Profiles of Chemical Engineers

Eric Teather

Development Engineer
DuPont
Deepwater, NJ

Education:
B.S. - Chemical Engineering, University of Maryland

Job Description:
Development Engineer

Advice to Students:
"Talk to people who are engineers. Look into co-oping to get an idea of the profession because if you know what you want to do, you're going to be more successful in achieving that goal."

Video Transcript:
"I'm in an R&D program. It's a job where you're developing a process or a product. Before we start out, there's a lot of time spent doing typical engineering calculations. When I'm at the actual plant and running the technology, or assembling and starting up, it's a lot of plant work. It's a hands-on type of environment. And then I come back to my actual office once we start running this plant or run in a steady type of operation, and I can actually monitor it on a daily basis and talk to the people at the plant who are running it, and make decisions on how we should continue to run it and how we want to experiment with it, because it is an R&D program. It's not a full manufacturing program."

Interview:

Teather: I'm Eric Teather. I'm a development engineer in DuPont Fluor Products.

Q: What does a development engineer do?

Teather: It's an R&D position. It's a job where you're developing a process or a product. Right now, I'm working with a process that's being developed. It's in the prototype stages and it's going to be commercialized.

Q: Do you have a typical day in this job?

Teather: There is not really a typical day. It runs more in cycles, and because it's a prototype technology, the cycle is: We conceive a new condition or a new configuration for this technology. I go to the plant. We actually assemble the plant or reconfigure the plant and start it up, and that takes a period of one to two weeks. Then we run a campaign for a month to two months, accumulate data, and figure out what we need to change and what we can improve on. Then, we shut it down and see what the next steps are, what the next development areas are that we need to work on for this technology. So it runs in cycles. Before we start out, there's a lot of time spent doing typical engineering calculations. When I'm at the plant and running the technology, or assembling and starting up, it's a lot of plant work. It's interesting-it's a hands-on type of environment, you're at a plant. Then I come back to my office once we start running this plant, or run in a steady type of operation, and I can monitor it on a daily basis and talk to the people at the plant who are running it, and make decisions on how we should continue to run it and how we want to experiment with it, because it's an R&D program, not a full manufacturing program.

Q: Who are some of the other people you work with?

Teather: I'm on a development team. It consists of me, a chemical engineer who's working with the nuts and bolts of getting the process running, and also a little bit of analysis of what's going on when it is running, Ph.D. chemical engineers, and chemists who originally conceived the technology, who I'll work with more on a theoretical basis. When I'm at the plant, I work with a team of mechanical engineers who work on assembly, design, and construction of this technology. I also work with the technicians and the operators who actually do the work, who run the equipment, who take the samples, and do the analysis of the process while it's running. So I work with a pretty broad, large team.

Q: How long does it take to get a project from conception to full-scale production?

Teather: That's another part of the team. Another team I'm on is the actual project team. This is a team of designers who are actually taking what we've learned from the pilot plant and scaling it up to a full-scale commercial project that'll be put on the ground at a plant site. There's another team with designers and engineers who do the scale-up, and also financial people estimate what the costs are going to be-the operating costs of this commercial project, the cost of the equipment installed on the ground. So the timing for this technology conception was three years ago. We've been running lab scale, and then when we moved up to pilot, that's when I came in a year ago. So from conception to actual project on the ground, it's about four years. It's a very new technology. So typically, you have a year or two for development before you move onto a project. And the project might take a year to implement also.

Q: How did your college education prepare you for the responsibilities you have?

Teather: It gave me the technical skills. Typically, when you think of engineering, you think of number crunching and that sort of thing. That's what I learned in getting my undergraduate education, and that really helped-that's a core foundation. The other skills that you acquire on the job are personal, interactive skills like dealing with people, and more managerial-type skills that you don't typically learn in school.

Q: What professional development opportunities exist for you now?

Teather: I've learned a lot about managing a project, a small project. I've learned to work through the financial side, the cost estimating, and budget projecting. Because this technology is in a very specific field, I've gone in one direction in my technical skills, and I've become more detailed in one area. When you're in R&D, you tend to go towards specifying or becoming more concentrated in one area.

Q: Looking back to when you were a freshman and sophomore in college, what were your expectations of what a chemical engineer would be, and how do they compare with reality?

Teather: I don't know what I was thinking in my freshman and sophomore years in school. I thought a chemical engineer was some nerd three floors underground on a computer all day, and I'm glad to find out it's not that. There's the technical side of it, and there's a whole world of other skills that are combined when you actually get into a job. Each job is different. You find the jobs are much broader than what you think of as a typical engineering job. Freshman and sophomore year, you think that a chemical engineer is a person who gets to solve these very technical, very detailed problems in an endless stream and come up with specific answer. That's different than reality.

Q: What made you marketable to DuPont?

Teather: Strong grades in school helped me get the initial interview. What really helped me was a co-op with DuPont in my junior year. I started in the co-op program at the University of Maryland, and it allowed me to work in the company to acquire skills. A co-op is good for both the company and for the student. You get the development skills you don't get in school-learning how to deal with people. The company gets useful work from somebody, plus it also gets a feel for what kind of person you are. It was very good experience. I found that when I graduated I had this year-and-a-half co-op experience that was a very marketable piece to my resume. So, I had this experience, and it stretched out my four years of college to five years, but it was very valuable, especially at the time when I graduated-it was a low point for chemical engineers in terms of job availability, but I had no problem getting interviews and job offers.

Q: What advice would you offer to chemical engineering students who want to come out of school and be very `employable?'

Teather: I would say study, and try to do as well as possible. The co-oping was very good. Other skills that would make you very marketable are financial skills. Take some business courses, which I did not take as an undergraduate. Extracurricular things help your interpersonal skills-just being involved. I find that people who are involved in a lot of extracurricular things, maybe working with people or working with organizations, have more interpersonal skills.

Q: What are some of the advantages of working for a large company versus a small company?

Teather: I have never worked for a small company, although some of the businesses at DuPont are set up as smaller businesses. The intent is to function as a smaller company, to get the efficiency of a smaller company. Working for a large corporation, you have a lot of resources. In DuPont, we have a huge pool of resources in terms of research. So you have designers that are available. You don't have to contract from outside. You have many different researchers who have specific skills in different fields, and you can go to any one of those persons. You can talk to engineers who will suggest that you talk to certain people to help you with your problem. You can just pick up the phone and give someone a call, because they all work for DuPont. In terms of benefits of a smaller company, you have a little more speed and agility to get things done. There's less bureaucracy-and DuPont's been moving towards that-so when you're in a smaller business, they try to encourage this entrepreneurial spirit of a small company. When you're in a larger company, you have to sell your ideas to more people. When you're in a smaller company, things can happen faster.

Q: What advice would you offer to someone interested in chemical engineering?

Teather: Make sure you enjoy what you're studying. Also, look forward and say it's not always going to be this dry. Don't be scared-off by the dryness of freshman and sophomore math, science, physics, Introduction to Engineering, and Thermo. It can be pretty intimidating in your freshman and sophomore year. But make sure you like that aspect of it and try to get a feel for what area you want to go into. Talk to people who are engineers. Look into co-oping to get an idea of the profession because if you know what you want to do, you're going to be more successful in achieving that goal.