

Not a Secret we Mean to Keep – Why Relevancy Demands Better Communication

C.M. Colson, *Student Member, IEEE*

Abstract—This essay is submitted in celebration of the 125th anniversary of the IEEE Power and Energy Society (PES). The purpose of this essay is to provide an answer to the question: “How power engineers can be more relevant to society”. The overarching theme of communication is discussed, as well as how power engineers can directly achieve improved relevancy in their work, study, and daily interactions.

Index Terms – Relevancy.

I. ESSAY

SECRETS are information that you veil; keep quiet. There is a truth about power engineers that isn't secret at all, but we only whisper about it. It's time we started shouting.

At the very heart of power system engineering is public service; a service on the most fundamental level. This concept is not often or readily discussed, but should be. Bound in the core of the power engineer's vocation is an obligation to the safe and reliable delivery of energy necessary for people's daily lives. Our chosen field touches everyone; it's hard to say that about other scientific or engineering disciplines. For example, although not diminishing the rigor of their work, only in an abstract way do efforts of aeronautical engineers directly affect greater society. Power engineers are different; and relevant. This fact has been long obscured by the technical complexity of the art and the quiet competency of its practitioners. The most important task for power engineers in becoming more relevant to society is to recognize that we are just that, and to communicate this at volumes louder than a hush.

Right now, power engineers stand at the front lines facing the most pressing modern challenges. On the surface, it is difficult to see how profoundly tangled and adverse our connections to energy are. How we generate and transfer energy has consequences, local to global. What could be more relevant? Power engineers are intimately familiar with the hurdles, but in many cases, the public is not. This is not due to a common lack of concern or inability to comprehend. Instead, this phenomenon demonstrates an opportunity for power engineers. Besides great technical comprehension, we have an immense resource of personal experience that informs our dedication to our field. That's how we show and grow

relevancy: make the personal connection. For me, one event in particular illustrates why I am so dedicated to power engineering. About two years ago, just after I transitioned to civilian life as a graduate student, a sailor that I had commanded was killed by a roadside improvised explosive device while on a combat logistics mission to a remote part of Al Anbar province in Iraq. Petty Officer Chuck Komppa and three Marines, who also lost their lives in the attack, were guarding a mobile convoy that was engaged in operations that are commonplace everywhere in Iraq and Afghanistan, everyday. One challenge faced by remote military outposts is the demand for a constant source of energy; a fundamental power engineering problem. Almost without exception, forces in the Central Command theater rely on diesel generators to support field operations. Due to a lack of self-sustaining energy operations, logistics and security personnel are put at great risk simply driving fuel tankers to these locations for constant resupply. Of course, this is a problem that extends beyond a military context. I was profoundly affected by these events and became aware of the capability that I have as a power systems engineer to chip away at the energy challenges we face. A short time later, an experience a world away from the deserts of the Middle East further demonstrated to me how important power engineering is to achieving a peaceful, connected, and sustainable world. It struck me like a bolt of HVDC, on a visit to a medical clinic for Izabal region natives in Guatemala that experiences electrical power for mere hours a day. Even the administration of simple vaccines that cannot remain viable without refrigeration is hampered by our energy limitations; limitations that power engineers stare down every day. These deeply personal experiences and the strong emotions linked to them influence me every day as a power engineer. When it comes to being relevant to the world around us, power engineers need to not only tell the story of what we are doing, but why.

It can be said that engineers are not strong self-promoters. This may be to our detriment. We know that power engineers do necessary and relevant work that affects the spectrum of human experience: from basic survival to the advancement of cutting-edge science. Given this astounding breadth of service, how can we better connect with people in our communities, nations, and the world? An important aspect to effective communication is to recognize how our work is intimately bound with the public that we serve. In so doing, we acknowledge our roles as ambassadors between our expertise in scientific concepts and the people we interact with on a daily basis. Why do we do what we do? It's no secret that power engineers tend to gravitate towards science,

C.M. Colson (email: christopher.colson@myportal.montana.edu) is with the Electrical and Computer Engineering Department, Montana State University, Bozeman, MT 59717 USA.

mathematics, and complex disciplines. This passion obligates us to translate our personnel connection to power systems engineering for a broader audience. We color technical details and scientific rigor with the thread of our personal dedication and enthusiasm for our chosen field. The human connection we offer allows challenging concepts, especially those related to power systems, to be understood. In this way, not only our work, but we ourselves are relevant. In this current period of global uncertainty, we stand at a crossroads of environmental degradation, self-propagated resource scarcity, and widening disparity of human existence between nations. We must choose the responsible path; power engineers are here to help guide us. It's time to holler it from the summits of transmission towers and atop substation gates.

