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David: Here in our department, reliability is one of the key factors of our foundation, one of the main come-to-work items that we need to provide for our partners here at UPS* and the customer.

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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 I'd like to welcome David Ayala. David is the Western Region Building and Systems Engineering Training Manager at UPS. That's a big company! Welcome today, David.

David: Hi, Michael. Thanks for having me here.

Mike: You know you've been at UPS a long time, I think. Like, I think, you started in your position is around 1999, wasn't it?

David: Yeah, I started... I was 18 years old, a college student that needed a part time job to make more money and I worked my way through school. And UPS offers that. And I started as a part-time Loader/Unloader. And then worked my way up to a part-time Supervisor. And I worked within Operations while I was getting my degree in Civil Engineering. And from there, even what we do today, in my senior year, UPS started offering a tuition reimbursement. And they paid up to 80% of my Senior year. So, that's something they offer today. At that point I was graduating, and I learned that

there was an Engineering department. And I came on board with that department in '99. And so, I've been an Engineer with UPS since that point. So, I just celebrated my 25th anniversary.

Mike: You know, it's interesting that you have this long-term perspective. You've seen...must be huge changes. In particular today, I'd like to talk to you about, well let's say, Automation at UPS. You must have seen a lot of changes as the company is moving very strongly in that automation space.

David: When I started UPS, I was offered a dollar more if I memorized the first three digits of all the zip codes in the nation, and so I went for it! So, just think of all the staffing we needed in order to pick up a box and see "010" needed to go to Boston, Massachusetts to a zip code with "100" going to New York. Or "196" going out to Philly. And then now, today with automation, that the fact that we can have a computer immediately read zip codes, know where it needs to go. And, through the PLCs, that now we have a mechanical operating arm, instead of my hand, my arm, reading upside down, or whatever, it is all done between the camera scanners and the mechanical devices that will be out in the field to move those packages over, divert it to another conveyor belt. So, absolutely amazing, and where we've been, and how we can operate more efficiently now.

Mike: So, what this really has meant, besides that huge bump in efficiency and everything that's associated with that, it must have changed the view that UPS has of the workforce, especially the technician-level workforce, of what you might expect from them coming into a place at UPS. What do you look for? And how do you know what to look for in your workforce?

David: That's a great point because there's a couple of things that we are absolutely looking for, is: those people are ready to go to work. We at UPS are really known for our hard work, and protecting "the shield," and you know, when you say you "work at UPS," it's something that you're known for: hustle, integrity, somebody that's going to take a package from point A and get it over to point B. And so, in this transition of going automated, from this place that we were just operating with just standard motor control, we ended up doubling, to almost tripling our staffing with automation. So, every building that has gone automated... Our typical building of—let's say four mechanics, one

supervisor—started doubling or tripling. Because of that operating efficiency, we ended up running that building longer and longer. And with the immense development of eCommerce, and the deliveries going out to homes instead of businesses, and especially during the Christmas time, where we would typically move 18 million packages a day throughout the year, we are now moving 36 million for about an eight-week period. So, we've seen a tremendous shift in what our staffing model looks like, our capacity challenges.

Mike: You know, David, I just want to reemphasize the point you just made. The conventional wisdom is "automation is taking away jobs." While certainly that's true for some level jobs. But what you're saying is the high automation levels in your facilities are increasing your workforce by as much as a factor of two or three.

David: Yeah, for sure on the engineering side. And back, let's say just 10 years ago, we were probably moving about 10 million packages a day. And so, the fact that, you know, now as we're crossing the 30 million threshold during the Christmas time, what we're doing is we're just spreading out our footprint in the nation, in metropolitan areas. And so, when we're building a new building, the need for as many people as we had before isn't there. But on the technician engineering sense, it's doubled! So, our department has pretty much tripled in the last five years.

Mike: So, when you look for people to fill that need, number one... Let's suppose I'm in a job interview. What are you looking for in my skillset? Do you want like electromechanical skills? Are you looking for someone who understands PLC programming? Ladder logic programming? Are you looking for a high-level person that can do preventive or even predictive maintenance based on data streaming out of the devices? What are you looking for?

David: Good questions. And really, we're not looking for a one-trick pony. But somebody that can handle their own on the electrical side. Troubleshooting when we have an issue out in the field. That they're good mechanically. That they can tell the difference in their Allen wrenches and know where to go. And know which ones are typically used to the point that they are comfortable with welding. Especially in a—what I like to say—a "battlefield moment," where the packages need to get out. There's a lot of customers that could be easily affected. One conveyor belt can move

typically about 8,000 packages an hour. And so, there are a lot of people that are affected.

