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Carl: ...getting that broad overview. Because when you get into the workplace, and mostly as a technician, one day you may have to work on an air logic machine, and the next day you may have to be working on a complex servo system. And just being able to understand those...

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Mike: From the Center for Occupational Research and Development, welcome to Preparing Technicians for the Future of Work. I'm your host Mike Lesiecki. In each podcast we'll reach out to people who are actually on the front line of the future of work and hear what they have to say. That means interviews with industry, interviews with working technicians, forward thinkers in the field. We'll do some background research, and we'll curate that research to make sure you have the most up to date and relevant information. And in every episode, we'll suggest action that you can take. We want to inspire you to take that action.

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Today we're talking with Carl Benttine at Hormel Foods. Carl's a Senior Electronics Technician there. Welcome, Carl. Tell us a little bit about your background and what you do at Hormel.

Carl: Well, I've worked for Hormel now for over 20 years. I personally program equipment. We build a lot of our own equipment. Sometimes there's things that can't be purchased on the market. If we need to build a slicer, a conveyor, vision systems,... to do specific things during production, then we are tasked with those projects. And that's what I do.

When I was younger, I actually worked on a farm. I actually sold hogs to Hormel. Never thought I'd end up working for 'em. And ended up working at a sock factory. I worked my way up to senior mechanic there and had the opportunity to

go back to college. So, I took it in electronic stuff and I ended up at Hormel.

So, I started as a union technician, working on the floor, on all the equipment. And with my skills I got from my local community college, I was able to move up very rapidly into what they considered was an Office Tech position. That's where I maintained the PLCs, the touchscreens, a lot of the processes, write programs, and help troubleshoot. I had the opportunity to move into our Engineering group. We have a group of engineers and other people like myself that...we just build our own equipment. So, that's how I ended up here.

Mike: Sounds like you have a really diverse skill set there, Carl. So, here's a question for you. You mentioned some of the things that you do. But what do technicians typically do at Hormel? Here I am, sitting on the outside. I really don't know what happens inside a major food processing facility. Is there automation? Is there robotics? Are there automated materials handling systems? Refrigeration? What to technicians typically do inside a facility like that?

Carl: Everything you mentioned there. All of the above. We have technicians that maybe will concentrate more on the IT side of it: keep track of security systems, keep track of the time clock systems, all of the computers. But myself, I started in the union. So, I was considered a union electrician. And over the years, I actually got my journeyman's license. But if a piece of equipment would go down, we'd get called: "Can you come and try to troubleshoot it? Get the line back up and running?" And there can be things as complicated as X-ray machines, metal detectors. And you'd have some robotic cells that would stack pallets, stack boxes (because the boxes were too heavy for a person to do it all day). So, there's the wide range, the whole gamut of different things a person could go into. But I specifically stuck with the automation side of it.

Mike: Carl, if you had to think as you see new people come to work at Hormel (technicians, right?): they could be coming from other industries; they could be fresh out of a community college program. Do you see gaps? Do you say to yourself, boy, I wish this person would know more about this or that—particularly the technical skills? Do you see gaps there?

Carl: There is some. When I first started, it was hard even reading prints, because European prints and the way we do it in the United States here—there's definitely differences. So over time, you just learn how their system worked, compared to ours, and you just pick those things up over time. But at first, stepping in, it was a little overwhelming.

And then you had to learn the wide range of voltages. You had equipment that was 480 volts. You had equipment that was 220. 110. All the way up to—in our engine rooms, we had big compressors that were 2400 volts (synchronous), 13,800 volts. Or you're even working on transmitters—big microwaves that cook product. So, yeah. You just would have to take one day at a time. And just keep moving forward. Learn as you went. Things that I would say people are lacking is just that confidence to dig in and try.

And troubleshooting skills. I've seen that gone to the wayside. Being able to look at a problem as a whole and break it down: "How do I get this machine back up and running? Or what is the major problem here? It just doesn't work." Well, why doesn't it work? Sometimes people get overwhelmed, and they just need to break it down into smaller pieces.

Mike: Sure. That sounds like you need a real mix of skills: electromechanical skills. IT stuff. Quite a mix there.

