

Adishri Pradhan

Major/Year: Environmental Engineering'24

ESW Subteam: Reactor Design

Current Career: Design Engineer at Invaleon Technologies Corporation

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[Interviewer]: Could you give a brief introduction of yourself, including your name, major, year you graduated, current occupation, and anything else you would like us to know about you?

[Adishri]: Yeah, of course. So my name is Adishri. I'm an international student from Kathmandu, Nepal, and I studied environmental engineering at Cornell. I graduated last May, and currently I work as a design engineer at an EPC company. And we work on solar, but we're also expanding to batteries, which are standalone battery systems. We're based out of Massachusetts. Yeah, that's pretty much all about me.

[Interviewer]: When you were on ESW, what sub team were you on? And then what kind of projects did you specifically work on at that time?

[Adishri]: Yeah, I was on reactor design for all four semesters. And we worked on a microwave catalytic reaction that converted plastic into carbon nanotubes and hydrogen gas for the majority of my time there. And we also got an outside sponsor, Carbonmeta, who wanted us to do R&D for that project. So that was a majority of my time there. But we had some delays with the equipment that was being sent to us. So one of the semesters, we shifted our focus to making recyclable cups easier to use. So people are encouraged to use them rather than just getting to-go cups. And we did a little bit of research on performing gallium catalysis with aluminum and water to also generate hydrogen gas.

[Interviewer]: Now that you've graduated, what kind of projects are you now involved with?

[Adishri]: So I was hired as a design engineer for the Solar EPC company, which basically

means I do preliminary designs like site layout and see if it works, site control, as well as making interconnection sets, which consists of single line diagrams. So figuring out what size inverters we need, if we need a transformer, if it's going to be behind the meter, in front of the meter, all system based stuff for the solar. But recently, they've also expanded my responsibilities into researching rebate programs and incentives for solar so we could maximize our profits for the company. Especially in Massachusetts, there's more focus on solar because they've increased the incentives. And then there are a lot of industries that involve sustainability.

[Interviewer]: So what made you choose specifically renewable energy? And what are some things that you've learned so far for your experiences?

[Adishri]: I grew up in Kathmandu. So I firsthand know how bad it can get if there's unmitigated waste and pollution. So that was something that naturally made me inclined into sustainability. But what made me interested in renewable energy is actually a class I took. And the professor had a very futuristic class set up where he would, for each lecture, present these new concepts. For example, he has a passive house, and he's completely off the grid. So his entire house is run by solar and wind, and it's in New England. It's temperature controlled. It's such a nice house we had a visit to. For another one of his lectures, he presented on an electronic trolley system. So it would be carpooling, but you could take it on the highway. And because it's an EV, you could charge it as you go on the highway, if there's electromagnets laid out on the road. So it was very futuristic in that sense. And I didn't realize how interesting that could be. So that's why I got interested in doing renewables.

[Interviewer]: When did you first realize you wanted to go into sustainability? And how did you know that was your passion?

[Adishri]: There's no exact moment, but that class definitely did help. And when I thought about what I wanted to do, five years from now, years from now, and what I think will matter at the end, I felt like it was something that I would want to work in. Especially because not only does it help the environment, it also helps the communities around it. Because it's not nice living next to a landfill, or it's not nice being flooded on. So I think it's also an aspect of yes, it does protect the environment, but it's also a type of service to the community around it.

[Interviewer]: How do you personally learn about sustainability outside of classes? Are there any specific experiences, tools, or resources that you use?

[Adishri]: I do listen to podcasts sometimes. But because I work in sustainability, and my major is in sustainability, I don't consume a lot of things outside it sometimes. But on an individual basis, I do think it's important to be conscious and not over consume things, especially currently, even though it is very accessible to us, you don't really need that many things. So I would say that would be my biggest advice, just to be mindful of your consumption and your behavior.

[Interviewer]: What is your thought process when thinking about ways to implement sustainable practices? And this can be either like in the industry or in your own personal life?

[Adishri]: Yeah, I think sustainability is not an isolated issue. It's very interconnected, because it spans so many industries. So I think, first, for a solution to be sustainable, it has to be long lasting. And everybody involved in that process, or if you're doing a life cycle assessment, each stage has to be accounted for. And everybody involved in that process, if it's the local community, or the policy people, the people who the private companies that need to adhere to the policy, they all have to be in the loop for it to be sustainable. The more you look into sustainability, the more convoluted and interconnected it gets. So I think there's a lot of work to be done. But I think it's an interesting industry.

[Interviewer]: What advice do you have for students who want to go into the industry of sustainability either in terms of the industry or like academically as well?

