

Quantitative ATEX-HAZOP - A holistic Approach tackling Process Safety by combining Risk and Ignition Source Analysis with Numerical Methods

Mag. Matthias Rizzi

TÜV SÜD Schweiz AG

The Hazard And Operability (HAZOP) Study is a powerful tool and as such widely used in Process Industry to assess risks, identify their root cause and describe their consequences. Specific risks, which are not primarily related to the process but to more general circumstances e.g. ATEX or Machine Safety, are often covered separately and not integrated properly into risk analysis. Moreover, these methods are of qualitative nature, which makes it difficult to implement them into a quantitative HAZOP study.

In the present work a holistic approach was developed to assess the risk from ionizing radiation as an ignition source in a quantitative manner. Numerical methods used in dosimetry were applied in order to identify potential root causes for igniting an explosive atmosphere. The results were implemented in an ignition source analysis according to ATEX standards and finally integrated into a quantitative HAZOP study.