Carl: Oh, yeah, that's something we have seen. Even when I did work in the plant on the floor every day, there was times that, of course, it was always "an electrical problem." And you'd have to go and prove that, no, it's actually a pneumatic problem because my electrical side's working fine. But maybe you have a sticky valve or a bent cylinder or something like that. And have the mechanic come and fix it.

Mike: Sure. What about cybersecurity, Carl? I mean, today, are we giving our students enough information—enough skills—in the cybersecurity area? Because that must be part of an issue for any modern technician today. What does an employee at Hormel need to know? And what do they have to be able to do when it comes to things like cybersecurity?

Carl: The big thing is to get that "30,000-foot overview" to understand what you're actually doing. Because the IT department... And I understand they want to make sure everything's secure, where nobody can get in and get out

where... Let's say, in my situation, I work off site from a facility. In the past, I would be able to get on my laptop and maybe actually connect to a process that was all the way across the country. And now they've made it a little harder to do that, because they're scared of people getting in and hacking their systems. So, we can still do it, but it just makes it a little more difficult, or you have to go through extra steps to get that kind of things done.

Mike: So, all that cybersecurity stuff is really integrated into everybody's job, I guess.

Carl: Oh, yeah.

Mike: I got a funny question for you, Carl. Let's suppose you were interviewing a technician. And let's say you asked them about power supplies. And all they could talk about was linear power supplies. And you asked them about switching power supplies. They didn't know anything. Are you horribly disappointed? Or are you going to train them on the job?

Carl: As long as they understood the power supply, the major overview, that would get trained on the job.

Mike: Carl does Hormel offer on-the-job training? Do they offer vendor training? How do people keep up at Hormel? How do they keep their skills up? These new skills that are coming out? How does Hormel manage it? Do they work with community colleges? Or do all of those things?

Carl: All of those things. Some of that comes from just the growth of technology. Because you may get a new piece of equipment brought into your facility, and then there may be some training with that. For us with PLCs at work, that stuff's always advancing.

I can remember back using old MicroLogix, Allen Bradley stuff, and now you're in ControlLogix. And you're just always being forced to move forward. But Hormel, as a company, has been really good where they can give you so many hours a year—to train you, or to bring people in to do some training.

Mike: Well, good. That makes a lot of sense. Let me ask you about one of those emerging technologies that people are hearing more and more about. Does a technician at Hormel need to know the basics of Artificial Intelligence and Machine Learning? Or not yet?

Carl: As long as they have just the understanding of it, so, they know what it is.

Mike: Yeah.

Carl: Because I can't think of a spot that we're actually using it yet. But our group, since it is a R&D group, we have looked into that for a couple years now. It's quite expensive. So that's sort of limited to us not to go down that route. But we do a lot of, let's say, vision projects ourselves. And that's been a huge discussion of... can AI help with this project or not? I can picture in the future, eventually, that will become more and more. But as of right now, as long as you have an understanding, you just know what it is.

Mike: Okay, that's good. That's fair. Think about automation. We talked a little bit about that. Do you feel that the whole pandemic thing might have accelerated more automation, more robotics? Or were you already on a path that was really moving fast in that direction? What's your sense of that?

Carl: We've been always on that path. Because that's always a huge thing. Can you make that production worker's job easier by automating something? Or can you increase your profit by: If I can automate this, then we can produce twice as much, for half the amount of money. So, yeah, we've grown to using a lot of servo systems. We've grown to using a lot of vision systems. And knowing what I know, that's just going to keep going up and up.

Mike: If I were to look inside of Hormel, would I see a lot of collaborative robots? And pick-and-place sort of situations? What would I see?

Carl: Maybe not so much collaborative. Pick-and-place—I know we do for a warehouse. We have some big systems there for automatic storage and retrieval—for pallets. Plus, then we do have some pick-and-place robots for boxing, just because, like I had mentioned earlier, some of those boxes are heavy. And if you expected somebody to do that all day long, it'd be pretty hard on the person. So, yeah.

Mike: Does the technician have to program those automated systems, those robots? Or that's done by somebody else? I'm trying to get a sense of what skills a technician might have, such as Programming. How much they have to know.

Carl: So, the basic technicians just need to understand how it works, maybe be able to get online with them if they needed to—to troubleshoot them. But then, as you grow, and maybe you get into a position, like I'm in, where we're building our own—that's where you get to actually start programming the higher-end systems. Or being part of when we purchase the higher-end systems.

