



Sloan Career Cornerstone Center

Profiles of Chemical Engineers



Lee Margolis

Process Engineer
DuPont
Seaford, DE

Education:

B.S. - Chemical Engineering, University of Illinois

Job Description:

Process Engineer

Advice to Students:

"I would suggest a co-op experience. It's something I wish I had and something that I think can benefit a freshman or sophomore engineer."

Interview:

Margolis: I'm Lee Margolis. I work on nylon at a plant in Seaford, Delaware. I'm a process engineer, making sure that the process is running correctly, that nylon gets down to our spinning area, and then to our customers.

Q: What does a process engineer do?

Margolis: Many people have different connotations of what that means, but what I do is check the process every day and make sure that all our temperatures, pressures, and levels are where they need to be. I check the quality measurements that we have in terms of viscosities and things like that, of the product we're making. I also have a lot of interaction with the operators. We have control operators who control the process, and I'm there to provide technical support and advice to them when we run into a crisis.

Q: What courses did you take as an undergraduate that help you in doing what you do?

Margolis: I can't say any one particular course helped me. The main things I got from college were problem-solving skills. College gave me the problem-solving skills that I need at work. What I learn at work is something you just can't get in college. The equipment that I use is nothing you'd find in a chemical engineering textbook. You just learn by gaining experience, sometimes under pressure. They can't teach you that in college. The only way you learn how to deal with those problems is to experience them yourself. I have something that hangs in my office at work that says, `The best way to gain experience is to gain experience under

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pressure.' What I got from college are the problem-solving skills necessary to solve technical problems out in the workplace.

Q: Is there a typical day for you, or is each day different?

Margolis: Each day, who knows what's going to happen? That's one thing I really like about being a process engineer. Every day is different. Sometimes it'll be a quiet day, and I'll get to work on some projects, some process improvements for the area. Other days, there'll be a problem, and I'll need to be there to handle that. Every day is different. You never know what you're going to get in a certain day.

Q: What skills have you learned outside of school that help you in your job?

Margolis: Your everyday dealings with people will help you in today's workplace. One of the things I really enjoy about my job is dealing with people-the operators, the other engineers, managers, everyone. That's something I enjoy and that's something you learn every day. Every day, you gain those people skills in your daily interactions with other folks.

Q: Who do you work with on a daily basis?

Margolis: I probably spend most of my time with the operators. Just going up there, making sure the process variables are on aim, talking with them, getting an idea of what happened overnight. I also deal with engineers on technical issues. Sometimes there are problems with the operator-engineer interaction, and this is usually because the engineer comes in thinking that he or she is the best engineer in the world and can solve all these problems. You have to come in with the attitude that you don't know what's going on. You're not going to be able to learn nylon processing in a chemical engineering textbook. You just can't. You can't deal with the everyday problems that you're going to see. So the operators are very important in understanding and learning the process because they're there every day and they can give you a layman's understanding of what's going on. That really helps a lot.

Q: What kind of chemical engineering takes place in developing and producing nylon, and deciding how it's used?

Margolis: You start by making a polymer. Nylon is two chemicals that react with each other and form a long chain. It's called a polymer, and you need to have the polymer at the right temperature, the right viscosity. You have to have it undergo the right conditions and there are all kinds of chemical engineering principles involved-heat transfer, mass transfer, material balances. It's just a chemical reaction taking place in reactors. The basic bare bones is typical chemical engineering, but the vessels we have are nothing you'd see in a textbook. Some of the technology we have is proprietary, it's world-class technology, and you have to see it to learn it. There's a lot of chemical engineering in it. We're mass producing nylon for the public. It goes into pantyhose, flags, athletic wear, swim wear, carpets, toothbrush filaments, and fishing lines. Different grades of nylon go into different things. A higher viscosity nylon will go into a tire cord-every tire has some nylon in it. Depending on what the end-use is, certain factors are different. Dye-ability of the nylon's important if you're talking about a textile nylon, but not so much if you're talking about tire cord. So the end-use is important to what chemistry needs to go into it.

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Q: Do you get any satisfaction from seeing your products on store shelves?

Margolis: Absolutely. That's one of the reasons why I chose chemical engineering. In fact, when I went to school, I spent my first two years as a chemistry major. What are you going to do with a chemistry degree? Well, you're probably going to go on to graduate school and do research and get your Ph.D., and maybe go into industry, or maybe become a professor. But research really isn't for me. I like interacting with people, I like variety. In a research job you might spend two years going for this one common goal, and that can get a bit tiresome. Every day you're working on the same reaction. But in chemical engineering, you're interacting with people. You're helping people around the world. The nylon I make goes into products that I use and other people in America and around the world use, and that's really satisfying. That's what makes the job a lot of fun for me, because it's great to see a product you make on the shelf somewhere. You can tell your friends, parents, and family, and everyone is really excited, and say, 'Oh, my son or my friend makes nylon, and it goes into this product that I have.'

Q: Are there things that you wish you had done differently while in school to make yourself more marketable?

Margolis: I wish I could have had a co-op experience. That way, I would've had some manufacturing experience in a plant setting. My work experience was mostly research. I did some research for some professors. If I would've had some manufacturing experience, that would've given me a real well-rounded background. It would've made me a lot more marketable, and I think I would've had an easier time getting a job.

Q: What kind of things are you doing to keep your skills state-of-the-art?

Margolis: Every day is a learning experience. Every day I learn something new on the job, whether it's in dealing with people, or something in the process area. One of the goals I have every day I go to work is to learn at least one thing that will make me a better engineer and a better person.

Q: What type of on-going professional development activities do you participate in?

Margolis: I have to pro-actively seek my training opportunities. But I've had the opportunity to take some courses on nylon polymerization, and oral communications, both of which are very important in the working world. In my job, I really don't need to get a master's degree. I could get one, and sure that would help, but it's not necessary. I could also get an M.B.A., but again, you don't need that to go into business. One of the things about an engineering degree that's so great is that you can do other things. When you have an engineering degree, you can really do just about anything you want because those problem-solving skills you learn in a college engineering program will help you with just about anything you want to do.

Q: How do you combat some of the frustration you encounter at work?

Margolis: I really have to be patient. Sometimes I beat myself up over the fact that things aren't going right, but they are things out of my control. Maybe we're doing a scheduled overhaul of the system and maintenance can't get a piece of equipment back in time. That's frustrating,

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because you realize you need to get the process moving, and meet shipments to customers, but it's out of your control. And I've had to learn to be a lot more patient with other people. That's something that has taken some time for me. When I first started my job, it really bothered me. But I'm getting better with it and getting more comfortable.

Q: What advice would you offer to someone who is interested in becoming a chemical engineer?

Margolis: Throughout college you need to learn what you want to do, whether it's going out in the workforce and working for a company as an engineer where you gain some practical knowledge in the workplace, or deciding that you want to go on to graduate school and do research. I would suggest a co-op experience. It's something I wish I had and something that I think can benefit a freshman or sophomore engineer. That's the time to start a co-op experience. If you do want to go into the work force, it'll help you get a job. You'll have a lot more work experience than the next candidate for the job.

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