Abstract
The European Union regulations require safety and health protection of workers who are potentially at risk from explosive atmosphere areas. According to the requirements, the operators of installations where potentially explosive atmosphere can occur are obliged to produce an explosion protection document. The key objective of this document is the assessment of explosion risks.

This paper is concerned with the so-called explosion Layer of Protection Analysis (exLOPA), which allows for semi-quantitative explosion risk assessment for process plants where explosive atmospheres occur. The exLOPA is based on the original work of CCPS for LOPA but takes into account some typical factors appropriate for explosion, like the probability that an explosive atmosphere will occur, probability that sources of ignition will be present and become effective as well as the probability of failure on demand for appropriate explosion prevention and mitigation means.