



**Restoring Industry, University, Government
Collaboration: Needs and Possible Ways
Forward – An Open Discussion**

Timothy J. McCoy - 10 March 2008

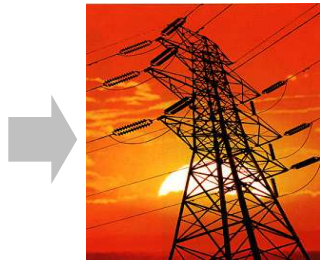
CONVERTTEAM
THE POWER CONVERSION COMPANY

What is Converteam?

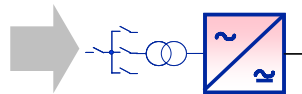
- Converteam is an engineering company providing customized solutions and systems converting electrical energy into productive performance



Power generation



Power transmission & distribution



Converteam



Marine



O&G



Energy

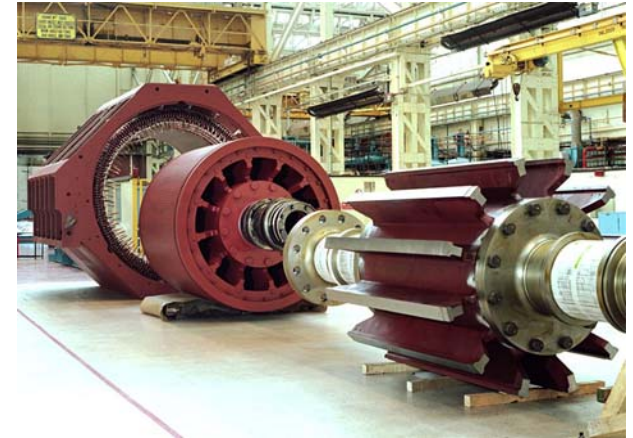


Industry

- Converteam: a company with more than 100 years experience in power conversion

Why do we care about Power Engineering?

- **Converteam provides solutions**
- **These solutions are made of systems built around 3 core components:**
 - **Rotating Machines**
 - **Variable Speed Drives**
 - **Process automation & control**
- **Our scope covers:**
 - **Consulting**
 - **Design**
 - **Manufacturing**
 - **system integration**
 - **Installation**
 - **commissioning**
 - **services**



"More than half the nation's science and engineering workforce will reach retirement age in the next twenty years. Currently, the IEEE reports 360,000 electrical and 23,000 registered power engineers. Yet, today there are only about 500 undergraduate degrees awarded in the area of power engineering (compared to nearly 2,000 in the 1980s) annually, fewer than 200 masters' degrees and about 20 PhDs conferred per year." -- Sen. Maria Cantwell (D-WA), Energy & Natural Resources Committee (2003)

- **These statistics would indicate a need for ~1150 power EE's annually.**

- **In 2006, the Bureau of Labor Statistics (BLS) reports ~291,000 EE's in the US.**
 - BLS estimates ~13,000 annual openings for EE's in the US

Similar problems exist throughout Europe

IEEE Power Engineering Education Committee (PEEC) 2006 Survey Results (Feb 2008):

- 115 schools across US & Canada participated in survey
- Research funding has decreased 16% since 2002
 - Government research funding has dropped 38% since 2002
- Schools average only 3.3 faculty members per school in Power Engineering
 - 33% of those are Junior Faculty (down from ~40% in 2002)
- Average is 16 grad students per school
- 60% of schools require an undergrad power class

G. Heydt & V. Vittal, "Feeding Our Profession," *IEEE Power & Energy Magazine*, Feb 2003.

- **~5.9% of EE undergrads study power engineering**
- **~500 undergrad Power EE degrees conferred in 2001**
- **~220 graduate Power EE degrees conferred in 2001**

What's the problem?

Jobs are available -- already a critical shortage

Why aren't we generating enough power engineers?

- **Opportunities to study**
- **Research funds to support faculty**
- **Interest / awareness among students**
- **Perceived lack of jobs (outsourcing)**
- **Curriculum**
- **Demographics**
- **1970's Oil Crisis**

Solutions Anyone?

What can be done?

- **Academia**
- **Government**
- **Industry**

Thank you for your attention

www.convertteam.com

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