And you know, think: one package has two customers. The one that sent it, and the one that's receiving it. And with the one that's receiving it, if it's a gift for a child, we may have a chance to negatively impact the future of UPS and what they think of UPS when they get that pair of sneakers, you know.

Mike: You know, you mentioned you're looking for a certain level of education. Are you finding the technical programs at the colleges, the community colleges, the private technical colleges? Are you getting the skills that you need? Or, if you had to go in and tweak those programs, you would say, "Oh boy, I wish they had more electromechanical stuff." What's your view of the people that are coming to you?

David: I think there are times that the material may be buzzed through really fast. And they're not getting that lab experience.

I went to a polytechnic university, Cal Poly Pomona, and we really harped on that idea that you're not just going to learn it here in class. You are going to spend time in the field or in the lab. I've learned testing water, doing soil samples, and building basic electrical circuits, and getting that experience. And so, from the school's perspective, they're actively coming up with ways to do that: to get exposure to the equipment, that they can handle their own, that they can pull away, and watch, and they can get feedback on how they did.

They may be by themselves at 10:00 PM. And, next thing you know, the conveyor is not working. Or the HMI goes down. And how are they going to hang in that moment? And can they be trusted?

And then ultimately that they can work safe. Because if somebody's not troubleshooting that fuse correctly, they got the wrong setting in place, they are in a live panel and they don't think they're in a live panel—we got problems! And we want to make sure people are safe. And we don't want to hire those liabilities that are going to injure somebody else at the same time.

So, those are some high concerns that I have with the students coming out of school. Then we have a standard test that comes in. The individual that applies would take a

written test to just filter out if they have a background in this or not. And then there's a hands-on test. That they pass that, and then they're doing that with a management person, or a group of folks, and they go around to like five different stations, demonstrating they know how to weld, that they know how to troubleshoot, that they know how to follow directions, that they know the basics of some mechanical elements. And then there's an interview. Going over safety procedures. How they would handle different scenarios. And then all that is based off of a score. And then depending on that score, they'd be eligible for the next opening that is there.

Mike: Gotcha. That's a pretty straightforward interview process. And I think it really sends a message. If a student was studying, and hoping to go to work at a place like UPS, they'd want that multi-set of skills, including welding, and ability to troubleshoot, and electromechanical side as well

David: As a management person, I'm looking to get a well-rounded team to protect the other individuals and make sure everyone's carrying their own weight.

Mike: Excellent. So, we talked a lot about what you're looking for today, and UPS's drive towards automation. So, get out your crystal ball, think maybe 24 months out, maybe a little bit longer. What do you see then? What's the future look like for this workforce that we've been talking about?

David: Well, that's a good question. You know, I would like to see more on the predictive maintenance side. I think there's many times that we can be on the reactive elements. And I would like to see the curriculum and those in the future start to see ways that we can be more predictive. And I say that because e-commerce is not changing. And the high strain on the requirements of an engineer, the requirements on our equipment, the strain and pull that our downtime is becoming very minimal.

And you just imagine what the airlines have gone through with aircraft, and keeping them reliable, and keeping them profitable, and, you know, highly paid pilots, to a lot of customers that want to use this equipment to fly from point A to point B. And that they're always in the air, and highly utilized, but that they're highly predictive in order to avoid a catastrophic event.

And the place I know that I'm concerned about, and there's many others, that we can also come to this point, a world-class maintenance. That we can come to this point of predictive failure instead of running something to a failure; or we're flying by the seat of our pants four to five days out; or certainly within 24 hours we know something's gonna fail. I mean, all those are good scenarios to some degree, but the more reliability that we can paint, and keep the building running, but the challenge of minimal downtime.

What are ways that we can, I guess, develop a better mouse trap and see that functioning at a higher level? And you know, 2 to 5 years and see more development in this area. Because you're seeing that with the low resources, or low unemployment rates. I think getting the staffing, getting qualified folks, getting folks in the trade and vocational schools, is all going to be a challenge. But the higher quality that we can get out of that and in ways that we can develop a future in this area, I think we're going to see a lot of profitability and more things that we could do that we never even thought of because of the current things that have been in front of us like huge mountains.

Mike: You know, even though I promised, David, that was going to be the last question, I can't resist asking...

David: [laughing]

MIke: I know. I can't resist asking one more. When you talked about equipment efficiency and minimizing downtime, do your employees...are they tuned into factory metrics? Like maybe overall equipment efficiency? Do they know what they're doing directly drives that company's business model? Do they have a sense of that? Do you give them a sense of that?

