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" RISK MANAGEMENT "

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Topic: Risk Reduction (Loss Prevention and Control)

" RANKING SAFETY:
AN APPLICATION OF MCDA TECHNIQUES
TO SAFETY AUDITING RESULTS,
FOR RISK PREDICTION AND REDUCTION
IN HAZARDOUS ACTIVITIES "

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Abstract

The present paper concerns the application of computational methods to extrapolate the results of safety auditing performed in hazardous activities.

A safety-oriented approach is based on the experience of the analysis of the major accidents historically happened. In this approach the adoption, implementation and evaluation of a process safety management system, covering the hazardous plant lifecycle, is a correct preventive methodology.

In this aim, an efficient monitoring of the process safety management system adopted is given by safety auditing performance based on integrated review techniques.

In particular, a comprehensive set of results can be reached through an integrated process safety management model, structured in seven keypoints, as:

- Management;
- Plant operation;
- Maintenance;
- Technical support;
- Safety;
- Training and qualification;
- Emergency planning , preparedness and management.

If a transformation of the results obtained from safety auditing into quantitative results is made, a "safety matrix" is obtained. This is made adopting a quantitative rating system based on appropriate safety indicators which classify the safety findings taking into account the specific plant's characteristics.

This "safety matrix", which is a photograph of the process safety management system acting in the plant, can be computed using Multi Criteria Decision Aids methodologies, ranking safety in the plant and giving synthetic indications, as:

- evaluation of the safety system adopted and of the plant actual situation;
- safety optimization inside the plant;
- comparison with other similar plants;
- standardization;
- risk prediction;
- adoption of measures for risk reduction.

The integrated methodology proposed, considering the "safety matrix" of the process safety management system ("software") as a stiffness matrix ("hardware"), make possible risk evaluations, simulating an initiating event and tracing its escalation towards accident.