

Workforce Development – What the Power Industry Needs From Universities

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Nelson Peeler – Duke Energy

- Basic Power Engineering Education
 - Generation
 - Transmission
 - Distribution
- Work Experience
 - Co-op
 - Internships
 - Projects

Kevin Bevins – Santee Cooper – 5 C's

Competence

- Basic power: Three-phase systems
- Single line diagrams
- Per unit calculations
- Delta-wye conversions
- Calculating line parameters
- Voltage drop
- Equipment ratings
- Power flow
- Economic dispatch
- Symmetrical components
- Fault studies
- Specifying CT tap settings
- Calculate protective device settings
- Fault location
- Stability studies

Kevin Bevins – Santee Cooper

Character

- Initiative
- Diligence
- Attentiveness
- Alertness
- Punctuality
- Discretion
- Thoroughness
- Responsibility
- Truthfulness
- Persuasiveness
- Flexibility

Kevin Bevins – Santee Cooper

Chemistry

- The ability to get along well with others
- Work on a team
- Respect – treat people the way you want to be treated
- Persuasiveness – the ability to guide vital truths around another person's mental roadblocks

Kevin Bevins – Santee Cooper

Communications

- Listening skills (attentive and active)
- Writing skills (including spelling, punctuation and grammar)
- Speaking skills (including public speaking)
- Power Point

Kevin Bevins – Santee Cooper

Cost Control

- Map and re-engineer business processes
- Define requirements for a RFP
- Economically compare alternatives
- Evaluate bids
- Cost justify a solution
- Build a business case

Kevin Bevins – Santee Cooper

Connections

- Theory with application
- Co-op or summer internship
- Tours – power plant, substations, energy control center
- Senior design project or research in power

Rob Manning – EPRI - 5 U's

Understanding of Fundamentals

- Knowledge of the complexity of the electricity business
- Impact the internet of things
- Future energy systems will demand distributed intelligence
- Need people who see through the promises and hype of the latest new product to clearly understand the integration and aggregation challenges

Rob Manning – EPRI - 5 U's

Unrestricted Ideas

- Unburdened by past failures
- Encourage students to explore both what is possible and what is impossible
- Fresh thinking

Rob Manning – EPRI - 5 U's

Unbiased by Traditional Business Practices

- Experience, while one of our greatest advantages, can also be one of our greatest challenges
- As our teams and people build experience, they build history. Within that history are failures that build up our resistance
- Unlimited by their failures

Rob Manning – EPRI - 5 U's

Unbounded Access to Funding

- We are working on a number of the same things
- Leverage our work together
- Look closer at the opportunity to work together, to leverage each other's strengths, and to back-stand each other's weaknesses

Rob Manning – EPRI - 5 U's

Unbridled Passion

- Need people to pack that pipeline that love making a difference
- We need people that love what they do
- Figure out how to push people through a demanding and rigorous curriculum without extinguishing the fire that brought them to your doors

In Summary

- Power and Energy field is changing rapidly
- Large new investments on the horizon
- Workforce is aging – big turnover soon
- Well educated, talented and experienced people are needed
- Opportunities are unlimited
- Now is the time to be A Power Engineer
- Preparing students is a partnership
- To quote Kevin Bevins: “All the World Needs is Unlimited EE’s in Power”

Workforce Development is A Partnership

University

- Undergraduate
- Graduate

Industry

- Tours
- Special topics seminars
- Work experience
- Research support

Students

- Interest, Passion, Initiative
- Work hard

Universities

- Back to the basics
- Offering the right courses
- Labs and “hands on experience”
- Involvement in meaningful and applicable research
- Education doesn't stop at graduation
 - Developmental courses
 - Special topic courses
 - PE Review courses

Industry

- Be involved in the educational process
 - Guest lectures
 - Seminar series
 - IEEE PES Chapters
- Support research projects
 - Financial, data and advisory
- Support Senior Design Projects
 - Financial, data and advisory
- Power Engineers – get involved in the recruiting process
 - Career Fairs, Interviews, Mentors

Students

- Willing to take fundamental courses to learn the Basics
- Take as many electives as possible
- Pursue advanced degrees if desired
- Get work experience
 - Co-op
 - Internships
 - Part-time

Questions and Comments !