David: Sure. Our system reliability is printed out on the top right corner of their timecard every day. So, that is one way that we've communicated the runtime hours per breakdown--is what we've called it. We've defined a breakdown as 15 minutes. But we are now moving over to a more industry standard of "system effectiveness. We are rolling this out this year. So we're in a transition. Transitional vocabulary. Transition of the matrix. And certainly, the matrix of old is still on their timecard today.

But where we're going to, is that one main line conveyor that carries 8,000 packages an hour. Is it as important as that little itty-bitty conveyor that's 10 feet, that moves 2000 packages in a 4-hour time span? You know, well, the answer is "No," because that main conveyor feeds the little itty-bitty conveyor.

So, we are now looking to rate and rank that differently. Where before, as of last year, any breakdown was a "breakdown." Anything that was 15 minutes, that's what we were targeting and looking for. And it was widely known. But in a different way to evaluate and look at the predictive side of it, too. How are we operating effectively with these main components that could catastrophically affect service? We are now changing that matrix. And it's something that we're embracing today. And we're probably gonna need to get it out over and over. And explain it in a way that our folks feel empowered. That they can see different ways to look at it. And we can start hearing ideas on how we can improve what we do.

And here in our department, Building and Systems Engineering, reliability is one of the key factors of our foundation, one of the main come-to-work items that we need to provide for our partners here at UPS and the customers.

Mike: Sounds good. You know David, for the educators that are listening on the podcast today, I hope they'll think about how they help their students prepare to come into an environment like this. And everything from understanding this interplay of reliability in factory performance and bottom line of the business. I think that's an important thing that they can potentially bring into their education programs. And maybe, in the end, that workforce that comes to you has a faster time to productivity on your side.

David: Excellent. I'd love to see that. And I appreciate those schools that are going for it. And, for me personally, I've been going to the high schools, going to the junior highs, to talk about these jobs that are there and that the schools are going for it. There's grants that are developing these programs. And we'd love to continue to try to partner up in these areas to support it, talk in formats such as these.

And there are at least 18 other Training Managers spread throughout the country. And I'm one of two West Region Training Managers. And there's two in the East. And we're

highly concerned about the workforce and what the future looks like. So, reach out to us. We're more than happy to get out there. And even mentor. And just even see what UPS can provide, let alone those that just need a part-time job. We have tons of those. And in the metropolitan areas, there's a lot of places that help pay for school. So, they can be in a junior college in these schools, just loading and unloading packages, getting exposure, and helping to pay for school while they seek this trade or these vocations.

Mike: That's a great wrap up, David. And watch out what you ask for. I mean, we could have people knocking on your door or your colleague's door, saying, "Hey, how about me here?" But that would be good, I think. Yeah, if it works!

David: Yes, it would. And we'll be ready!

Mike: Good. As I listened to you today, boy, was I struck by that UPS work ethic that came through your discussion of what you're looking for in the people that work there. Do you want people that are really willing to work? And work hard? And you're willing to compensate accordingly. That sounds very good.

And I also, David found it interesting when you talked about that "battlefield moment," right? And suddenly, in my mind, there was a UPS plane waiting on the tarmac there. And you've got a technician finalizing, or trying to get something back online. Very exciting to think about that sort of thing.

David: Yeah, absolutely. And that's it, on a daily basis. And we are now going to a six-day operating week—right now. And so, it's even happening, even more today.

Mike: All right. Colleagues, we've heard, from David today from UPS, talk about that increasing level of automation that's driving their business. Also, increasing the numbers of certain segments of their workforce to a rather large extent. And what they're looking for on the workforce that comes in that wants to work with their company. David, thank you again, for being part of the podcast. It's just a pleasure talking to you.

David: Likewise. Thank you very much.

Mike: Goodbye, then.

[background music]

Mike: That's it for today, listeners. We were really struck when David talked about that upcoming emphasis on predictive maintenance and how important that would be to increasing the reliability. They really count on reliability in their systems. So that's your task for today: is to take a look at the Show Notes. We put a link to a resource on An Overview of Predictive Maintenance. It's a theme that's come up several times in our prior podcasts. So, take a look at that. Make sure that you understand all of the features of predictive maintenance. And you might begin introducing that into your technical programs if you haven't done so already. That's your action for today.

As always, find our podcast on PreparingTechnicians.org, or subscribe on Apple podcast, or Google Play. A rating and review is always appreciated. Our series is produced by John Chamberlain at CORD. Thank you, John. The project is led by the Principal Investigator Ann-Claire Anderson. Thank you, Ann-Claire. And thank you, our listeners, for Preparing Technicians for the Future of Work.

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