[Adishri]: Like I said, it's a very broad industry because it can apply to most things like it can be for chemical, like reactors, it can also be for just environmental consultants or healthcare even has sustainability consultants. I was interviewing for a company that wanted to reduce its waste. So there's a lot that sustainability covers. And so I would go with the role like if you look up sustainability consultant, you read the role and if it sounds interesting to you, then you should do it because there's a lot of like on site testing type of roles. There's also a lot of reading and writing, reporting lifecycle assessment, that type of roles. There's also research like grid management. So there's a lot of different areas. So I would, I wouldn't just go off the title because usually they just kind of put sustainability consultant or environmental consultant, but you need to look at the description to really know if you want to do that role or not.

[Interviewer]: And now I'll ask you some more questions more on ESW. So what are some of your favorite memories from your time on ESW? And this can either be with like projects or like the people you worked with or any kind of experience you had.

[Adishri]: I think my favorite time was just spending time with my members doing R&D just because it was so like, it was all our own projects. So there's no authority over us. Every decision was based on what we did and what we could find. Like I remember scavenging for equipment because we didn't have any in the lab. We have a couple of members who worked in different labs and we had to take something from this lab and return it, take something from that lab and return it. I think it's a lot of problem solving that went into it, but it was also fun because you were working with people that you were close with and had a common goal. So that was one of the, that was, there's not like one memory particularly, but it was just enjoyable to work with my sub team members. And then what challenges did you face working on ESW projects and how did you overcome them? I think the largest challenge I faced during my time there was the equipment delay. We couldn't do our experiments because the equipment wasn't delivered on time. And we did contact our sponsor, but there was miscommunication and we weren't able to get a hold of them. So I think the best course of action we found was to just put that on hold and focus on another project. We can work alongside it. So in case the equipment falls through, then we can just shift our complete focus or we can bounce back and still do the R&D for that company. So yeah, I think that just because it is very like, there's no authority over you. You have to kind of extend yourself out to people and ask for help. And you do learn a lot about reaching out for help and you need to do things to get, like you need to pull out, be proactive and reach out to people to get things done in a project team. Whereas in a corporate structure, you have a manager, you have his manager, there's a lot more support and guidance. But yeah, I think you just learn how to do things by yourself more.

[Interviewer]: And if you could go back and change anything about your time in ESW, what would it be and why?

[Adishri]: I think I would want to do some projects that were more community based. But I do think we did a lot of research into reactor mechanisms and different new types of technologies. But I think it would have been nice to have maybe an event or two that was community based. So we could engage more with the local community as well as help out with some environmental issues or even I know there's an organization that works with reducing energy consumption of buildings in Ithaca. So that would have been a good collaborator to work with.

[Interviewer]: What part of being on ESW has had the greatest impact on you as an undergraduate and now that you're in the industry?

[Adishri]: I think being in a project team really did teach me a lot about project dynamics. I think that stayed the same regardless of if you're in a project team or in a corporate setting, you learn about different types of personalities and how to navigate that setting. It taught me how to take charge when I needed to and when I need to sit back and let my project members talk it out. And I think that's a skill that's very important. And I value it a lot from ESW.

[Interviewer]: And you touched on this a little bit before, but what have been some of the major similarities and differences of working on projects in the ESW compared to projects in the industry? And there is a big difference in the scale from like more of a college level project to a more industrial level.

[Adishri]: Yeah, I think, as I said before, there's more of like a structure and an already outlined process for industry. If you're stuck, you always have your colleagues and your managers. And it's probably a problem they've already encountered before because of the industry experience they have. Whereas in a project team, you're trying something new, you're trying something novel. So it's a lot more hands off. So you have a lot more control over your project. If I wanted to change something in my company structure, it would have to go through a far more intensive process and up the chain a lot more than if I wanted to change something in my project team. So I think there's definitely a difference, but there's definitely an advantage to being on a project team and having that responsibility and that freedom to progress how you're to track the progress of your project and just choose the direction where you want it to go.

[Interviewer]: That's all the questions we on the ESW team have for you now. Is there anything else you would like to say or any last words or any advice that you have for current ESW members or people who are interested in sustainability?

[Adishri]: I think my biggest advice would be sustainability is not a very simple idea. It's very interconnected and it requires a lot of moving parts. And it's also not very conclusive most of the time. So it can be frustrating. But progress is happening and we are building structures around sustainability. For example, the life cycle assessment thing has been around for not that long, and it doesn't even have a very good structure right now. So I would say if you're interested in sustainability, try to focus on personally, what do you like to do day to day? Like, do you like researching? Do you like being in the lab? Do you like crunching numbers? You know, it all depends. And I think you can find a spot for yourself. And the type of roles you want to do in sustainability because it's such a broad industry. And yeah, I would advise you to just have fun a little bit like with your projects and as well

as like try to get close with your sub team so you can have the most out of your ESW experience because that is a large part of why I think you should join.