**

Uhuh, it's just a guideline. And, and how dare you limit the number of cloves of garlic I'm gonna put into any one dish.

**Denise:**

Exactly.

**Christa:**

There's never enough garlic.

**Denise:**

No, no. Well, okay. So your role today in CRB, what does a typical day or week look like? I know they're not typical, but

**Christa:**

Well, so as a service provider, right? So CRB is, we do consulting, engineering, architecture, and construction for our customers. Correct. And so, through and through we are a service provider. And so my day consists of, you know, if I'm on project meetings and I'm often on many project meetings, I'm looking for delivering that best option solution to our customers. First, though, you have to listen to the customer to find out what they want. Yeah. Although sometimes that's tricky because they can come in and say, I wanna, I want a purple cake with green icing. But what they handed you were ingredient ingredients for a cherry pie.

**Denise:**

Yes.

**Christa:**

And so sometimes you have to look and see what they're actually asking and determine what they actually need and get into a little bit more of a dialogue on best functions. So many times we're doing early, we call them pre-feasibility engineering studies. So pre-feed to us where we're doing early designs where maybe a, an executive group comes to us and says, Hey, we wanna get into x, y, Z production, and, you know, we wanna build a \$10 million facility to do that. And we look at it and say, okay, great. We've done nine of those. None of them are \$10 million. They're all \$120 million. So let's talk about what you really want.

**Denise:**

Yes.

**Christa:**

And so that way what we, what we try to do is save our customers money and time on going down a path and getting to the right path for them. And, and sometimes we were, it's funny, we were laughing about it today. Sometimes that means killing a project.

**Denise:**

Yes.

**Christa:**

We were in a project today where we got asked a question and or we were, we were told to go do something. And as we got into that, and we asked where it came from, they showed us that they had a regulatory finding, and the reality was the regulatory finding was not down the path

that they were going. And so we had to stop, kind of stop the meeting and say, yes, but you understand, of course, that you may be able to do this without a huge investment. You could do this by managing your risks. Yes. And so it's one of those things that sometimes the right answer is no, don't do the project or postpone the project until it's more functional. But answer the direct question now.

**Denise:**

Well, and we find, you know, in, in fabric designing and fabricating equipment that sometimes people don't know what they don't know, so they don't really need what they don't really know what they need.

**Christa:**

Mm-Hmm. That's right. So

**Denise:**

It's that whole dialogue of what is your intent? What does the end game look like?

**Christa:**

Yeah. And there's some finesse to that, right? Oh,

**Denise:**

Golly, yes.

**Christa:**

So that's, that's one of the things that's a part of my daily life, right. It's really working with the customers to find the right solution for them in the midst of that. So one of the other titles that I hold at CRB is senior Fellow. And one of the other things that I'm doing normally during a day is I'm mentoring people in, in our staff on how to grow their careers. Oh, I'm mentoring them on technical situations. I am looking at what we should be doing with, you know, everything from some of our external material and what the clients want, as well as helping to support the industry industry through things like [ISPE](#) and [BioPhorum](#) and other organizations like that.

**Denise:**

So that brings me to another question, because you've been active for a good long time in being a speaker at those organization conferences. So how did you get into that? What have you seen then as a benefit both for yourself professionally and for TRB and suggestions for others to do that?

**Christa:**

It's a great question. So one of the things that I found is that the more effort that I put in and the more service that I would commit my suit myself to, the more I learned. And so, frankly, many times, me helping ISPE or helping bioform or volunteering in those ways and speaking, I do that one because it helps the industry to move forward. But it helps me tremendously. I have found in

[ISPE](#) and in other organizations, Bio Forum BPE I-S-E-B-P-E, all of these organizations, the biggest benefits are the network of friendships that you develop. And I mean, Denise, you and I have known each other for a long, long time.

**Denise:**

Yes.

**Christa:**

And it's nice to have a group that you consider friends that you can pick up the phone and call and say, I have a customer that has trouble. How can we as a group help them solve this?

**Denise:**

Yes.

**Christa:**

And I think that's one of the things that brings me energy to all of this, is that that's what I see these organizations do. They're trying to build cohesive communities that, that move the industry forward. And so, it's surprising to me when I get in these rooms and I hear companies that are sharing their problems and sharing their woes in order to help each other come up with solutions rather than walls up

**Denise:**

Yes

**Christa:**

And no, and not sharing.

**Denise:**

So brings up a question that I hadn't really thought about until just now. Do you think the, that women in these roles, because of maybe our natural curiosity, are maybe better at collaboration and communication, because we wanna know?

