

017 Art of Engineering - Amanda Wollnick - Transcription

Guest: Amanda Wollnick, Development Engineer at [American Breast Care](#)

Amanda Wollnick once thought science “isn’t for girls.” But something kept calling her back to it. In this episode, you’ll hear how she took her chemical and engineering knowledge to American Breast Care in Marietta, Georgia. There, Amanda is helping transform the prosthetic breast industry, and even holds a patent on a formulation that helps keep the breast prosthetic in place and looking natural.

DENISE:

Welcome to the art of engineering, where we speak with some of the top women in engineering about their process principles and personal stories. I'm Denise McIntosh, CEO of [Custom Powder Systems](#), The Containment Company. Today, my guest is Amanda Wollnick development at [American Breast Care](#) in Marietta, Georgia.

AMANDA:

In eighth grade, I had to take one of those career tests and it said, you'd be a chemist. And I was like, oh no, no, no, I can't be a chemist. That's just that's for guys. And you wear lab coats with crazy hair. I was like, oh, I can't be that. And ironically, I am a chemist now and you know, chemist can look like me and can do some really fun things. But with this degree, and you're also not just always stuck in a lab

DENISE:

Welcome Amanda.

AMANDA:

I'm excited to be here.

DENISE:

So I'm always curious about how people get started in their careers or even in the industry or study that they choose. So tell me how you got to chemicals.

AMANDA:

Oh, that's, it's an interesting story. I don't know if I ever was geared towards science or math. I always did well on that in school. Actually I think when I was like second or third grade, I wanted to be an astronomer. I was like, oh, that'd be really cool to be. My parents even bought me a telescope, but then I was like, then I realized, oh, there's gonna be all this math. And because I'm a girl, you can't do math, which was completely wrong because I did really well in math. And then I said, oh, I want to be a veterinarian. Because I love dogs. And ironically, I'm a cat lady... But I was like, okay, a veterinarian. So when I got to high school, you know, I took all the, the classes you should take if you're going along that path, biology, chemistry, math.

And then I did pretty well. But then I realized, oh yeah, you, you're probably have to put some of the dogs down and it's not gonna be, you know, just petting puppies all day. So starting, you know, trying to think, okay, what do you do? And you know, one thing that, you know, my mom always tried to instill in me was okay, you can't always rely on your partner or your spouse. Maybe they divorce you or they become disabled. You have to be able, you support yourself. So I really wanna make sure I had a job that could, you know, pay the bills and support myself. So I was like, okay, science sounds like a lucrative career. And in a few years prior was when [Jurassic Park](#) came out and everyone was talking about DNA.

I was like, oh, this is kind of cool. It sounds like you can make some money off of that. So I actually decided to become a biochemist. And as I went to [Purdue University](#), I'm actually originally from Indiana and at Purdue, there's actually was three different ways to get a biochemistry degree. There was one through their school of agriculture. And then there's two ways through the school of science, either through the biology department, or the chemistry department. For some reason, I chose the chemistry department. I don't know why. So I, you know, it's pretty much my first two years of college at Purdue, I was taking all the same classes as the chemistry majors. And then I didn't actually take any biology until my junior year. And they put you into second year biology and actually been a couple years since I'd been exposed to learning about the different things in cells and proteins.

And I actually, I failed that class. I didn't do so hot in it. And so I'm thinking, okay, do I really wanna be a biochemist? I'm thinking that's also kind of a narrow field to be in. It's like, okay, I'm already on this route to become a chemist. And that seems like there's just more job opportunities. I'm just not in this little niche field. So I switched my major to chemistry. It set me back a little bit, cause I take a little bit more math and some more chemistry courses. So I graduated with my BS in chemistry and as far as what I wanted

to do with chemistry I really didn't know. I figured, okay, just put me in a lab somewhere, I'll test water, dirt. I don't know. I'll just be that lab monkey. So that's kind of what I did my first few years, I was an analytical chemist and I kind of was working in manufacturing environments testing whatever materials that we were producing and, you know, doing things like quality control, some auditing.

And then eventually I started working for a company to make construction products. And that's kind of where I got the title "engineer." I was supposed to be doing audits of their manufacturing plants across the United States. And so I was this quality process engineer. And, and with that job, you know, I did some of the auditing and then also things like some product development, raw material testing, customer tech support. And that's just kind of how I become an engineer. Like I just never thought I would be an engineer. I've always thought I'd be this person playing with beakers and test tubes, even though that's kind of a, a glamorous version of what chemists do. So that's kind of my path from science to now engineering.

