

# On-shore supervision of off-shore gas production - Human Factors challenges

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## Abstract

Technology enables remote process control of off-shore gas production assets, thus reducing off-shore manpower. The human factors in control centre engineering include operator consoles, information presentation, interaction, alarm management, and job content. The human factors are all related to each other. Moving off-shore tasks to on-shore control centres requires a human factors approach, which includes an operator task analysis. For natural gas production, some new control room tasks appear, such as contract management and related production volume control.

Two cases of Human Factors engineering of *a move to shore* are presented. At the first case, a hierarchical task analysis was performed to get insight in the operator tasks. This enabled determination of the number and size of workplaces and revealed the importance of contextual off-shore platform information. Several years later, increased data transmission capacity between on- and off-shore, led to the implementation of an advanced alarm management philosophy, including an optimal visualisation of (grouped) alarms. The second case also concerned the design of an on-shore control centre for over 40 off-shore gas production assets. A major effort concerned the redesign and standardization of process graphics, in order to enable on-shore operators to supervise all processes adequately.

## Human Factors Engineering

The aim of Human Factors (HF)/Ergonomics is to optimize the work system. Ergonomics can be defined as *user-centred design*, or user-centred engineering. This definition expresses a focus, both on the human being and design. In general terms, this requires an approach including both social and technical aspects of the system. Job design, operator workload, control centre layout, workplace layout, instrumentation, information display, environment, and many more topics have to be addressed. The HF professional may not have much background in process control or other engineering sciences. Therefore, he relies on a systematic analysis and design approach (ISO 11064, 1998). He tries to get insight in the relationships between relevant human factors, such as operator workload and job design, or the number of screens on a console and the measurements of the workplace. In addition, HF may fill the gap between technical engineering disciplines and users. Of course,

In D. de Waard, N. Merat, A.H. Jamson, Y. Barnard, and O.M.J. Carsten (Eds.) (2012). *Human Factors of Systems and Technology* (pp. 293 - 306). Maastricht, the Netherlands: Shaker Publishing.