PRV Chatter Incidents

Brad Otis
Shell Global Solutions

ABSTRACT

API-520 recommends limiting Pressure Relief Valve inlet pressure losses to 3% of set. It also allows use of an engineering analysis to assess PRV installations that have inlet losses greater than 3% of set. At the moment there are a lot of discussions within industry regarding current API 520 guidance. This is an important issue for industry since studies have shown that a sizable fraction of existing vapor relief PRV installations have inlet losses greater than 3% and yet they have not had significant chatter issues. This paper takes a look at this from an operational experience point of view rather than a theoretical one. It presents survey data on 42 liquid relief PRV chatter incidents within the refining industry that occurred prior to 1976. It also reviews an additional 20 cases of PRV chatter (liquid and vapor relief) within industry that covers the time period since 1976. The data clearly illustrate that the predominant risk with PRV chatter is with installations relieving liquid, not vapor. The paper makes recommendations on improving guidance for the design/installation of relief systems that have liquid relief.