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ABSTRACTS' BOOK

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are not available, or are unreliable; 3) there is lack of agreement or consensus among experts; and 4) the phenomena involved are not well understood, or models are non-existent or known/believed to give poor predictions. The discussion emphases the importance of aspects such as risk awareness and the inherent limitations in the predictive capabilities of consequence models for dust explosions in complex systems.

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ORAL COMMUNICATIONS

Influence of bends in the functionality of passive explosion isolation valves

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Keywords | Dust explosion, explosion mitigation, explosion isolation

Passive explosion isolation valves are widely used in dusty industrial processes to isolate explosions.

They prevent the propagation of flame and pressure to the rest of the installation, mitigating the consequences of an explosion. However, the valves only work under specific conditions, defined by the manufacturer as intended use. One of these conditions is the installation of bends between the protected equipment and the isolation valve, since it can generate turbulence and pressure drops that can influence the speed of flame propagation and the pressure wave.

This paper presents the methodology and findings of the Adix explosion tests.

Explosion tests have been carried out in a 2m3 vessel together with a DN 500mm straight pipe, as well as tests introducing 3 three 90º bends. These configurations have been tested with low and high kst fuels.

As a result, it is shown correlations between Kst, the presence of curves, flame propagation speed, and pressure wave propagation.

Reviewing Particle Size Influence in Biomass flammability and Explosibility

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Keywords | Biomass flammability, Particle size distribution, explosivity, dust explosions

Due to the new policies implemented to mitigate and reduce climate change effects, the use of biomass has significantly increased in the last years, and so, the number of accidents related to biomass storage, use, transport, and handle. Several authors have focused their research on biomass flammability and explosion severity properties, together with the influence of chemical and physical characteristics, finding out that particle size (PS) presents a major effect on those properties (Eckhoff, 2009; Guo et al., 2012). In order to increase biomass safety knowledge, PS has been widely studied, however, most of the published research determines PS using common methods that do not properly define this parameter. As biomass presents elongated and fibrous shape, granulometry methods that approach particles to spheres do not properly characterize biomass particles, which leads to misunderstandings when assessing relationship between granulometry and flammability properties (Gil et al., 2014). The aim of this study is to collect published information regarding biomass granulometry and flammability so assessment can be carried out. Indeed, it was found out that most of the published research determines PS using laser diffraction whose error when testing fibrous particles is quite significant. The obtained results were compared to coal samples, as their

characteristics are further studied. From data, it was noticed that biomass samples present a wide particle size range and, even when considering biomass with similar particle size distributions, important deviations were found when assessing flammability and explosibility properties. Furthermore, it was clear that there is no standard method for particle size determination which can unify results in order to carry out comparisons between samples. Moreover, the public existing data regarding biomass industrial safety is not extensive and should be increased to help understand biomass behavior.