

Experimental study on the performance of the standardized test method for detonation flame arresters

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Flame arresters are autonomous protection systems and are among the constructive explosion protection measures that limit the effects of an explosion.

In this study, the performance of the standardized test method regulated in the DIN EN ISO 16852 standard for in-line flame arresters for stable and unstable detonations, which is mainly designed for atmospheric conditions, is examined. In an interlaboratory comparison, experiments are performed for different pressures before ignition and explosion groups according to the standardized test method. The experimental data is analyzed in detail to further optimize the test method and to thus achieve an improved reproducibility of detonation tests at high pressures, especially regarding the deflagration to detonation transition.

Based on these results, an improved test method for detonation flame arresters will be developed, which will ensure better reproducibility as well as applicability under non-atmospheric conditions.