

Solve 60% of your leaks with Bellows Sealed Valves



Problem

Big Taps Bellows Sealed Valves Since 1955 the USA regulations in relation to fugitive emissions and the monitoring thereof have become stricter and stricter. Fines for non-compliance have also increased dramatically (up to \$3.5M US) forcing some industries to implement proactive programs of leak detection and repair (LDAR), thus avoiding non-compliance and conforming to low emission consent decrees.

Generally low emission consent decrees from a conventional valve gland packing perspective is 500 ppm (parts per million) as the maximum emission standard. Since 2009 Enhanced LDAR (ELDAR) programmes have been introduced to reduce the emission levels to 100 ppm. This has forced a number of companies to employ low-leak valve technology, and to replace up to 20% of the facilities valve population that are leaking between 100 ppm and 250 ppm, on an ongoing basis, as conventional valve packing is not able to meet this level of emissions over an extended period of time.

Valve gland leaks account for up to 60% of all non-compliance reports in refineries and chemical plants. This is even higher when referring to control or high cycle valves that are operated on a more frequent basis - this is due to the mechanical wear and tear and relaxation of the gland packing material (normally PTFE or graphite). Live loading of stem packing by means of Bellville washers may be applied in order to decrease the relaxation and thus increase the lifespan of the packing, however leakage is inevitable.

Solution

Eliminate Valve Leakage Whilst the design of gland packing has continued to evolve, the only true way to obtain zero ppm is through the introduction of a high quality metallic bellows into the valve. The bellows sealed valve stem design was initially introduced to contain lethal mediums, such as chlorine, within the valve, ensuring zero leakage to the atmosphere and increased safety to employees. However, this design has also been introduced on applications such as steam, where gland leaks can not only be dangerous due to burning, but can also be very expensive due to the amount of energy lost in such leaks and the cost to produce it.

Savings



From a cost perspective, bellows sealed design valves are more expensive than valves with conventional gland packing arrangements, but when you take into account the monetary savings provided from:

- Zero leakage to the atmosphere; Increased plant and staff safety and reduced community complaints.
- Zero product loss to the atmosphere; increasing plant efficiency and lower raw material input costs.
- Improved reliability; increasing productivity and less frequent shutdowns.
- Reduced maintenance labour cost; due to reduced valve repacking.
- Reduced parts & spares purchasing; valves, packing and stem sealing arrangements.
- Reduced leak detection and repair cost.
- Reduced risk of fines from monitoring authorities such as the EPA.

The long term savings far out way the initial purchase price.

