

The influence of vessel volume and equivalence ratio in vented gas explosion

Abstract

Experiments of vented gas explosions involving two different cylinder vessel volumes (0.2 and 0.0065 m³) were reported. It was found that self-acceleration and larger bulk flame trapped inside the vessel are the main factor enhancing the overpressure attained in 0.2 m³ vessel. There was about 2 to 7 times increase in ratio of pressure and flame speeds on both vessels at the same equivalence ratio and K which can be considered as turbulent enhancement factor, β . Hot spot or auto ignition is responsible to the deflagration to detonation.