Facilitating Constructive Alignment in Power Systems Engineering Education using Free and Open Source Software

I. Introduction

The power and energy industry is on the verge of facing one of its biggest challenges ever: to overcome a looming shortage of human resources product of an ageing workforce, coupled to a lack of newly produced engineers to meet this shortage. Although this phenomena was first identified as an important issue during the early 2000's, primarily impacting North America, it continues to be a major concern. While earlier reports of this kind of shortage were limited to North America, this phenomena has now spread to other industrialized societies, including the European Union and Australia.

In a report issued by the House of Commons of the United Kingdom in 2009, it is stated that "40% of National Grid's workforce will reach retirement age over the next 10-15 years. The UK faces a 'crucial skills shortage from 2015 to 2025 that will make power supplies less reliable and more expensive' ". In a press release from Nordic Energy Research in 2008, it is stated that in Denmark "for every new power engineer who completes his/her education, three power engineers are retiring."

The difficulties in attracting new talent into this particular engineering area are large, and the rate of recovery in training new human resources is increasingly challenging. The fact is that beyond the concern of demand and supply of human resources, there is a need to appropriately transfer knowledge so that new engineers arrive with functioning knowledge to the workforce.

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