DENISE:

Well, and, and you earned your stripes because the description you gave of those first two jobs of the hours you put in and working nights and, and oh, by the way, your, your mother is a wise woman. We all need to be independent, but you did certainly earn your stripes in those first couple of jobs.

AMANDA:

Yeah. I mean, I was working seven, 12 hour shifts with my, my first job outta school. So it was like 84 hours in a row. And on night shift and I would come home and like, all you did that week was basically drive, work, sleep, and then you would get a week off, which was really, really awesome, but it was just like that week you work, like you couldn't see any friends or, or whatever. And then I quit that job after about a year and some change and it took another night shift job and that job was actually even more hours overall. Cause it was like 50, 60 hours a week. And you know, that's kind of when I realized too, okay, as far as what I wanted a job is, and sometimes, you know, what guides you in your career is what you don't want. And I realize I don't wanna work 60 hours a week and I don't wanna work night shift anymore, even though I'm kind of like a night person. But anyways, I just didn't wanna work night shift quite like that. I wanted to have a weekend and time to relax and, and enjoy life, not just work all the time.

DENISE:

Tell us about American Breast Care and how did you find them? How did they find you?

AMANDA:

I had moved to Georgia probably was it 2008 and I left my job. And so I was unemployed and just looking and the job I ended up getting was for a company that made construction products. That's where I got the engineering title and I just took, I needed something to start paying the bills. I figured, you know, maybe I'll like it, maybe I won't, but you know, you can always find another job. I stuck with that job for about three years, but it just really, wasn't a good fit for me. Personally, like it was like a really much like old boy's club. And just like I said, I really didn't fit in with the company culture. So I started looking, I actually looked for about a year. Then I get a call from this recruiter and, and he was like, yeah, this company, they take this goo and they shoot it into molds.

Like he didn't wanna say the word breast to me. I'm like, like, you know, he was like, it's like, you know, so is for women after a mastectomy, I'm like, oh, like a breast prosthetic? He's like, yeah, that's the word! I mean, I mean, I get, you know, my job can be kind of scandalous at times because I do talk about very personal body parts, but what we do here. So this recruiter you knowed me. So I came in for my interview. I did a couple different interviews here. I was like, I really like what this company do does, like, I want, I had worked in the healthcare industry previously manufacturing, drugs and testing medical devices, like, and I wanted to get back into healthcare. To me, seemed like a more female friendly industry to be in better benefits, better our better pay.

So like, yeah, I'll, I'll go work in the healthcare industry again. Plus I really like the fact that this job helps women. Like it, it's a very personal thing. Like I consider myself a feminist, it's like, oh, okay. This is a really great way to use my knowledge, my skillset, to help women in a very personal way. For that's kind of how I started at ABC. I'd actually replaced three different development engineers. They all lasted only a couple months and I'm pretty sure they thought I quit after a few months and I've been here almost 11 years.

DENISE:

That's great. And tell me about the company itself, because I think that story's fascinating.

AMANDA:

Okay. so American Breast Care formed in 2003 but it's kind of a convoluted story. So actually the, the people that work here at American Breast Care actually used to work for our, our com competition. And that was started actually in the seventies by two brothers Jolly and Cornelius Rechenberg and Cornelius was had a background in

chemicals and plastics engineering. They were in Germany and, and I guess a Cornelius was working for a lingerie company and they were making prosthetics for women after the mastectomy. And they were just like bags of oil or sometimes like beans or rice, like it's, it was just a very, you know, crude thing that these women would have to wear. And so Cornelius, like there has to be a better way to help women. So actually him and his brother Jolly were making breast prosthetics in their mother's kitchen which is kind of really awesome.

And they showing around their prototypes trying to get people to buy 'em and eventually guess they got an order for like a thousand. At that time they're only making like a couple a week and this company was like, oh, we want, was it like 1,000 in 6 weeks or something? And they're like, oh, do we do this? But they figured it out somehow. So eventually they decided to move their operations from Germany to America. Just because the American market for post mastectomy products is a bit different compared to Europe. And they thought that there was a real need here in America. So they started making breast prosthetics here in Atlanta, but that was under our competitor's name. Well, at some point Jolly and Cornelius had left the breast care industry. They sold the business, made their, their money, but then eventually this competitor, they decided they wanted move their operations to Germany and basically laid off most of this staff, all the manufacturing staff.

