

عنوان مقاله:

Experimental values for adjusting an automatic control valve in gas pipeline transportation

محل انتشار:

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خلاصه مقاله:

When a natural gas pipeline ruptures, the adjacent automatic line control valves (ALCVs) should close quickly to prevent leakage or explosion. The differential pressure set point (DPS) at each valve location is the main criteria for value setting in ALCV action. If the DPS is not properly adjusted, the ALCV may mistakenly close or it may not take any action at proper time. This study focused on the DPS values prediction for setting ALCV installed on a gas pipeline with 1mm orifice diameter. The effect of characteristic parameters such as pipeline operational pressure (POP) and pipeline pressure drop rate (ROD) due to rupture or major leak was experimentally investigated on DPS. Twenty-five different conditions with double set of typical mentioned characteristic parameters were chosen. For each condition, the differential pressure (DP) was measured over 180 seconds by analyzing the experimental values. Therefore, 25 maximum DP values (DPSs) were obtained. The DPS increases by increase in ROD or decreasing POP parameters. Because of using nitrogen gas instead of natural gas due to safety reasons, the DPS results can be practically applied by adding a safety factor of 15%. The diagram of DPS with respect to ROD and non-dimensional .DPS (DOP) versus non-dimensional ROD (RTP) was provided for different POPs

کلمات کلیدی:

Automatic Control Valve, Operating Pressure, Adjusting Values, Pressure Drop Rate, Gas Pipeline

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