

Advisory board meeting Fabrication Welding & Design 11-15-2025

Michael Porzio: Hi, Paul, good. How are you doing today? Good, good. I see we're waiting on a couple other people. Give them a couple minutes like two. Thank you so much for joining tonight.

I don't think in person, no, we'll do a round of introduction. Introductions once the other two or three jump in. Hopefully they do. We're waiting on Jim mail and Derek Geno and possibly Jim Barry. We'll see he's he was a maybe, hopefully we're not ghosted by the others, though I was hoping especially Jim Mail would join. He's a representative from ABB robotics.

Paul Dana: Here

Michael Porzio: I couldn't recall. Did you say you were going to you were thinking about coming down here and touring the space? Yeah. No. Okay,

Paul Dana: It's right up on the hill there. Yep,

Michael Porzio: All right. Um, well, I don't want to hold you up. I'm not sure where the other two are at. We can start a one v1 advisory board. All right. All right. Let me go through my notes here. All right, so I'm Michael Porzio. I teach fabrication, welding and design at rtcc. You could also think of this class as just being called advanced manufacturing. We changed the name this year to try and get more student engagement from people that have never heard of the program, advanced manufacturing, we figured we'd just check exactly what we do in advanced manufacturing right in the title. We had a bigger turnout this year. I'm not sure if that was a coincidence or maybe it was title, so we're not complaining. We'll probably keep it as fabrication, welding design. So I teach a couple different things in this class. It's not predominantly any one, advanced manufacturing. We have welding, we have CAD so I teach SolidWorks. We do additive manufacturing. So we do a lot of 3d printing. And of course, SolidWorks slots right into additive manufacturing, because you can design parts and then print them. We have vertical mills. We have two bridge ports, so we get IRCs on those. We have, of course, a drill press. We can get an IRC on that as well. Our IRCs, these licensures come from NIMS certification. We also have two CNC machines, two hosses. However, I inherited them, quote, unquote, non functional. So the previous instructor informed me that they had sat for a while, and they need to be completely gone through with new coolant oil, and that their pumps had issues. So I would love to fix those, but I have, I have issues with funding. So this year, we started

with five students, and you need to have eight students to get, like, enough funding to really do overhauls on a CNC machine. However, my class is filled up to now having 10 students. So it's we're spread kind of thin. I don't have any extra budget, but I have a lot more students. So that can be a little complicated, but hopefully next year, if I get a lot of the students from this year returning as seniors, we'll have the budget to repair those machines so that we can get certifications on them. Yeah, so at this point, I would let me check to see if anyone has tried to join. It doesn't seem so much just us still, all right, so now I'll ask for everyone that would be you to introduce yourself and your background.

Paul Dana: So thanks, Paul. Obviously, I am the subtractive engineer for the manufacturing collaborative, which is a department of Vermont State University. So. Do contract manufacturing and engineering services for local Vermont businesses. My background, I started seven years ago in CTE. I did three years of a high school CTE program in Springfield with Chris Cray. And then I, after graduating out of that program and graduating out of high school, I went right to Vermont Tech, now, Vermont State University did four years there, graduated this spring with Manufacturing Engineering Bachelor's degree. Nice, and I've been with the collaborative for a year and a half in this position.

Michael Porzio: Cool, very cool. I'll give some pretense. I didn't give any background on myself. So I have my bachelor's degree in Industrial Design. I've worked in industry as industrial designer and design engineer for the last decade. This is my second year of teaching. I have not taught before these two years, at least in a professional sense, within a school system. So this is all a little new to me, as far as like, how everything flows, but the background I have experience with, and I'm very comfortable, and I enjoy this kind of work, so it's cool. I think that makes a better teacher. All right, next question, all right, we went through that step four explain what tools and equipment you have in your class and available or the resources. So I kind of went over that briefly about the the Haas mini mills. So we have a Haas mini mill and a Haas lathe. They're both, like, the same size, same class machine. The bridge ports are actual bridgeports. They're, they're bridgeports, vertical mills. They're, they're nice. They've got all this, all the tools and all the tricks and toys, so they're fun to use, and no cooling or pumps to go wrong. So we can use those. That's good. We also have three welding booths. We have TIG stick and MiG. We haven't touched on TIG this year. The students are still getting comfortable with making stick, and we're going to probably move into TIG later in the year. We don't offer any IRCs in TIG stick or MiG, as our school, like most schools in Vermont aren't certified to give American Welding standard Association licenses, but if students are interested, and they do very well in our class, we can send them off to White River to do that With your fabrication collaborative. How does that work with

welding? Do you do offer? Well, you're not really a traditional Can you explain what you do for this? Because it would be good for context, like, what is the manufacturing collaborative?