So they also had to, you know, come together and realize that there still is a need here in America for someone that can make these products for the American markets. So they decided to get together and form American Breast Care, and we kind of know their secrets. There were some lawsuits I, you know initially you know, intellectual property, trade secrets and all that. So I heard it was a very interesting time, but they ironed things out and we've been in business since 2003, making all types of external breast prosthetics for women after their breast surgery so that we can live a fuller life. After their surgery, they can feel more confident, beautiful. They can live their day to day life and, and not notice that, you know, they're having this thing. They feel like, hopefully they're old self again.

DENISE:

So Amanda, you have an invention there. So tell us about that and the name of it and how it came to be and what you're working on now as product improvement.

AMANDA:

Okay. So this was actually my first invention and there's a patent for my first time applying for a patent. I never thought I'd be an inventor. So there used to be a breast

prosthetic on the market that had this multiple silicone back because after a mastectomy doesn't necessarily mean you're flat, there could be extra tissue, there could be deficits. Every surgeon kind of does that surgery differently. Some will leave tissue or things go wrong, failed reconstruction. So the idea is that you'd have this kind of multiple material on the back, so it can form to whatever topography on the chest wall. And that just makes it more comfortable. The way these prosthetics are worn, they worn in a special pocket mastectomy bra. So you think that bra would hold it in place really well, but it doesn't always, these things kind of shift around.

So if you have something that conforms to you, it kind of just holds it in place a little bit better. So I'd only been in the company maybe a year or two and, and Silicon chemistry was all new to me. Like I went through some of my old college textbooks, like, okay, did I ever learn about this? And I never had, so I'm trying to, you know, learn how this chemistry works and my boss, yeah. We wanna make something like this mobile product that was on the market, but there were issues where I guess it was like a mixture of like oil and some fillers, but it was separated over time and basically told this woman, okay, well, if you start seeing separation on the back, just, just massage or kneed the need the back of your breast form. And it's like, who wants to do that?

So it was like, okay, you have to make something that has this multiple pasty consistency has to be silicone. And it can't separate. So I'm like, okay, how do I do this? So I don't have access to a lot like journal. So I, I do a lot of like Google scholar or Google patent searches. And like, I think I spent like two days just Googling, trying to find something. And I saw some stuff that was interesting and how to process silicone to make a paste. I was like, okay, let's try doing it this way. And you know, I think there was like 50 or 60 different formulations and processes. I tried before I kind of came up with this silicone pacing materials actually was making it in a KitchenAid mixer. And like back to the

Yeah. Yeah. I mean, like, I actually use a lot of kitchen equipment, like around here, pots, pans, heaters, like, I mean, it works great. And you know, it's a lot cheaper than some lab equipment, because once you say it's lab equipment, then the price goes up five times. So I was making extra, she looks like almost like cake frosting, you know, in the mixing bowl. And for a while too, I was kinda experiment with different colors. I was making it pink cuz you know, this breast cancer industry, there's a lot of pink. And then too, I was playing with some mica powder, some sparkle powders, like, okay, this was real pretty. So my boss was like, was, you know, joking. He's like, yes, let's call it Amanda. I'm like, no, no we're gonna call this "Amandacill." And is this okay? You know,

I just, we started just calling it Manil, like just, I thought it was like kind of a joke, you know, but the name sucks. That's actually what the silicons called actually have one I can show on the camera so that you can kind of see here, it's this bite material, this is Amandacill and you can kind of manipulate it to where you need wow. A little bit of extra material.

DENISE:

I love the name. It's so appropriate.

AMANDA:

Yeah. I mean I was kinda shocked that they would have that in there, but the idea was okay, this is interesting. Like what's Amandacil? So I was like, sure, go for it. Like call it Amandacil. So actually we have three different prosthetics on the market with this Amandacil material on the back and I hear it's, it's going over pretty well. But even too. Okay. So I came up with the formulation and it's like, okay, great. I can make a few prototypes at a time, but it's like, okay, how do I scale this up from a KitchenAid mixer? And how do I get basically what's a, a non flowing paste into, you know, the back of a breast prosthetic, you know? So this is it's polyurethane for on that in cases. Silicone gel, it's like, okay, how do I get this paced in here?

And that was a whole other engineering feat. It's like, okay, how do I make this paste in a larger scale? And then how do I get out this mixer into dispensing equipment? And, and that was definitely a hurdle for me. I was very unfamiliar with some of this equipments and the technical terms. And, you know, I probably spent a while just talking to different companies like, okay, I'm trying to get this paste into a bag and to make a breast. And you know, I got a lot of weird looks, weird questions. Eventually I came up with a solution. We did develop some other stuff in-house. We have a really great machinist. So I worked with him to kind of develop some of the equipment we use to process this material.

