



Case study

## Designing PRVs for Cryogenic Optimization

### Enhanced Seat Tightness

# 50%–200%

Improvement vs. standard trim disc for reduced Fugitive Emissions<sup>(1)</sup>

### Cost of Ownership

# \$2K – \$6K

Per PRV Repair<sup>(1)</sup>

### Operating Cost Savings

# Up to \$50K

Per PRV Repair<sup>(1)</sup>

<sup>(1)</sup> Savings vary by application.

### The Right Valve for the Right Application

Contact your local *Green Tag*™ Center today.

[valves.bakerhughes.com](http://valves.bakerhughes.com)

Pressure Relief Valves (PRVs) are a necessary requirement for overpressure protection within the LNG industry. However, not all PRVs are created equally when it comes to performance within cryogenic applications, and design temperatures as low as -320°F (-196°C).

### THE CHALLENGE

**PRV leakage problems** in LNG applications are a result of dramatic thermal stresses, rapidly leading to **process waste and fugitive emissions**:

- **Seat leakage** Induced by thermal stresses causing disc seat deflection.
- **Galling of bearing/guiding surfaces** Anti-seize grease, used to prevent galling, deteriorates under cryogenic conditions resulting in galling.
- **Fugitive Emissions** Prolonged seat leakage, premature opening as a result of major seat leakage, or the PRV not fully closing after a relief event due to galling leads to costly releases or fugitive emission of process fluid.

### THE SOLUTION

**Consolidated's 1900 Dual Media (DM), 1900 and 2900 Series patented Cryodisc technology** offers **enhanced seat tightness before and after a relief event**. The low temperature media creates thermal stresses in the material that deflect the **patented disc thermolip** downward creating **uniform contact pressure on the nozzle seat** resulting in **enhanced seat tightness**.

**Titanium Nitride (TiN)** coating, an extremely hard ceramic material, is applied to bearing surfaces and guiding surfaces of out critical PRV components to **prevent galling induced wear**.

A PRV that can maintain seat tightness before and after a relief event **saves user's thousands annually on unplanned downtime, PRV repair costs, process loss and excessive fugitive emissions**.

