Educating the Power Industry Workforce of the Future

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Abstract — This is a summary of the presentation on the panel entitled "Power Industry Workforce of the Future" at the 2006 IEEE/PES GM in Montreal, Quebec, Canada.

Index Terms — Continuing Education, University Teaching, Power Engineering Careers, Workforce Development

PANEL SUMMARY

THE myriad changes underway in the electricity industry, the rapid advances in technology and the major dislocations in the industry work force have brought about significant repercussions on the human resource needs of the industry. The huge reductions in force throughout the industry have significantly reduced the depth of technical expertise and the breadth of experience at many industry enterprises. The attendant decrease in recruitment and hiring have further eroded the knowledge base in the industry. When these changes are coupled with the large number of recent retirements and the even larger number of planned retirements, the industry is facing an unprecedented demand for the steadily decreasing number of power engineering graduates. This presentation addresses the role that the universities can play in successfully meeting the ramped up human resource needs of the electricity industry.

The discussion starts out with an assessment of the needs of the industry in terms of forecasted manpower requirements. The current status and key trends in undergraduate and graduate power engineering programs are surveyed and a careful evaluation of the recent statistics on the subject of enrolment and delivery of EE degrees. In general, at the undergraduate level, the wide interest in newer fields, such as nanoelectronics and computers, has steadily eroded interest in power engineering. However, recently some encouraging developments indicate that there is a turn around in the situation. At the graduate level, a somewhat steady enrolment level has been maintained with the large influx of foreign graduate students. The state of the university – industry relations is assessed and the government involvement in power engineering education and research is discussed.

Given the magnitude and the scope of the human resource needs that must be effectively met, success in meeting this unprecedented high demand will require a solid industry-university-government partnership. The partnership requires the establishment of a solid foundation given the scope and magnitude of the efforts required to effectively solve the human resource problem on a timely basis. The universities' role is critical in shaping and providing the training of the cadre of future power engineers and specialists that will enter this industry's ranks. The partnership will be a fundamental component of the means of ensuring the universities' role in the education of the new generation of engineers is a success. The active role of the government in the direct support of power engineering education and an increased involvement of industry in all aspects of the educational experience of students and faculty are crucially important factors. The scope and nature of efforts in preparing the workforce of the future are outlined. This educational activity is of paramount importance in ensuring the well being of the electricity infrastructure for the nation's economic success in the future.

BIOGRAPHY

George Gross is Professor of Electrical and Computer Engineering and Professor, Institute of Government and Public Affairs, at the University of Illinois at Urbana-Champaign. His research and teaching activities are in the areas of power system analysis, economics and operations, utility regulatory policy, renewable resource integration and industry restructuring. He was formerly with the Pacific Gas and Electric Company, where he held various technical, management and policy positions.