DENISE:

Oh, product development. Covers the gamut, doesn't it?

AMANDA:

It, it does like, I mean, I mean, we're kind of a small company here. Like we're just a little under a hundred employees right now. And you know, you know, I kind of wear a lot of effort and hats around here. It's product development, chemical formulation quality control auditing during COVID we had some people quit. So I was actually on the

production floor making silicone in 75 gallon quantities doing that type of physical labor. So yeah, we're a lot of different hats around hear.

DENISE:

And we got acquainted, I'll just share with our audience that we got acquainted because you are doing a product improvement right. For Amandacil...

AMANDA:

And it's a different product. It's actually for one of our custom pro prosthetics.

DENISE:

Okay. But, and you need a piece of equipment that we design and fabricate. So you reached out to us and then I discovered you were at chemical and an inventor and, and here we are on a podcast!

AMANDA:

Awesome.

DENISE:

Well, one of the reasons that I started this podcast, Amanda, was to help young people and particularly women to find the opportunities that are in be it chemistry, be it manufacturing, pharmaceutical to help us find those young, bright minds to join us. Oh yeah. So I understand that you have done some mentoring and with the stem group in Atlantic. Can you tell us about that?

AMANDA:

So one things that American Breast Cancer we've done, we, we have participated in, in Georgia Tech's co-op program you know, there's such a great engineering school and it's probably in our backyard, so we'd have a student work for us for our semester and they go back to school, come back, work for us for another semester. And, you know, that's kind of a really great thing for these students to have with this experience working, maybe you learn what you don't like, what you do like so we did have some male engineers and, you know, this might sound a little sexist, but you know, we never had much luck with them. Like there was one when I first started and he spent half the time sleeping, which I'm like, okay, you're trying to maybe have a job. Good job reference here. So why are you sleeping? And then you also broke things.

And so we ended up actually really liking the industrial engineers. We just wanna do some process improvements and, and so we had a female one and we were like, oh, she's a real go getter. She doesn't mind being on the production floor. You know, I mean she, and really awesome work. And after that, we kind of wanted to specifically target female engineers especially the industrial engineers out of [Georgia Tech](#), cuz they were just so awesome. And one helped develop like a custom software for us, which we're still using to this day. We've since tweaked it, but we've had such great experiences with these up and coming female industrial engineers. And I kind of also had to help with them as well, like mentoring, you know, like, you know, you know, talk about job things.

Like what could you do with this type of career, you know, I'm like, yeah, you could do so much with an industrial engineering degree in hindsight. I'm like, I probably would've been a really awesome industrial engineer if I had known even what it was when I was going to school. I've also, I'm a, I'm a member of the [American Chemical Society](#) in the Georgia chapter and they have a woman chemist committee. So I've tried to do some there with local elementary school. So which actually was one in my neighborhood it's kind of special school. They're all like title one kids, you know, they come from really poor backgrounds and, and I was trying to work with their fifth grade science teacher and they're like, oh yeah, we're gonna do a science fair. So actually it would come in a few times and help the guide them through their, their whatever they're doing for their science project. And then also had to help judge 'em and like, it was really fun. Like the kids were like, oh my gosh, she's a real scientist. This is so cool. Like, like they never would be exposed and I'm glad that they could see, okay, a scientist can look like me. It's just not some crazy guy with the, you know, white hair

DENISE:

I like your description of your, of your mental image of a chemist

AMANDA:

Yeah. I mean, like it's a weird thing too. Like it was like in eighth grade I had to take one of those career tests and it said, you'd be a chemist. And I was like, oh no, no, no, I can't be a chemist. That's just that's for guys. And that's like social suicide. And you, you wear lab coats with crazy hair. I was like, oh, I can't be that. And ironically, I am a chemist now. I mean, I do have crazy hair, some fun colors of blue and purple in my hair, but that's kind of fun, you know? Yeah. Let show that, you know, chemist can look like me and you can do some really fun things with this degree. And you're also not just always stuck in a lab with a piece of analytical equipment, that's actually kind of really boring. And here my job it's, there's always something going on. Something's breaking. I

have to go fix silicone batching air there. There's never a boring day at the breast form factories. I tell people there's always so thing going on.

