

Nuclear Simulation Laboratory at NC State: Current Aims and Perspectives

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1. INTRODUCTION

For a sophisticated multi-billion-dollar venues like nuclear power plants when dealing with ionizing radiation, it is not easy to build education, research and training projects to acquire the required skills of designing and operating safely and economically nuclear reactors. Computer simulations instead are used to design and visualize nuclear power plants and to incorporate the ideas and knowledge of nuclear engineers. Computational methods and simulation then take the utmost importance in such cases, and one relies on mathematical equations implemented in computer codes to model and imitate real life designs and scenarios.

The department of Nuclear Engineering at NC State university has recently renovated its Nuclear Simulation Laboratory (NSL) and equipped it with a Generic Pressurizer Water Reactor (GPWR) computer simulator developed by the real-time simulation-systems company GSE. The simulator is utilized to support educational, training and research modules and curriculum and to help students do analytical studies of various reactor transients or simulations that can be encountered in real Pressurized Water Reactor (PWR). The aim is to increase the educational benefits and to train the students in simulating and understanding nuclear power plants operations and to reinforce their educational curricula [1].



Figure 1. Simulator room showing the three vertically stacked touchscreen displays and connected computer systems.