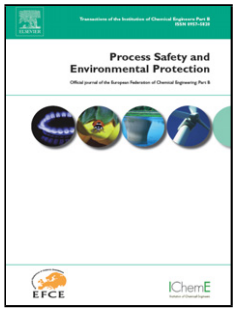

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Influence on the methane/air explosion characteristics of the side venting position in a pipeline

Minggao YU[a, b], Shaojie WAN[a *], Kai ZHENG[a], Pinkun GUO[a], Tingxiang CHU[a, b], Zhuang YUAN[a]

[a] State Key Laboratory of Coal Mine Disaster Dynamics and Control, Chongqing University, Chongqing 400044, China

[b] State Key Lab of Gas Geology and Control-Cultivation Base, Henan Polytechnic University, Jiaozuo, Henan 454003, China

* Corresponding author.
E-mail address: wanshaojiewan@126.com.

Highlights

- Methane explosion characteristics have been studied affected by side venting position in an end-vented pipeline.
- The venting effect is not linearly increasing with shortening the distance between the side vent and the ignition point.
- A side vent exhibits opposite influences on flame propagation before and after the flame passes the side vent.
- The venting effect of a side vent is influenced by both the side venting position and the inducement of an end vent.

Abstract: To reduce the huge losses caused by natural gas explosions in transport pipelines, a small simulation pipeline with internal dimensions of 100 mm × 100 mm × 1000 mm was constructed, and the effects of the side venting position in the pipeline on methane explosion characteristics were studied. The experimental results showed that the venting effect of a side vent on flame propagation and explosion overpressure is not linearly increasing with shortening the distance between the side vent and the ignition point. The venting effect is significantly influenced by both the side venting position and the effect of an end vent. As the flame propagates