

Acceptance 2012 RGV IEEE PES Outstanding Engineer of the Year

Greetings

Good evening and welcome members of the Rio Grande Valley IEEE Chapter of the Power Engineering Society, fellow Engineers and Guests.

Acceptance:

It is a great honor to be recognized as Engineer of the Year among my peers, I gladly accept this honor. I want to express my thanks to Dr. Jaime Ramos who in 2010 pulled together a group of Electrical Engineers to form the Rio Grande Valley IEEE Chapter of the Power Engineering Society. Many others deserve credit for their efforts toward forming the Chapter and making it a success.

Challenges ahead for Engineers involved in Power and Energy

When I learned that I was the successful nominee for Engineer of the Year I saw this as a unique opportunity to give a message to those Engineers who are following behind me on that “road to building a better tomorrow” in the hopes that I can pass on a bit of information that some of you may find helpful in your careers. So I would like to take this opportunity to talk about some of the concerns that today’s Power Engineers are facing as we move further into the 21st century as well as some ideas that I hope will be helpful to you in the future.

As you all know the electrical infrastructure that we have today is a key factor in making life easier and better than it has been at any time in the past. It is a key element to a robust economy. The ability to burn a large quantity of fuel at a power plant, convert it into a form of useful and transportable energy, then transport this energy over great distances to many end users gives all of us “power right at our fingertips” that we can utilize any way that we choose.

As I see it there are three major concerns for today’s Electrical Power Engineers. These concerns or challenges were not as prevalent in generations past like they are today. They are:

- 1) Society does not have a good understanding of the role of Engineering in improving our way of life.
- 2) Fewer universities in this country are teaching courses related to Electrical Power Engineering.
- 3) Students coming out of high school are attracted to careers that are more lucrative than engineering.

When I was young the public was more aware of the roles of scientists and engineers due to all the publicity that the space program received in the press. Everyone had an interest in man travelling thru space and landing on the moon. Today society is not so interested and is much less knowledgeable of the role of Engineering.

This lack of knowledge on the part of society of the Engineering profession is a concern for all Engineers. So long as society does not understand the Engineering role, Engineers will lack the recognition that they deserve and the profession will continue to fall short of other professions in compensation, recognition and rewards. The end result will be a lack of public support for important infrastructure projects.

Our electrical infrastructure has been neglected for at least a generation, while spending was concentrated in other areas. Recently there have been some signs of a turnaround, but this is only because the electrical infrastructure has failed a number of times and the consequences of these failures have been disastrous.

After the major blackout in the northeast part of the United States in August of 2003 New Mexico's Governor and former US Secretary of Energy, Bill Richardson, was quoted as saying "We're a superpower with a Third World grid".

We as Power Engineers need to take advantage of any opportunity that presents itself to inform others what Engineering is all about and what role we play in keeping the electrical infrastructure in this country running as it should.

As we go forward it seems that fewer institutions of higher education offer a curriculum that includes courses in Electrical Power Engineering. Many of the professors that taught courses on this subject in the past are no longer around. Today most of the emphasis is on how electricity is used on the downstream side of the 110 volt outlet.

There is a need in industry for Electrical Engineers educated in power systems. The higher education system in this country is falling short in meeting this need. Employers that have a need for Electrical Power Engineers sometimes have no choice other than to hire Electrical Engineers that have studied electronics, microprocessors and computers to work in the area of electrical power. Electrical Engineers educated in electrical power systems are gradually becoming extinct.

Knowledge in electronics, microprocessors and computers is important when it comes to controlling, protecting and monitoring electrical power system components. However, much more knowledge is needed to design and manufacture these power system components, then to properly apply these

components in constructing the major building blocks of the electrical grid such as power plants, electrical transmission lines or substations.

Today's younger Electrical Power Engineers must become self educated. Fortunately, much of the information on electrical power has been preserved and is still available. IEEE has preserved much of the literature that has been published in the past century. There is a section of the IEEE web site where many of the "classic" books on Electrical Engineering are available to members as a free download. When it comes to the subject of protective relaying, Schweitzer Engineering maintains an extensive library of articles on this subject on their web site. These are wonderful resources of information that young engineers can take advantage of.

