

PRV Survey Results: PRVs for Packaged Equipment Pre-Pop Testing of PRVs

Presented By:

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API PRS Subcommittee Meeting

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Engineering
Group, Inc.**

Background

- E²G Client in Non-Commercial Nuclear Industry
- Federally Regulated by DOE – Overkill?
- Survey the Petrochemical Industry
- API Typical Practices
- Wanted 6 to 8 Data Points for Comparison
- Survey Topics
 - PRVs for Packaged Units
 - Pre-Pop Testing of Pressure Relief Valves
- Commitment to Provide Results to PRS Committee

Response Summary

- Surveys sent out in October, 2002
- Sent to 14 PRS Subcommittee Members
- Sent to 21 other E²G Clients
- Response from 14 sites
 - 9 U.S., 5 Overseas
 - 10 Refining, 2 Chemicals, 1 Corporate, 1 EDC
 - 5 PRS Subcommittee Responses (1 U.S. Owner/User)
 - 7 Companies represented (1 Company sent 7)

PRVs for Packaged Equipment

- Estimate that 50% of Packaged Equipment Deficient
- Does your Pressure Protection Program (ASME/API design requirements, sizing, installation, documentation) apply to packaged equipment?
 - Yes, 7
 - Yes, by specification, no good audit performed, 4
 - No, 3
- Comments
 - Review and approve vendors calculations
 - Check datasheet only
 - ASME Code design, no design review
 - Only verify installation
 - Practice is different than policy
 - We try, but some packaged equip. fall through the cracks

PRVs for Packaged Equipment

- Are your policies and practices for the design and installation of PRVs mandated corporately or locally?
 - Corporate, 8
 - Local, 5
 - Both, 1
- Are Packaged Equipment required (by purchase specification) to be designed to ASME and API Requirements or left up to vendor?
 - ASME/API or other Industry Standard, 9
 - Vendor, 2
 - Unsure, 3
- Comments
 - Debatable whether vendors comply or understand ASME/API Requirement
 - ALL equip. is designed to ASME, PRVs not specifically mentioned
 - Sometimes it doesn't happen if the right people are not involved during design
 - Project Engineering Responsibility (unsure)

PRVs for Packaged Equipment

- For those whose standards apply to Packaged Equipment, do you review prior to installation or rely on the vendor without verification?
 - Yes, 4
 - No, Rely on Vendor, 5
 - PRVs are Pre-Tested, 1
 - Check basic data and installation, 1
 - Installed inspection only, 2
 - Unsure, 1
- Comments
 - Yes, but tiny skid mounted units may be missed
 - Estimate that 50% are not verified

PRVs for Packaged Equipment

- Do you check the installation or rely on the vendor without verification?
 - PRV Capacity – Yes, 8, No, 6
 - 3% Inlet Loss Rule – Yes, 5, No, 9
 - Back Pressure – Yes, 6, No, 8
 - Inlet and Outlet Bore Area – Yes, 7, No, 7
- What would be the logic for not verifying the installation design (some answered more than once)
 - All Verified, 5
 - Rely on Qualified Vendors, 9
 - Outside scope of plant's normal PRV installations, 2
 - Considered as low risk, 2
 - Ignore them, 2
 - Lack of recognition, 1
- Comments
 - Expertise of contractors such as Berwanger, help increase recognition
 - Cutbacks in staffing require us to rely on design firms and vendors more

PRVs for Packaged Equipment

- If deficiencies are found, in package unit designs installation, do you replace or modify to meet requirements of ASME and API Guidelines?
 - Yes, 11
 - Have not found deficiencies, 1
 - Based on Risk Review, 1
 - Have never looked, 1
- Comments
 - Based on vendor's re-calculation
 - With assistance of Contractor's
 - Notify vendor, if owned by vendor

Pre-Pop Testing of PRVs

- Pre-pop most/all of PRVs in As-Received condition from Unit?
 - YES, 11
 - No, 1
- If Not, Why?
 - Off-site vendors currently don't do it, re-writing policy
 - Exception: dirty/smelly PRVs

Pre-Pop Testing of PRVs

- Are Pre-Pop test results used to adjust inspection interval?
 - YES, 10
 - No, 2
- Comments
 - It is one factor in setting interval
 - RBI used also
 - Main consideration is Stuck. Don't adjust frequency for items such as would not reseal. Could benefit from standardization of pass/fail criteria
 - In process of adding criteria to procedure
 - Not allowed per jurisdiction (Sweden – 1 year)

Pre-Pop Testing of PRVs

- Are small thermal reliefs handled different than larger PRVs?
 - Yes, 5
 - No, 7
- Throw-Away in Lieu of Testing (Disposable)
 - Yes, 4
 - No, 1

Pre-Pop Testing of PRVs

- Pre-pop a Percentage of Throw-Away PRVs?
 - Yes, 1
 - No, 3
- Comments
 - 100% of throw-aways pre-popped
 - Probably should test percentage of throw-aways
 - Starting to require pre-pop testing of throw-aways
 - When throwing any size away, pre-pop 100%

Pre-Pop Testing of PRVs

- Pre-Pop New Valves prior to installation?
 - Yes, 10
 - No, 2
- Pre-Pop Stored Valves prior to installation?
 - Yes, 10
 - No, 2
- Re-test After What Storage Period?
 - No time limit, all valves, 7
 - 60 days, 2
 - 30 days, 1 (try not to pretest anything until it is ready for service)

Summaries

- PRVs for Packaged Equipment
 - Purchased to ASME/API Requirements
 - Design is typically not thoroughly reviewed
 - Rely on Qualified Vendors
 - Often ignored, some consider as low risk
 - Deficiencies exist (50% of installations?)
 - Trend lately to perform better/more recognition
- Pre-Pop Testing of PRVs
 - Most (92%) pre-pop PRVs in as-received condition
 - Most (83%) adjust intervals based on pre-pop testing
 - Often (42%) treat small thermal reliefs differently (disposable)
 - Typically do not pre-pop disposable PRVs
 - Most (83%) require pre-pop of new and stored PRVs prior to installation