DENISE:

That's awesome because we've, we've, you know, because our facility here is, is full of engineering people and fabrication people and polishing people. And you know what, we've tried to encourage the young people that we talk to here in the Springfield area is that the, you know, that connotation of manufacturing being the dirty job that left a long time ago, because most of these buildings that are manufacturing, anything these days are very clean, some pristine I'm sure yours is just because of the product that's being developed there. So yes, I think the, the more we can encourage young people about the opportunities that are within our industry are, are really the key.

So have you had mentors as you've come along?

AMANDA:

So, you know, I'd say like my mom was a big influence. She was actually a lawyer and, you know, she, I mean, she still wonders where all the science stuff came from. Cuz my younger brother's a scientist too. Like he's a biologist. But too, my grandfather was electrical engineer. So maybe there was something in the, in the gene pool. But one thing too was at Purdue through the school of science, they actually had this, something called the, the woman in science program. And I signed up for it. I mean, I didn't know that there was a leaky pipeline and the sciences and, and it was actually kinda like a really awesome program to be in. So as I joined it, like you were in one residence hall and the whole floor was female science majors.

Yeah. It was like, it was really cool to have that. So, you know, you always had probably study buddies, like you were all in the same classes together. So like this study groups kind of naturally formed. They had like tutoring there was a monthly dinner they would have with speakers and they also tried to pair up with a, a mentor, like, you know, someone like a junior or senior or something that you could talk to, you know, help, you know, you adjust to this new labs actually had a really great her that first year. I think her name was Julia. But you know, she was really awesome. Like we would get together once a week for lunch and you know... it was just really good to like have this person that you could talk to about this career path.

And so then, so I eventually said I did leave that dorm actually went to a different one and I was like the only science major on that floor. So again, it's like, okay, this is such a night and day difference. Like when you're on this floor, you know, mean I don't wanna, you know, dog on the, the humanities, but I mean, these are people that were, you

know, elementary education English, and a lot of them didn't have, you know, such rigorous classes. Like I had, they had to write, you know, a couple papers a year and I was like, oh, I I'm doing like six hours of physics homework every night. Like it was just a night and day difference between what our, our classes all entailed.

DENISE:

Wow. What a great story. And I'm so glad to hear that about Purdue always been one of those places that I've held in high esteem because I was in agricultural economics major at [Oklahoma State](#) and Purdue, actually one of the colleges that I looked at to go to. So I, I was always ex it just been one of my favorites.

AMANDA:

Yeah, no, it's, it's a pretty good school. I mean, like, I, I never thought much of it cuz you know, I was always, I've always lived to Indiana until, you know, my adulthood and I never realized how good of a school it is, you know, for engineering also science. Like, I mean it, you know, the having that degree has opened up doors like, okay, she had a really rigorous, you know, chemical education and oh, I did. I mean, it was, there were some classes it's like, okay, is chemistry really meant for me cuz you know, the classes were so hard. I wasn't understanding it. But in reality, like I really wasn't the only one, like we, you all kind of suffer through it. Unfortunately.

DENISE:

Yes. I had some pretty good friends to help me get through some of the econ stuff that involved more numbers than I liked. Yeah.

AMANDA:

Yeah.

DENISE:

So before we wrap up I have just two or three rapid fire questions. So what brings you joy?

AMANDA:

Oh, I really like cats. I'm also a fiber artist knit and crochet. So I always like to create, so you know, you put the, the needles and the yarn in my hands, it's just so relaxing and then you have a beautiful thing to wear or, you know, keep you warm or cozy in the winter. So things like that, you know, bring me great joy.

DENISE:

Great. Who would you like to be stuck on an elevator with?

AMANDA:

Oh, that's kind of a good question. Maybe Anthony Bourdain. I mean, I just really liked, you know, his description of food and snark and you know, just interesting guy. I know he's dead, but you know, I really loved watching his show.

DENISE:

He was one of my favorites. So which, what gets you going in the morning?

AMANDA:

So you know, you know, I'm always stuck in Atlanta traffic, unfortunately. So always I'm a tea drinker. So I have my, you know, to go cup of, of tea. I make have a fancy tea cuddle robot. So, and then I always have a Thermo to bring empty, but have my commute. I'm usually listening to like NPR news in the morning and that's my morning tradition or commute, you know, learn, you know, the news of the day and, and eventually, you know, 30, 45 minutes, sometimes two hours later, I'm finally at work and you know, ready to start my day.

DENISE:

Well, Amanda, this has been as delightful as I anticipated.

AMANDA:

Yeah. Well thanks for having me. It's been great.

DENISE:

Thank you again for joining us 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 custom-powder.com.