About 25 years ago I was seeing a medical doctor when I lived in the state of Georgia. This MD told me that he started out in electrical engineering as a student, but that he dropped out of engineering and went into medical school. He said the reason he changed is that he found that engineering was more difficult than medical school and that compared to being an MD there was very little monetary reward in engineering.

When a person is 18 to 22 years old, the decisions they make generally affect them the rest of their lives. There is no other time in a person's life when decisions concerning education and career path have more impact over the remainder of one's life. One can't be blamed for taking the easiest path with the most compensation. Only a small percentage of students choose the path of Engineering.

In my experience as an Electrical Power Engineer I have found that the monetary rewards have been sufficient to make ends meet and to support a family in comfort. Sometimes we tend to put too much importance on compensation for the work that we do. There are other rewards associated with engineering.

A successful infrastructure project can improve the lives of many thousands of people for more than a generation. This is important to keep in mind and something you should take pride in when you look back over the successful projects that you have been involved with, even if your role was a small one. This should give you a feeling of accomplishment. This sense of accomplishment is important, it can be a motivating factor, and it cannot be measured in dollars and cents.

If you work for a good company and keep focused on making every project successful, monetary compensation will take care of itself.

Furthering your career

There are 5 things that today's young Electrical Power Engineer can do to better prepare for the road ahead, these are:

- 1) TAKE THE EIT (Engineer in Training) AND PE (Professional Engineer) EXAMS EARLY IN YOUR CAREER: The subject material of these exams is similar to what you learned in school. The sooner you take them the more likely you are to pass these exams. PE or Engineering Licensing may not be a requirement in the job that you have today, but it may open some doors for you in your future employment.
- 2) LEARN THE ELECTRICAL CODE THAT IS APPLICABLE TO YOUR JOB, WHETHER IT BE THE NEC OR the NESC: It is not necessary to commit these codes to memory, they will be changing every three years anyway. It is important to know where to find answers in the code books and use them to your advantage. If someone ever questions one of your designs or asks "why did you do this the way you did"? It is important to be able to explain that you did it a certain way to be in compliance with one of the code rules. With a dedication to learning, diligence, hard work and experience one should be able to successfully support or defend any engineering work that you do if it is challenged. There are also many other standards and recommended practices that may be applicable to the work that you do. Many of these are published by IEEE.
- 3) LEARN THE CODE OF ETHICS: Both IEEE and NSPE (National Society of Professional Engineers) have a code of ethics. It is wise to read these once in a while. You never know when you will need to make a decision where ethics is involved.
- 4) BECOME SELF EDUCATED IN THOSE AREAS WHERE YOUR FORMAL EDUCATION LEAVE OFF: When it comes to learning, be humble, don't ever think that you have learned everything you will ever need to know. If you are really progressing in the learning process you will soon come to the realization that "The more you know, the more there is to learn". You will never know everything about any one subject, the universe of knowledge is just too vast.
- 5) BE CONFIDENT AND BELIEVE IN YOURSELF: As you grow and gain experience you will also be able to look back at a list of successful projects and other accomplishments. This should help to boost your confidence. Don't shy away from new challenges. There is at least one solution to every technical problem. With a positive approach and belief in your abilities you can be successful in whatever you set out to accomplish. Every project, regardless of how difficult, should be approached with a positive attitude and the belief that you will succeed. Keep reminding yourself that "failure is not an option". Never say "never" and never give up. Every challenge is an opportunity to prevail.

A long time ago I heard someone say: *"There are just two types of people, one type always looks for an excuse, the other type always looks for a way"*. Be the later type of person.

Whenever I think about the value of never giving up I am reminded of the famous quotation by former President Calvin Coolidge.

Nothing in the world can take the place of persistence. Talent will not; nothing is more common than unsuccessful men with talent. Genius will not; unrewarded genius is almost a proverb. Education will not; the world is full of educated derelicts. Persistence and determination are omnipotent. The slogan "Press On" has solved and always will solve the problems of the human race.

In closing, I would like to point out what I believe is truly important. It is not compensation, promotions, bonuses, or impressing your boss that is most important. It is not owning a big beautiful home, driving a nice expensive car, taking wonderful vacations or other material things that you may enjoy along the way that is most important.

Most important is to be able to look back at your successful projects and other accomplishments and know that you have had a positive impact on making the world that you will someday be leaving behind a better world than it was when you first arrived. That should be the goal of all Engineers. That is what the Engineering profession is all about.

Thanks you.