Paul Dana: So I'll start at the beginning, and I'll try and keep it short. We were funded in 2020 we got a large, \$12 million grant from the Department of Defense to work on bringing advanced manufacturing technologies to rural areas. So we have sort of four cornerstones of our business. One of them is machining, traditional machining. We have a DMG Mori, five axis wired em and stuff like that. That's machining. Side of it is my responsibility. That's my process area. We also have metal 3d printing. We have a couple different technologies in that. We've got polymer 3d printing, which sort of falls in that additive sphere, although they're two very separate things. We have industrial CT scanning and reverse engineering. So we've got very powerful CT scanners that can look through electronics and see those things. And then we do have, like, design, just regular design engineering, or products and stuff like that. So we don't serve much in the term of extreme metal pipe welding, that sort of, you know, more traditional fabrication, right? It's, it's it's all, you know, very high end is our goal? Cool.

Michael Porzio: That was a great summary. I've toured the space before. It's very, very impressive, especially the am I, I guess. But I think the the metal additive manufacturing part is really cool. That's, I have more of a background with additive manufacturing is I worked for phillibot, we and massive dimension, which are companies that designed large scale 3d printers. But your CNC space is also very impressive for subtractive manufacturing. All right. Next question my advisory committee, which is currently just you right now, what equipment, tools or programs do you for C being useful in the coming three to five years? I What do you think would be valuable for our class and for me to teach students moving from our CTE space into the real working world?

Paul Dana: Yeah, I think SolidWorks is great. I think that's going to be timeless for a very long time. That's what we use in our islet workforce for design stuff. Excuse me. You know, as you look forward towards CNC and Cam, I use Fusion 360 Yep, yeah, Fusion 360 is pretty good with Cam. Yeah. Like it runs our five axis, like we do great stuff on it, and, like, I never run into issues with it, you know. So as you look at getting that CNC equipment online using 360 I think it's the no brainer for you. It's free. There's tons of great support online. It's constantly changing and constantly getting better.

Michael Porzio: Yeah, when you say it's Sorry to interrupt when you say it's free, free, in what sense the cam section of it is free based on the rest rest of the package,

Paul Dana: because the whole thing is free. So currently, because I'm part of an

educational institution, and I have you reached me at my collaborative email, I have a Vermont state.edu email, gotcha edu email, I can register with Fusion. Every year, I get a free full licensure

Michael Porzio: with all the ad hocs. I That is interesting, so I probably could do the same thing. I would assume with an edu I did not know that that is valuable, if anything comes out of this meeting, that is extremely valuable, because we have to, we have to balance, of course, budgets for services here as well. Fusion 360 for a solid which I was not aware of that interesting.

Paul Dana: A couple more notes and a couple more on this. I think would be good for you that we can talk about at some point. Sure. Yeah. So I think fusion 360 would be really good. What are you guys using? What is your printers?

Michael Porzio: Oh, for printers, we have two bamboo p1 S's, we have a now ancient Ultimaker s5 though it's still running next to me, so it's functional. We just got a Creality Ender five Max, which has been pretty cool, because that's a much bigger format printer.

Paul Dana: Yep, so you guys are using bamboo studio. Yes, yep.

Michael Porzio: The slicer wise, Slicer wise bamboo, of course, has their own proprietary one, the s5 Ultimaker, we use cura and then CReality. They have their own slicer, which is a little strange, but it works.

Paul Dana: I think you can get an thing in Kira. That's what I did.

Michael Porzio: On my Yes, I've got to set mine up in Kira as well. I'm just more used to cure, and I think that the its layout is really intuitive.

Paul Dana: Yeah, do you guys use what else do you guys use for technology or in your like tech stack?

Michael Porzio: I'm trying I'm trying to think, if I'm missing anything, I mean, of course, we have a whole host of other fabricating tools, like we have band saws and sanders and pipe benders and grinders and all manner of power tools you can possibly imagine. But as far as, like, kind of big price point items, we have a we do have a laser cutter as well, though we really haven't dived into that too much. It's a boss laser cutter, one of the bigger ones.

Paul Dana: What do you guys use it for? You guys a Google organization?

Michael Porzio: Yes we do

Paul Dana: I think that'll make sense. My one recommendation, infusion, obviously, because it's free yep and continuing to grow Yep. Thank you.

Michael Porzio: All right, we'll move on. I'll remind you to circle back to unless that was, let's just circle back now before I forget. You said you had a couple of things you wanted to bring up. So do you know Lorraine Palmer? If I do, I have forgotten their name.

Paul Dana: The education sales rep for Hoss.

