

Pressure Controls **EXPRESS**

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An informative newsletter for Tescom distributors & representatives.

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Tescom's back pressure regulator exceeds LPG manufacturer's demanding requirements

By Iain Johnston, Territory Manager UK, Tescom Europe

Liquefied Petroleum Gas (LPG) is manufactured during the refining of crude oil, or extracted from oil or gas streams as they emerge from the ground. LPG is formed naturally in oil and gas fields and is pumped out from on/offshore wells mixed with other fuels. At oil and gas facilities, butane and propane gases are separated from the heavier fuel and stored in purpose-built vessels. LPG is a mixture of hydrocarbon gases used as a fuel in heating appliances, vehicles and is increasingly replacing chlorofluorocarbons as an aerosol propellant and a refrigerant to reduce damage to the ozone layer. LPG is colourless and odourless but is highly flammable. A powerful odourant (organosulfur compound) such as tetrahydrothiophene and ethyl methyl sulfide is added so that leaks can be detected quickly.

At normal temperatures and pressures, LPG will evaporate. Because of this, LPG is stored in pressurised tanks. In order to allow for thermal expansion of the contained liquid, these tanks are not filled completely; typically, they are filled to between 80% and



85% of their capacity. The pressure at which LPG becomes liquid varies depending on its composition and temperature, and is typically between 4 bar and 10 bar.

A major LPG manufacturer's oil field has reserves of 236 million barrels of oil and lies underneath an island. It provides an example of how, with planning and care, oil fields can be managed with minimal damage to the environment. It is at the centre of an area of outstanding

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QUOTE OF THE MONTH

"You cannot do a kindness too soon, for you never know how soon it will be too late."

— RALPH WALDO EMERSON



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LPG requirements - continued

natural beauty bounded by a number of nature reserves and National Trust Land. The LPG manufacturer spent two years before applying for planning permission, talking with the local communities and explaining how they planned to sensitively develop the Gathering Station. The LPG manufacturer bought the island and this is where the first drilling took place.

The rigs are only erected and used for a few months at a time, to reduce their visual impact. Special care was taken to place the Gathering Station in the middle of woodland and to locate pipelines carefully below ground. It is almost impossible to see any trace of the works except when a drilling rig protrudes above the trees.

At this manufacturer's oil field, LPG is accumulated at the Gathering Station. This is the heart of the facility where butane and propane gases are separated from the crude oil and stored in 12 containers known, because of their shape, as bullets. An underground pipeline transfers the LPG to rail sidings a short distance away and from here the LPG is moved by rail to the processing terminal some 80 miles away.



The LPG manufacturer's on-site engineers had a problem with their existing pressure control setup for their propane and butane lines with 4 relief valves being incorrectly rated and set to relief at 28 barg. Since both the propane and butane lines observed some thermal expansion during the hot summer months and the line pumps operated at 27 barg during this period, there was the risk of release during normal operation through flaring & ultimately unnecessary lost product.

The system also required a relief valve set at 37.4 barg to prevent odorant being sent to flare in an abnormal shutdown situation (i.e. odorant pumps fail on and keep pumping into a closed line). This situation would cause the odorant to relieve through flare, however, if the PCV was rated higher and set at 37.4 barg then it would not flare as the odorant pressure safety valves were set to trip at 35 barg.

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Literature

INDUSTRIAL CONTROLS

44-1800 Series - Form No. 1678

Revised - catalog page

Replace old stock.

44-2800 Series - Form No. 1761

Revised - catalog page

Please use up old stock before ordering.

54-2200 Series - Form No. 1601

Revised - catalog page

Please use up old stock before ordering.

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Please order through our 'Distributor's Only' section of our [web site](#) or contact Robyn Seitzer at robyn.seitzer@emersonprocess.com.

Trade Shows

SEMICON Japan

December 6-8, 2006

Makuhari Messe

Chiba, JAPAN

Booth: 8B-309

Arab Health

January 29 - February 1, 2007

Dubai International Exhibit Centre

Dubai, UAE

Booth: ZF37

SEMICON Korea

January 31 - February 2, 2007

COEX

Seoul, KOREA

Booth: TBA

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• **Fuel Cell Magazine**

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LPG requirements - *continued*

In total, the customer wanted to upgrade 5 relief valves in their current system as follows:

- PCV # 1 Propane set at 30 barg amount to be relieved 0.277m³/hr
- PCV # 2 Propane set at 37.4 barg amount to be relieved 0.388m³/hr
- PCV # 3 Butane set at 30 barg amount to be relieved 0.103m³/hr
- PCV # 4 Butane set at 37.4 barg amount to be relieved 0.514m³/hr
- PCV # 5 Aerosol set at 30 barg amount to be relieved 0.208m³/hr

Their current supplier of relief valves could not offer a higher rated product to meet the increased settings required and the customer subsequently contacted Tescom UK for assistance. We were able to help them with their increased pressure ratings and after careful consideration, we offered a flanged version of our 26-1700 Series back pressure regulating valve.

The Tescom solution also offered a further advantage over the previously installed relief valves. Most direct spring operated safety relief valves have a high re-seating pressure which is inconsistent and unreliable. This the primary difference between a safety relief valve and a Tescom back pressure regulator. A safety relief valve is designed to protect downstream personnel and equipment should over-pressurization take place. As such, when its set pressure is overcome, it will blow wide open immediately and exhaust all of the pressure. It needs to be able to handle the full flow of the system in order to rapidly exhaust to protect downstream. Tescom's back pressure regulators are designed for precision upstream pressure control. When the regulator's set-point is overcome, it will "crack" open (not blow wide open) and try to exhaust just the excess pressure above the set-point. When it cracks open, it uses its sensing element (relief valve's do not have sensing elements) to try and reseat very close to its set pressure. Most of Tescom's back pressure regulators have "crack to reseat" pressures less than 2% of the set-point. ■



26-1700 Series
with NPT



Examples of flanged version

Holiday Schedule

Offices will be closed at:

TESCOM USA

December 25-26 - Christmas

January 1-2, 2007 - New Years

TESCOM Europe

December 25 - January 1, 2007 -

Christmas & New Years

TESCOM Korea

December 25 - Christmas



*"The best things you can give children,
next to good habits, are good
memories."*

— SYDNEY J. HARRIS

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