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## Corrosion Damages of Pipelines Assessment by Using the Finite Element Method

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### Abstract

In order to ensure pipeline safety during their service life, all relevant construction, testing and safety requirements must be met. Corrosion damage is a major hazard to the steel pipeline as a whole, and it is necessary to comply with inspections and adequate maintenance so that destruction with catastrophic consequences would be avoided. In this paper, the standard calculation for determining the maximum acceptable corrosion damage length according to the RSTRENG method is presented using the calculation of the corrosion-damaged structure of the ammonia (NH<sub>3</sub>) transfer pipeline. After that, the methodological approach to calculation using the finite element method (FEM) is presented in accordance with the methods defined by the new and general approach to standardization and technical harmonization for pressure equipment (Pressure Equipment Directive). The aim of the work was to present advanced modeling techniques of corroded surfaces based on FEM in order to develop a procedure for evaluating the residual strength of steel pipelines in the chemical industry.

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