ERGONOMICALLY DESIGNED COMPUTER BASED OPERATOR TRAINING SIMULATOR SYSTEM

THESIS

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ABSTRACT

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Operator training simulator are typically also used for operator training before initial start-up, major plant upgrades, training of procedures, and for regular refresher courses on emergency events. Operators who don't have legitimate proper training, gear and deficient information in the field of activity causes mischances, increment deformity rates, machine interest in advising an operator training simulator in selected electronic manufacturing firm and propose an ergonomically designed computer-based operator training simulator system to fit the job the workers. Development research was utilized in developing a system based on the needs reflected by the problems identified. Six sigma, Define-Measure-Analyze-Design-Verify (DMADV) approach was used to determine the problems and needs of the respondents and verify its solution. DMADV was used to analyze the problems that the respondents experienced using the existing training and used for possible system improvement.

A design methodology for the configuration and procedural training with an Operator Training Simulator (OTS) in Power Box. The objective of the study was to show how the methodology provides a powerful way for finding the best configuration and training structure of the OTS before its implementation. The OTS principle, i.e., to use a computer-based virtual presentation of the real process plant intended for efficient training of process operators. The training included general standard operating

procedures for running of the company under normal operation conditions with different starting materials, handling of typical frequent disturbances as well as acting in situations not described in the standard operating procedures and applying trouble-shooting.

As the result of the study, the operators were confident in executing tasks, leading to product quality and skills improvement. One might see a reduction in human errors due to the competency-based approach. By integrating the training evaluation models with the OTS, the instructor can easily measure every session not dependent on questionnaires. This study optimized the trainings delivered and improved future sessions. Lastly, the system was evaluated by the participants with an overall rating of excellent.

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ERGONOMICALLY DESIGNED COMPUTER BASED OPERATOR TRAINING SIMULATOR SYSTEM

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INTRODUCTION

The Operator Training Simulation (OTS) is an Informative Technology system used to transfer the knowledge from the expert operator to the new generation of operators within production plants. There is a lot of ambiguity about OTS and its components. (Ambibi, 2015).

A practical approach to train operators needs to be developed that provides reliable hands-on experience without any associated risks of compromising productivity and safety. This can be achieved using real time on-line dynamic simulators specifically designated as operator training simulators (OTS). OTS allows operators to control and drive the virtual plant using implemented control systems and HMI graphic screens without stresses associated with controlling the actual plant. OTS promotes a learning by doing approach, illustrating cause-effects and action-reactions interconnections within the dynamic environment of the virtual plant (Kaushik & Schaffer 2014).