Mike: Okay, cool. All right, Carl, now get out your crystal ball. And, as much as you can, if you can give a sense of: What's emerging out there? What do you see as new technologies, maybe that are just on the drawing board? Of course, we want to be careful and not say anything that the company wants us to hold tight, right? But what would you see out there? Or maybe it's MORE automation? Or maybe it's more remote operation of machinery? What do you think? What do you see coming out there in, let's say, the next three years or so?

Carl: There's always been a big push for trying to keep machines safe. In the past, a lot of old equipment safety isn't up to today's standards. Nowhere near. And some projects we've had to come back and add safety, just for that reason. So, that's one thing you got to look at that, try to incorporate that into your design and programming from the start.

A lot more motion. Servos. I'm more old school. A "servo" to me used to have...a motor would have two cables: a power side and a feedback side. And now you're getting down to motors with one cable—where everything's together. And that was always a sin to do something like that. But technology today is allowing that to happen. So, it saves on cabling, and costs, and wiring.

Otherwise, vision has been growing on and on. Every year there's better cameras. Or better technology. That's where, as a food processor, you see those things. How can you automate that? Make it better? Make it faster?

Mike: Sure. Makes sense. Here's the last question for today, Carl. I know you've been involved in a good way with the community colleges and an advisory board role of helping them. If you had to advise the Community College... Let's use our colleagues, our friends at North Iowa Area Community College (NIACC). Say, "Look, this is what you folks need to be doing to better prepare technicians that come to work here." What would you tell them?

Carl: So, since I'm biased... I went through NIACC's program. And when I went through it, we had fluid power. So, I got to see hydraulics. I got to see a robot. Maybe not so much on welding and some of the mechanical things. It's just getting that broad overview. Because when you get into the workplace... And mostly as a technician, one day you may have to work on an air logic machine. And the next day, you may have to be working on a complex servo system. And just being able to understand those. And, like, relay logic compared to a PLC. Those are things that, if you understand relay logic, well then you understand how a PLC works. And just those types of things. So, trying to get a person that's got some experience, at least with everything. You don't have to be great at everything. But, at least, if you have the experience, and you know what you're looking at, that moves you further ahead than a lot of people.

Mike: That sounds good. Carl. As I reflect on what you said today—the diversity of the job tasks that a technician has to do at Hormel—I thought it was interesting. You mentioned one day, they're working on this. And the next day, it's something totally different. And you emphasized that broad background in technical skills that a company like Hormel is looking for in their technicians. It just makes a lot of sense.

Carl: Well, thank you.

Mike: Carl, it's been a pleasure talking to you today. Appreciate taking time out of your schedule. I know it's a busy time for companies like yours. Again, thanks very much for being part of this.

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Mike: That's it for today, listeners. If you access this podcast via the website, will you please help us? Go right near the Show Notes and click on the Survey link. That'll give us a little bit of feedback on how we can improve this podcast. And thanks very much. We appreciate it.

Now, today, we heard Carl talk about the challenges of working as a technician in the food processing industry. One message was very clear today: that technician's work changes very rapidly. They're doing something quite different often on a day-to-day basis. They have to be agile. And there's a lot of on-the-job training to help them keep up to date. So, your challenge is to take this message into your own training and education system. Look

at your program. Are there enough real-world scenarios where students are quickly asked to shift projects and bring themselves up to speed? For example, do your electronics students face cybersecurity issues? Do they suddenly need to integrate a vision system into their project? Are they confronted with a rapidly changing system to which they must adapt? Think about that. Think about how you could do that.

By the way, there's a starting point for you. And it's in our project, Preparing Technicians for the Future of Work. We're developing a series of instructional cards which bring these scenarios to the fore, so you can use them to help your students adapt to situations. Now imagine the positive impression your students are going to make when they go on a job interview. And they describe their response to what happened when a situation rapidly changed. So, that's your work for today.

This podcast, as you know, is produced by CORD and our audio engineer John Chamberlain. Thank you, John, for all of your excellent work. The project is led by Principal Investigator Ann Claire Anderson, also at CORD. Thank you, Ann Claire. And you can find our podcasts at (all one word) preparingtechnicians.org. You can also access the podcast on Apple Podcasts or Google Play. And, of course, a rating and review are always appreciated. And thank you, our listeners, for ***Preparing Technicians for the Future of Work.***

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