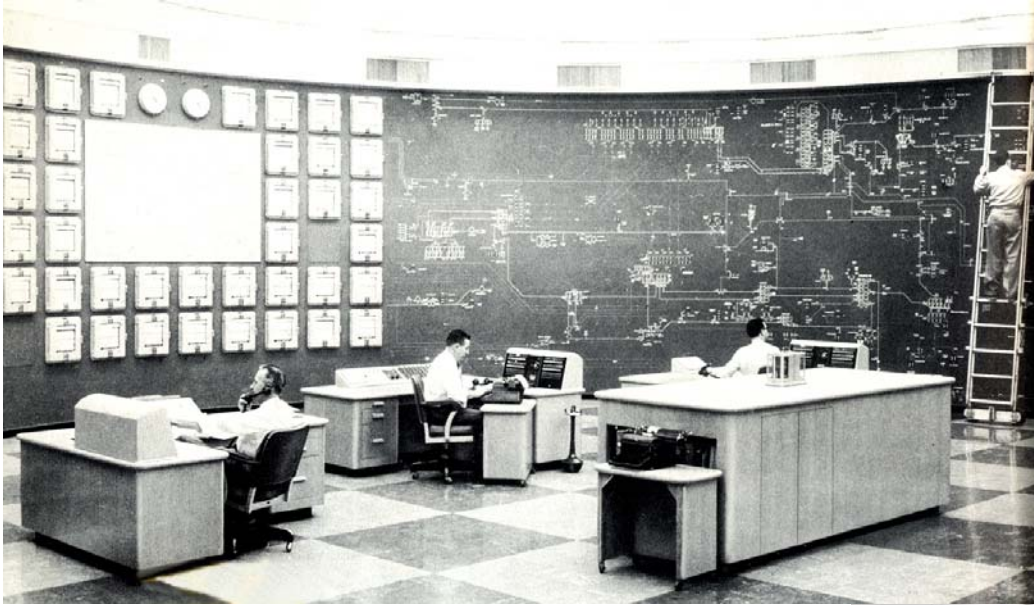

Training the Future Engineering Workforce for the Power & Energy Industry

IEEE PES General Meeting - Calgary

28 July 2009

Session Chair - Bill Cassel, KEMA

Back in the day...



Long, predictable careers

Stable technology and
business climate

Slow, steady absorption of
formal and informal knowledge
from experienced mentors



Questions for today and tomorrow...

- Who is the future engineering workforce?
 - How do we make them aware of, and interested in, electricity and the power & energy industry?
 - How do we equip them to begin engineering careers in power & energy?
 - How do we retain them in the industry?
 - How do we transfer the experience and tribal knowledge from experienced engineers?
 - How do we keep power & energy engineers up-to-date with advancing technology and business climates?
 - Who is best suited for each of these tasks?
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Motivation in Steps

- Outreach to grade school students
 - Where does electricity come from?
 - Electrical safety
- Outreach to high school students
 - What is engineering all about and why is it a neat thing to do?
- Outreach to university students
 - Why should power engineering appeal to students of today (or tomorrow)?
- Outreach to young power engineers
 - How do we provide useful work experiences that meet young engineers' career goals and retain them in the industry?



Training is forever

- Part of the future engineering workforce is the current engineering workforce—they need continuing training to equip themselves for future challenges.
 - In a forward-thinking company, training is everybody's business—employees need to deliver training, as well as receiving training.
 - Knowledge needs to be captured, organized, and made available to those who need it.
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The Puzzle Pieces

■ What

- Outreach
- Education
- Training
- Knowledge capture
- Knowledge transfer
- Refresher training
- New situations and technologies

How do we fit the puzzle pieces together?

■ Who, How

- Universities
 - Employers
 - University-employer partnerships
 - Summer internships
 - High school career internships
 - Industry organizations (e.g., Electricity Council of New England)
 - IEEE PES Education
 - IEEE PES Chapters
 - Others
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The Agenda

- U.S. Power & Energy Engineering Workforce Collaborative Action Plan
 - Gregory Reed, Ph.D., Vice President, IEEE PES Membership and Image, Director & Professor, Power & Energy Initiative, Univ. of Pittsburgh
 - Professional Resources to Implement the “Smart Grid”
 - Gerald T. Heydt, Arizona State University
 - 09GM0323 – Replenishing the Aging Workforce
 - Randy Kimura & Daniel Wong, GE Energy
 - 09GM0343 – Training T&D’s Next Generation for Next Generation Networks
 - Adam Middleton, GE Energy
 - 09GM0436 – The Power Academy in the UK: A Successful Initiative to Attract Graduates to the Power Industry
 - Keith Bell, University of Strathclyde
 - 09GM1392 – A Course in Power System Analysis Based on Project Based Learning Methodology
 - Nasser Hosseinzadeh, Swinburne University of Technology
 - 09GM1423 – Using Hardware and Software Studies to Teach Power-System Modeling and Analysis
 - Robert Cox, UNC Charlotte
 - 09GM1535 – Integrative Graduate Program in Sustainable Electric Energy Systems
 - Efrain O’Neill-Carrillo, University of Puerto Rico-Mayaguez
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