Michael Porzio: No, I do not know this. I do not know them. All right, go on.

Paul Dana: So she works with career and tech ed centers. She works with colleges. She works with all post people to work on, you know, I think that's probably who you worked or who the previous instructor, worked with to purchase that equipment. They have POS as a foundation that will give educational grants. So there is, I know, in my when I go to 1821, we got \$7,000

Michael Porzio: Wow, that's good. Just goes to, like, that's just in the program.

Paul Dana: There's, I don't think there's any strings attached there, okay, also, through that program, I think is really good service. So things like the cooler pumps and stuff like it in my notes to I will connect you with Lorraine tomorrow. Thank you. Email address and you guys can get talking and see what you guys will do.

Michael Porzio: Yeah, that would be excellent. While I have experience running HAAS brand, CNC, like in the past and previous jobs, I have no experience maintaining them or replacing parts, or I have no connection to their their organization whatsoever, so anything like this is very helpful. Thank you. Thank you.

Paul Dana: That's it for now. Cool. All right,

Michael Porzio: I'll move on. We're getting through this really fast with one. Person, so we might both be out of here pretty soon. We talked about equipment, we talked about software,

Michael Porzio: As far as IRC. So those are like licensures. So of course, our students,

when they graduate, they can go right out into the workforce and show that they have skill sets. Is there any others you can think of us providing and, of course, CNC and CNC lathe are two that I would be very interested in providing next year or when these machines get fixed, possibly this year.

Paul Dana: So you guys are doing sort of for your manual stuff. That is NIMS right, correct, yep. Excuse me, you guys use tooling. You at all?

Michael Porzio: Um, I'm not familiar with that, so now, so tooling, you, I used it in my program. It is an online, like, multiple choice answer sort of thing, okay, on by the Society of Mechanical Engineers, cool. Don't know what it looks like, but like, we were assigned like, three modules a week or whatever. Okay, they have hundreds of them that would be excellent, yeah?

Paul Dana: And it's like basics of vertical milling or cutter geometry or bench work or all sort of around machining, yep. And what it did is we honor this homework. And it was we could use the lab time. At this lab time, much of like, this is an end mill. This is how an end mill works. This is how you use an end mill. Like all that, that stuff was done outside of the classroom, into the classroom, you can spend more time on machines, turning tiles and figuring stuff out.

Michael Porzio: Yeah, that's great. I would definitely say one of the difficulties is last year, my first year, when I was dropped in, dropped into this in the deep end. I like, I didn't even know what an IRC was and I was supposed to be giving my students done this year. I'm much more familiar, but I'm at the point where it's like, I know how. I know what the tests look like for them to get their NIMS certification. I know what NIMS certifications look like, but as far as like the steps between me training them on the machines and them doing well on the test is sort of like a black box, so anything like a website or an app that helps organize lessons so that they are as beneficial and optimized for helping them succeed on NIMS as possible would be great, because otherwise, I'm out there. I'm coming up with my own original projects for them to work on, and I'm trying to think of like the points they should hit so they can get better. But i don't i That's probably not the best way, right, right? There's no reason for me to invent or imagine how the system works when there's probably a system. So that would be great. So if you could send that to me as a resource, that'd be excellent. Thank you.

Paul Dana: I think the other thing would be, you know, once you get your CNCS up and running, Haas does a certified operator, and so you can go and take a test, or it might even be the case that Haas will come to you to your lab. Oh, that would be awesome. Can take a test, and it's pretty much like, okay, yes, they're, they know how to work the hospital. They can do, you know, very, you know, basic things. And then they can take

that to an employer who cost machines, right, you pretty well know, oh yeah. And say, like, you know, I can, I can run this machine like, I'm very familiar with this in the code that goes into it. You guys do your solid works.

Michael Porzio: like Solidworks so that is an option the associate last year I offered it as an IRC I struggled with the students I had due to them just lacking either the math the basic math skills and the understanding of geometry, and it was very challenging this year. I'm a huge fan of I've SolidWorks. I've done a lot of CAD drafting in the past. So there's no way this class can't have SolidWorks in it, considering what we do with it. But I'm not currently offering it as IRC. If I can figure out a way to teach them better or to get them to be more engaged with it, then, yes, I would like to do that more in the future.

Paul Dana: No, I totally get it driven by what the students want to do. I was just was just curious, if you know, it was thought about. But yes,

Michael Porzio: yes, yeah, when I got my certifications, I did it in college. And as I explained to my administration, I took a whole college course. That was the whole course the whole year to get my certification. And it's like we have a lot of things we have to cover, like here in this classroom, and if my students were doing SolidWorks all day long every day, it'd be no issue. But there they want to be out in the lab, working welding with the vertical Mills, etc. So it's hard to keep them staring at a screen, so to speak, all day long. Yeah, I think that's about it.

