Bautechnische Maßnahmen zur Schadensminderung bei Staubexplosionen
(Ergänzende Untersuchungen zum Vorhaben IV 1-5-605/90)
Vorhaben IV 1-5-856/97

Abstract

The object of this research project was the development of an updated guide line for the design of large silos against the detonation of inflammable dust-air mixtures regarding also the pressure relief due to venting.

This updating was necessary as originally the mass moment of inertia of the venting device was regarded according to the available literature resulting in a considerable pressure increase.

Numerous explosion experiments carried out in parallel in a 50 m³ test silo however showed a far less significant influence. This made a slight modification of the originally gained design procedures necessary.

These new results concentrated now by means of dimensionless characteristics in design charts became part of a new guide line, which will be integrated into the German standard "DIN 1055, Teil 6: Einwirkungen auf Silos und Flüssigkeitsbehälter (actions on silos, bunkers and tanks)".