Multi-objective and Systematic Performance Analysis of Industrial Operators
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Introduction

- Increase in complexity and technological inclusion in chemical processes demands higher cognitive load, increased working memory, attention allocations abilities, stress handling, responsiveness, and abnormal situation management by the operators
- Several training methods are deployed to enhance operators’ skills to face above mentioned challenges
- Generally, the performance assessment during training sessions is made by analyzing the final goal
- There are fewer studies highlighting the limitations of existing performance assessment methodologies

Methods

- Training can improve the operator’s understanding, abnormal situation handling, reliability especially during an accident scenario with higher cognitive readiness.
- A training method must be followed by a systematic, hierarchical, internally weighted, automatic and unbiased performance assessment which should be based on well-defined Performance Indicators

“Plant Simulator” is designed and developed to train and for performance assessment

Design

- Plant Simulator
- Performance assessment
- Improved performance
- Increased responsiveness
- Better comprehension
- Plant Simulator
- Training
- Performance assessment

Experiment and Results

- Experiment conducted with 14 participants (average 20.8 years, 12 Male)
- Procedure for automated assessment of industrial operators, Chemical Engineering Transactions, 36, 391-396

Conclusions

- Single Objective performance analysis may lead to wrong conclusions
- Identification of the impact and consequences of error increases the reliability of performance analysis
- Multi-objective and Systematic Performance Analysis enable the emergence of performance rather than only focusing on final goal
- Training programs and performance assessment shall be developed with domain expert as well as Human Factors specialists

References