Paul Dana: In terms of higher students. Especially, like, such a broad program, like, you're right? No, it's you got a lot, like you said, you got a lot to cover. How long are your lab periods?

Michael Porzio: So we have the students for five hours a day, and we're in the classroom for about two of those hours, and we're out in the lab for about three of those hours every day.

Paul Dana: That's great, yeah, that's great.

Michael Porzio: And that's five days a week. Yep, five days a week. Yep, there is, well, sorry, that's not quite true. I would say three days a week, two days of the week, they have academics for half the day, but that's almost the same thing, so only cuts in a little bit.

Paul Dana: Yeah, no, that's great. I mean, I went, I was in two hour labs, like I had two

hours a day, so that's great. I'm glad to hear that.

Michael Porzio: All right, um, when we went over the last one, that's that's all the questions I got. Thank you. You were very specific on everything, and I can already tell that the links and help you're gonna give me gonna be super beneficial. So thank you.

Paul Dana: Yeah, yeah. Can we talk a bit more about the program?

Michael Porzio: Oh, of course, yeah, sure. What questions do you have?

Paul Dana: And just, you know, what are you, you know, it seems like the program is growing, and that's good, you know, what are the current issues we're running into?

Michael Porzio: So the current issues, I think the biggest one is the one that had mentioned about bridging the gap between knowing what the IRC deliverables are and how to teach the students effectively in such a means that they are simultaneously engaged and learning, right? Because they can learn. I can give them projects all day long, and they'll learn doing those projects, but they may not learn specifically the exact things and hit on every single topic to master their ICS at the end of the year. I think that's probably one of the harder parts, just understanding exactly what it is that like, for instance, we we need textbooks for our classroom. We have mechatronic textbooks that were in that I inherited. So we were using those earlier in the year and last year, but they don't necessarily have IRC or NIMS certifications in them. So I I had to figure out where those textbooks are and and talking to the representatives at NIMS, they don't provide, or they say they don't know, they no longer provide the resources for teaching the material so much as just testing the material, so there's, there's a lot of like gaps I have to jump over to figure out exactly what the right path is. If that makes sense for the learning. Outside of that, I would say it is. It is, of course, challenging to run a machine shop as a one man operation where you're simultaneously maintaining every single piece of equipment, but also making all the lesson plans and also teaching the course that it's just not enough hours in every single day. So that can be challenging. And then, of course, there's behavior stuff, but that's that's just the reality of teaching in general that has nothing to do with CTE or my school specifically, and that's always something that we struggle with.

Paul Dana: Yeah, what did your placement rate look like last year? Like? Where did your student go off to once they graduate?

Michael Porzio: So one student is now working with Brian kippen at CAD one student

decided to go. And I had a very small class last year. I only had four students. One student ended up working for their father in trades. They do like machine repair. He has their own, his own company. They're in Barrie. And then another, another teach, another student went to do massage college or something has nothing to do with our trade whatsoever. They had always been planning to do that. They just took this class because their friend was in it. And then the last student shoot. I can't remember the name of the company, but they work in Barrie. They do do CNC machine work? So of the four students, two of them, ended up doing CNC machine work. One of them did dermatology stuff, and then the other one went to work for their father in Deseret. Thank you. Thank you. That's it. That's correct. Yeah, is Deseret and Barry? Or am I mistaken?

Paul Dana: Okay, yes, that is it, yep.

Michael Porzio: So this year, last year, I had only seniors. This year, I have two seniors, one of them, we've been struggling to place in co op for other reasons. The is the other senior we just recently got added to our class, like just a couple weeks ago. So we're still trying to figure out what we're doing with them. They are probably going into welding trades because they have their certifications already from their previous school. They just moved to Vermont, and that's something that really resonates with. Them, and then the rest of them are not eligible for Co Op because they are not seniors yet.

Paul Dana: Cool, Yep, yeah, any other questions? No, it doesn't for me. I think that was a good snapshot. Cool, yeah, like, I'd love to get down there.

Michael Porzio: Yep, and I've got to get my students up to your your space as well. I think they'd be really interested in it.

Paul Dana: Yeah, absolutely anytime. That's what we're here for you to get people excited,

Michael Porzio: Yep, and see what we do to help out cool. Thank you, Paul. I appreciate your time, and I'm sorry that you're the only one that showed up, but you were highly valuable to this discussion.

Paul Dana: I will get those notes wrapped up and sent to you in the morning. Great.

Michael Porzio: Thank you, Paul, hope you have a good one. Yeah, you too. Michael, good night. You.