**Christa:**

So at, at one point, I thought that was something pretty specific to women. I, that that's been, I think my opinion on that has been challenged over the past few years. I think it's a personality type.

**Denise:**

Ah,

**Christa:**

And you know, at our company we did we did one of the Gallup personality tests called Strength Finders.

**Denise:**

Yes.

**Christa:**

And one of the things that we found out was that each of us have strengths, and that when we play to those strengths, we really bring high value to a team. But when you build a team, the team has to have multiple values. So I'm good at troubleshooting, I'm good at problem solving. I love jumping into the middle of something like that and starting to, you know, to, to disentangle the information. But what I am not as strong in is some of my organizational skills to make sure I write all of that down and pass it on to the next group to make sure that they can get it done. So many times I find I have to partner with somebody who has that set of personality strengths to be able, so that we are a good, solid team together, and not just me alone.

And so I absolutely think that women do have these skill sets and bring a high value to the table. I think many times and, and again, some of this, I think I've, my my beliefs have been challenged over the past couple years. I found not only is it coming from, you know, women having a different throughput or different idea and a different background than maybe some, some of the men do. But I also found that it was, different cultures have different backgrounds and different abilities.

And a friend of mine who's who is Indian in the middle of a project, was trying to explain something to us. And it had a, it had an Indian reference. He had to go and pull up the, he had to go and pull up the, I think he was talking about a certain type of tree. And so he has to go and pull up the picture of the tree to explain to us what he's trying to talk about. But the minute we saw it, it made everything start to make sense.

And so I think those different experiences, you and I coming off of farms, we bring a different set of information to a team than maybe kids that grew up in an inner city situation.

**Denise:**

Thank you for that. And then back to the conversation that you and I started at the ISPE meeting about how critical it is to find the right fit in terms of what our skill sets are. Would you elaborate a little bit on your journey of finding that?

**Christa:**

That's a great question. So when I got into CRB, again, I've been here a long time, and CRB was my third job outta college. One, one of the best pieces of advice I was given by Bill Jarvis was learn as much as you can about as many things as you can. And then you can specialize,



but you're going to need a lot of experiences in order to be able to judge what's gonna be fun for you. And so I jumped into everything I could from the very beginning doing flammable codes highly potent compound codes building codes, how that affects a facility. I did, I did biotech work, I did utilities work. I did API manufacturing design work. I did fill finished work. I did some oral solid dosage work. And from each of those, I learned very distinct things.

And so it wasn't until maybe 10 plus years in that I could start putting my finger on one, what I liked and what would bring me happiness with, on a, doing more of on a day-to-day job. But it also gave me a breadth of background that standing beside a fill line, which is what I do these days, aseptic filling. I can look at the stainless tank beside me that has CIP and SIP hooked up to it, as well as the single use tank beside me that has single use materials in it and understand the utilities, the process, the valves, the, all the different, this, that, and the other that goes with each of those processes. If I had not broadened myself early on in my career, I would've never gotten to where I was. So very much like a pyramid, you have to start with a very broad base and build in four or five directions, and then you can start building up the pyramid and narrowing.

**Denise:**

What a great piece of advice. Thank you, Bill Jarvis.

**Christa:**

Yes, absolutely.

**Denise:**

Wonderful. And you also mentioned culture. So I have found myself over my career in places that, you know, I knew I didn't fit.

**Christa:**

Oh, absolutely.

**Denise:**

Maybe not because of the work I was doing, but just because of Yeah. It didn't, it didn't feel right.

**Christa:**

Culture's always one of those tricky things. And I think it's hard to describe sometimes.

**Denise:**

Yes.

**Christa:**

It's hard to verbalize that not belonging feeling and to understand what that means. And usually you don't feel it or you don't understand it until you get into a, a place of belonging, or you see somebody who does belong somewhere and you go, I want that.

**Denise:**

Yes.

**Christa:**

And so to me, culture always revolved around, teach me more. Let me learn more. Let me grow. Let me go, let me reach, let me climb. If I had been a part of a company that said, here's the one thing we want you to know, go sit in your cube and go do that. I would not have been a happy employee, nor would I have ended up, you know, leading in any manner that, in the way that I have across my career.

**Denise:**

Oh, I so agree. So I thank you. And I ran across one of your articles.

**Christa:**

Oh, goodness.

