Air Control Engineering Pvt. Ltd.

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ACEPL'S 'CAGE VENT'

Coal Grinding & various Storage Systems should be essentially protected against explosions & their highly hazardous consequences. Protection can theoretically be made by safe process conditions namely low oxygen content of the process Air or purging inert gas like Nitrogen & by installing safety techniques like Explosion venting, 'CAGE VENT' in our parlance. This technique is common & feasible in Cement Industry.

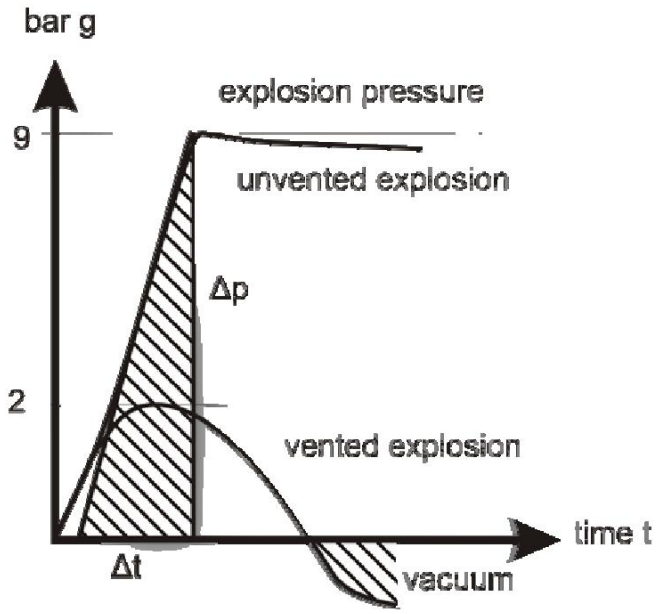
Explosions occur only when three situations take place simultaneously. Fuel, Oxygen & an Ignition source must appear together. If an inflammable finely ground material especially its dust are dispersed in air with sufficient oxygen static electricity or mechanically created sparks can originate an explosion with the attendant increase in pressure in process enclosures like Grinders, Silos, Dust receptacles etc. Coal dusts by itself can build up sufficient heat to form a source of ignition.

In Cement industry as aforestated, the standard procedure for protection against the consequential fall out of explosions is explosion venting, ACEPL's 'CAGE VENT'.

Dust explosion is nothing but a steep pressure rise owing to air expansion as the consequence of heat. The nature of Dust, predominantly its particle size distribution & burning properties, determine the maximum pressure which will be reached in the enclosure in which the explosion occurs & the velocity of the pressure rises

The principle of venting as a safe guard against the consequences of explosions is as under;-

After the fuel comprising fine dust dispersed in air having sufficient oxygen content gets ignited the pressure rises steeply as can be evident from the curve below;--



Without venting the coal dust explosion pressure can reach maximum explosion pressure value which can go as much as 10bar g depending on the burning properties of the dusts. With proper venting the pressure increase will be limited to the pressure that results from the interrupted pressure rise after the vents have opened. The resultant pressure is a vastly controlled value when the vent system is designed properly. ACEPL make CAGE VENTS essentially contain the increase in pressure value by virtue of intelligent venting.

In order to prevent a venting system from opening under the normal pressure fluctuations during the process they must be preset for a determined response pressure.

For protection of ducts ACEPL's CAGE VENTS offer precision engineered explosion diverters comprising air cushioned doors. The schematic representation below shows explosion hood of ACEPL's CAGE VENT design.