

THE ENGINEER

The Engineer applies scientific and mathematical principles, experience, and common sense to solve problems and provide efficiency.

OVERVIEW

Engineering is a fascinating and varied career field which combines technical know-how and artistic vision. Engineers look at problems in business or society and help to find effective solutions. They are inventors, artists and scientists all wrapped into one.

According to the U.S. Department of Energy, companies producing technology and offering services related to the smart grid include communications firms and technology firms. Implementing the smart grid requires many workers in various occupations. And after the smart grid is set up, other workers will be needed to operate and maintain it. Work related to the smart grid is expected to result in about 280,000 new positions, according to energy consulting firm DNV KEMA. These jobs span several occupational groups and include engineers, technicians, and construction workers. In addition to employment with utilities, many workers will be hired by suppliers and contractors.

Today's business environment requires engineers in various specialties to work together drawing on each other's knowledge.

Introducing: Michael Chimack Engineer at Siemens

Michael Chimack helps buildings provide comfort, safety and efficiency through a process called building commissioning. Building commissioning is a quality centered process for improving the way a building operates by looking at comfort, air quality, lighting, fire suppression, HVAC and information technologies. The result is a better building that requires less energy to operate. Michael especially likes that commissioning includes a requirement that changes happen almost immediately. "Our job is to understand the building and affect change as quickly as possible so the client's return on investment can be maximized."

Michael is the Director of Building Commissioning Services at Siemens. He manages 3-5 projects per year which requires a significant amount of travel. Last year he traveled 90% of the time and this year anticipates traveling 50%. When he is not on the road, however, he works from his home office. A typical week includes regularly scheduled meetings within Siemens; answering questions from clients and colleagues in over 100 field offices; overseeing the progress on each client's scope of work; and research. Lunch time is often at his desk trying to keep the Doritos from getting into his keyboard.

"I didn't choose to become an engineer" Michael said. "Engineering chose me. I was always strong in science and math and wanted to know how things worked. I would take things apart and put them back together. I was just meant to be an engineer." Michael believes that mechanical engineers must be analytical, curious and always looking for root cause/ underlying cause. He thinks of himself as more of a CSI investigator than as a building engineer. Effective written and verbal communication skills are also important because you must be persuasive when talking about energy savings and sustainability. You also need to love your computer.

Michael enjoys teaching and learning. An important part of his job is sharing information with clients and colleagues. The ability to communicate ideas succinctly to team members, customers and all of the building stakeholders is critical. Michael stresses that continuing education is paramount. One of the things he teaches the sales teams is that, everyone - no matter how smart or how high your level of expertise - everyone will learn something about the building during the commissioning process. Continuing education begins with certificates for very specific topics and continuing through to overarching certificates. The energy field is changing so quickly but it's easy to maintain your credibility because of continuing education.

The smart grid and smart meters are examples of this change. The smart meter message is clear: you can't successfully manage what you don't measure. With ComEd hourly metering we're able to see energy as we use it. We can make informed decisions. Michael has participated in ComEd's hourly pricing program and likes it because he is able to know how much energy costs each hour and make decisions not to use energy during the high priced times. He has used the delay feature on his dishwasher and a timer to delay his laundry. Michael was pleased that, by using the program wisely, ComEd paid him .01 per kilowatt hour to wash his clothes.

OPPORTUNITIES

The U.S. has approximately 1.6 million engineering jobs that pay \$42 per hour in median wages. Civil engineers account for the most jobs of any engineering field (274,000 in 2014), followed closely by mechanical engineers (264,000) and industrial engineers (229,000). Those three engineering jobs, plus electrical engineers and electronics engineers, make up two-thirds of the American engineering workforce.

The engineering occupation with the oldest workforce is also one of the smallest in terms of jobs: marine engineers and naval architects. Only 8,000 of these jobs are in the U.S., but 29% are 55 years or older. The youngest occupations, on the other side, are computer hardware engineers and agricultural engineers; just 12% of the current workforce in each is 55 or over.

EDUCATION

The education path to becoming an Engineer includes a bachelor's degree in engineering which is normally a four-year degree.

Personal Traits

Students should enjoy analytical problem solving, designing and explaining solutions, and working in teams.

High School Preparation

Students should prepare for entrance into an engineering school by getting good grades especially in math, science and information technology.

College

The engineering undergraduate spends many hours studying. Many of the courses they take are math and science related. Michael Chimack says, "My junior year was a perfect time to pick my major. The first two years were composed mostly of general education requirements which gave me time to decide on mechanical engineering as my major." In most colleges and university, the final years of study are geared toward the student's choice of specialization in the engineering field.