Use of 26 Liter dust explosion vessel to measure Dust explosion characteristics

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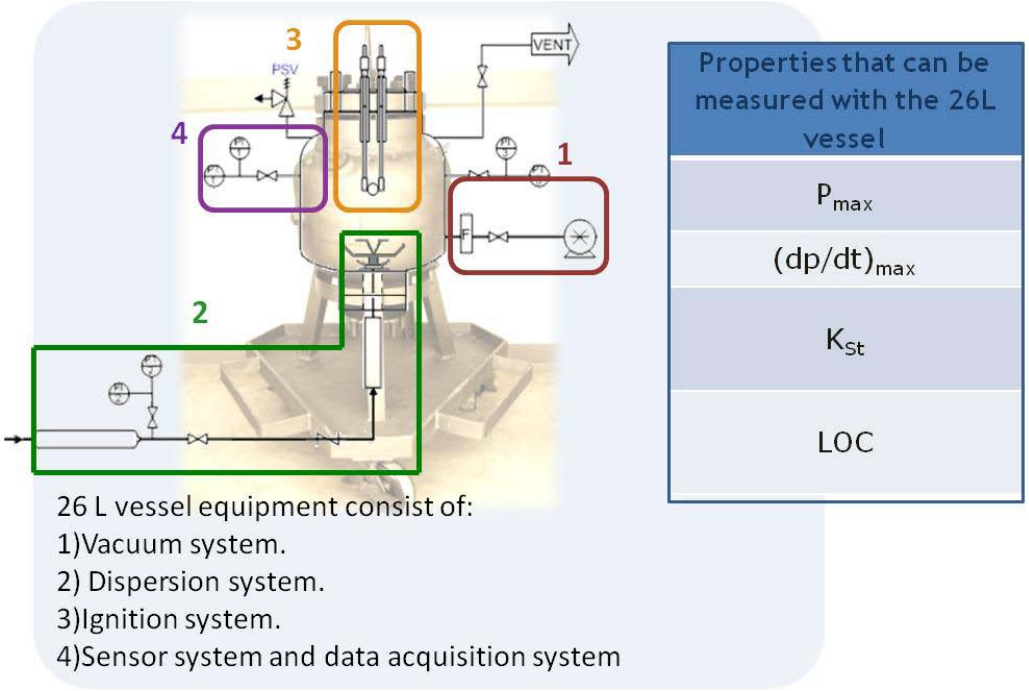
Numerous dust explosion incidents over the past years have raised serious concerns about combustible dust hazards in dust handling industries. These accidents have involved a variety of materials, and many causes have induced the dust explosion incidents. Due to the complexity of the dust explosion phenomena, theories about dust explosions and methods for the prevention of dust explosions are still insufficient. Therefore comprehensive research in this field is needed.

26 Liters Dust explosion vessel:



Our study will be mainly focused in quantify the influence of dust properties such as moisture content, particular size and surface area on dust explosion characteristics. This dust explosion characteristics including deflagration index (Kst), Maximum Pressure (Pmax), Maximum Rate of Pressure rise ([dP/dT]max), Minimum Explosive Concentration (MEC) and Limiting Oxygen Concentration (LOC) are useful to identify the severity of the dust explosion.

The project can also integrate available softwares to quantify dust explosions consequences, for instance, Dust Explosion Simulation Code (DESC) which is a CFD code that use experimental input data to simulate the course of industrial dust explosions in complex geometries. However experiments will remain indispensable for validations of the mathematical models. The research will be experimentally conducted by using 26-Liters Dust explosion equipment and results obtained from this study can be useful to understand the risks in more detail to prevent recurrence of dust explosion accidents.