As a junior power engineer, I have come to discover a few simple rules that guide my efforts as a technical ambassador. They help me "double-check" that my efforts remain aligned with the public I desire to serve; in other words: stay relevant. First, I make a deliberate effort to communicate in plain terms, as it serves no one to harbor a feeling of superiority from high above on a tower built of rotating phase equivalents and small-signal stability formulations. Second, I try to convey my personal experience as a power engineer and why my research is pertinent to the growing world. After all, this profession is way too hard to be entered into lightly; one has to be passionate and our fire comes from somewhere deep. This focus helps me when I attempt to connect the understanding that friends; family; acquaintances; and community members with whom I interact, have about power system topics to the broader context of real life. In addition to the substantive products of our work, we offer a very real and human connection to those we serve. We deserve our profession if we remain as stoic diplomats locked away in our embassy.

The process of improving our communication as power engineers extends beyond the public we connect with. Building connections and spreading the word about power engineering involves an oft overlooked concept: mentorship. Personally, I have benefited greatly from the sage counsel of experienced power engineers who have gone before me. I am not alone. It is no secret that the power engineer demographic is maturing. If this is so, are the ranks of mentors likewise growing? The Power and Energy Society is blessed with great experience and wisdom; a critical core principal for the Society going forward must be to encourage and facilitate strong connections between talents on both sides of the career progression bell-curve. Herein is the relevancy Möbius strip: mentors inspire students or junior engineers to take up the charge which, in turn, leads to more mentors; all the while the message of relevancy grows. To be clear, this effort goes beyond simply informing about job opportunities. But there is work here, too, for young engineers starting to make their way. There exists a community of seasoned power engineers out there that want to see us succeed; building on their innovation. If we don't yet have a mentor (or a few): find one. These efforts communicate a similar message to the one we send the public we serve; this is about making a personal connection. The future dividend: not only will the ranks of

power engineers grow, but the inspired force of relevancy is multiplied. And, yes, mentorship can flow both directions and help bridge gaps established by disparate academic and industry spheres. Better connectedness between junior and senior power engineers; stronger collaboration between academic and private counterparts; stronger interconnectedness; this will benefit us for the future. Mentorship yields lasting results.

We can do this. By maintaining our focus on the public welfare we serve, we will best grow relevancy to our world. Adding the "why" to the "what" mixes the human element with our power engineering work, better forging connections with those we ultimately sustain. Power engineers know intimately locations worldwide where attitudes of waste, withholding, and resource misuse directly compromise basic human rights. We've seen firsthand that the strongest opponent of peace is the simple struggle for resources. We ache knowing that systems, as diverse as water purification to rural electrification, are impeded by forces that don't share the commitment that power engineers have to developing and implementing energy technologies that can benefit all people. This personal perspective makes us better engineers. It can make us better communicators, too. Relevancy involves proper alignment between our efforts and society's needs. I've focused on a few tasks that we as power engineers can undertake in order to achieve our goal of increasing relevancy, but they all branch from the same root: communication. Without connecting our professional endeavors to the fundamental reasons we abrade these challenges, relevancy remains obscured. Now, like a secret that we've been dying to tell: let's pump the volume.

REFERENCES

This essay reflects only my own opinion, writing, and original thinking. No reference is made to any other publication. This is a wholly original work by the author.



C.M. Colson (M'07) received the B.S. degree in control systems engineering from the United States Naval Academy in 1999, the MEM degree from Old Dominion University in 2006, and M.S. degree in electrical engineering from Montana State University in 2008. He served as a Submarine Warfare Officer in the United States Navy for seven years and is currently a National Science Foundation (NSF) Graduate Research Fellow and doctoral student in electrical engineering (power systems focus) at Montana State University in Bozeman, MT.