

ABSTRACT

The Ergonomic Evaluation and Redesign of a Process Plant Control Room

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This study assesses the control room in a process plant facility from a human engineering perspective and provides recommendations for improvement where required. The three main areas that were explored are the man/machine interface, environmental factors and personnel interactions.

The techniques used for gathering information about the existing design include observation of control room operators, face to face interviews and measurement of environmental conditions. Where possible, the information gathered was evaluated by comparison to ergonomic standards or guidelines.

Keywords: Ergonomics, Control Room Design, Human Engineering

The results of this project clearly reveal that the user's requirements were not met in the design of several key areas in the control room under investigation. These include the design of graphic displays and control devices, thermal comfort, control room lighting and communication. The only area in which the system design was found to be acceptable was in the area of personnel and equipment safety.

Since the client representatives for the owners of process plants often have the final approval for the design of process plant equipment and buildings, it is imperative that they understand the benefits of incorporating the user's needs in the system design. Designing a control room that is safe only fulfils the requirements partially. The operator also requires a system that suits his/her natural abilities and needs thus reducing human error and promoting efficiency. Even though the initial expenditure may be higher for an ergonomically designed system tailored to specific end-users needs, the result is increased safety and better production.

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