**Denise:**

About, well, it was to me a mentoring article. Which was, you know, how do you get from here to there? And you mentioned you had three suggestions. One was a simple timeline. The second one was list what you bring of value, those things that you do that you know you're good at, and then a list of 10 people who can help

**Christa:**

Mm-Hmm.

**Denise:**

And then somewhere along the way, I also saw the name Brene Brown. Yeah. And vulnerability. And to me, the way we get ahead is figuring out where we need help, who we can get that help from, and not being afraid to ask.

**Christa:**

Absolutely. Absolutely. Now it's that. So one of the hardest things to do is to see yourself clearly, and it takes time and it takes proximity, but, and it takes good friends to help you get there. That, but, but it also takes the, that humility. Okay, if I wa, if I get a timeline and I want to be, you know, I wanna be at a certain position by the end of December, 2025, then we teach this with project management too, right? So if a customer come customer comes to us and says, I wanna build a facility that will make this, well, the first thing we do is say, when does it need to be done? And then we back ourselves into a schedule and say, that means we need to start

construction here, which means we need to be done with design here, which means we need to be done with this part of the project here. And that part of the project at this point. Well, so you can do the same thing with your own goals. Okay? If I'm going to speak at three conferences next year, that doesn't just magically happen.

**Denise:**

No.

**Christa:**

And so you have to start setting up some timelines and some people there that you can talk can, you can reach the, I think when I first started looking at this, the biggest intimidation factor was, how in the world do I do this all myself? Well, as I started talking to people, what I found out is you don't do it by yourself. You get your list of 10 people and you call and you say, I wanna present in three locations by the end of next year. What are your suggestions? And then you can get together a plan, set some action modes in and jump into it. Now, sometimes you need somebody that says, by the way, it takes a year to get you know, to, or, or, you know, one, the one of the things I found is, oh, by the way, the call for papers for those three shows that you put on your list happened last year. You're already a year behind.

**Denise:**

Yeah. You're behind.

**Christa:**

Oops. Oops. So sometimes you have to be very humble and very authentic to say, well, that means that my timeline is a little off and I need to modify my timeline, and I need to modify my actions as well. And so, without the humility, without the retrospect, I, I think you end up being very clumsy in life. And so, you know, Brene Brown talks a lot about authenticity and talks a lot about humility, and talks a lot about, you know, as you chase joy, what you have to chase is humility to get to joy.

**Denise:**

Yes.

**Christa:**

And so the, you know, the more I step into bigger things, I've got a couple of dear friends in the industry that will remind me, Hey Krista, you're, you've agreed to do these four things. Should you really be adding that fifth this year?

**Denise:**

Oh, that feedback is so important.

**Christa:**

And sometimes it's not what you wanna hear.

**Denise:**

Exactly. Exactly.

**Christa:**

But it, it does become highly valuable because when, you know, for me, if I push myself too far, then I'm not good at anything.

**Denise:**

Yes.

**Christa:**

But if I'll take the feedback, then I can modify my goals, modify my timeline, and make something that works out for me. And then I'm also a big believer in saying, and by the way, thank you for helping me get there. What do you wanna do? And what do you want?

**Denise:**

Oh, that is a great question.

**Christa:**

And so you'll find that other people just, you know, can I speak with you too? And that's, that's one of, to me, that's one of the most special things that if somebody is willing to trust you to speak with them, then it's a great way to change up your whole idea set of what you were gonna go do and make it beneficial for, you know, both, both individuals and both companies

**Denise:**

Well, and that whole asking for help and feedback, it's the gift that gifts that continues to give

**Christa:**

It. It does. I agree. I agree.

**Denise:**

It's those relationships we have that, like you mentioned earlier, there are those people we can just pick up the phone and, and have a conversation with.

**Christa:**

That's right. That's right.

**Denise:**

Krista, I don't wanna take a whole bunch of more of your time. And I knew this would be a great conversation, which is why I've continued to pursue this.

**Christa:**

I appreciate that.

**Denise:**

So thank you so much for contributing to my conversation and contributing to the growth of other young people in engineering and manufacturing that we so desperately need.

**Christa:**

Absolutely. Absolutely. Anytime. Absolutely. Anytime. And if anybody wants to sit and talk about what's next steps in their career, I'm always up for that.

**Denise:**

Thank you so much. Thank you for joining us again on The Art of Engineering. I'd love it if you would share this episode with others in our industry and encourage them to subscribe wherever they get podcasts. In the meantime, we'd appreciate your five star review and would love to hear any comments or suggestions. Until next time, I'm Denise McIntosh from Custom Powder Systems online at [custom-powder.com](https://custom-powder.com).