Great Gaskets!

Leak-proof, Blowout-Proof Gaskets Provide Major Savings for Utilities and Industrial Powerhouses


Leak-proof, blowout-proof gaskets provide major savings for utilities and industrial powerhouses

By Ed Sullivan, Technology Writer
Major utilities and industrial power plants are adopting blowout-proof, leak-free mechanical gaskets to improve productivity while minimizing maintenance requirements.

In the face of spiraling fuel costs as well as safety, regulatory and green issues, the power industry is looking to new technologies and systems integration for solutions. While utilities and industrial powerhouse engineers and maintenance supervisors focus on major power generation systems, they may overlook subassemblies, where improved technologies and products can have a substantial impact on operations.

Once such subassembly is gaskets, where failures can have expensive and even hazardous consequences. In fact, the "science" of gasket sealing is a popular subject among users. Yet blowouts and chronic gasket failures continue to plague utilities and industrial power plants.

Such failures give rise to a litany of related problems, ranging from loss of productivity, untimely shutdowns and dangerous leakage problems, to tedious, repetitive gasket replacement and costly inventory of a wide variety of replacement gaskets.

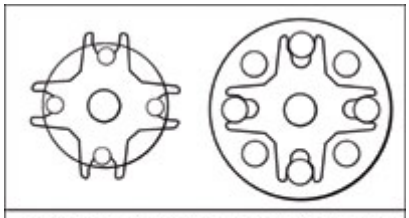
"For a power utility or industrial power plant to be able to install a flange gasket and not worry about blowouts and leakage would represent a major savings of time and money," says Wayne Boyd, a field specialist with A.W. Chesterton Co., Rome, GA. "However, using gasket systems of the latest mechanical design, it is possible to achieve very substantial savings on maintenance and also reduce gasket inventory investments."

"One-size-fits-all"

Because gasket applications involve many complex factors - application conditions, friction, materials, mechanical design, fluid mechanics, and heat transfer -- one might suppose that a huge range of gasket materials and configurations are necessary. However, technological advances made in the development of fighter aircraft for the U.S. Air Force have led to the design of a leak-proof mechanical gasket system that can be used with a wide thermal cycle and control range.

Using this technology to develop a leak- and blowout-proof gasket "system," the Selco Seal produced by Sealing Corp. offers inherent advantages over the traditional spiral-wound type of gasket for critical power plant applications. These include heat exchangers, steam crossovers, manways, soot blowers and many types of flanges, applications found in many utilities and industrial power systems.

"Up to 70% of gasket cost is in installation," says Mel Lowry, Sealing Corp. vice president and general manager. "By using gaskets that create leak-proof flanges and will last for years, users will enjoy very substantial gains on maintenance cost as well as productivity while eliminating potentially hazardous emissions. Plus, the 'one-size-fits-all' design also means sizable savings on gasket inventory costs."



Selco Seal self-locating gaskets are easy to install and offer great savings to systems requiring gaskets in a variety of different pressure ratings. A self-locating gasket is (shown above) in position with 150 psi flange (left) and 2500 psi flange (right).

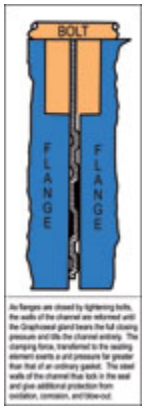
Less stress; better sealing

The Selco Seal is a non-asbestos metal gasket. Thegasket consists of both a metal carrier and a sealing material. It maintains a less than T-3 seal under large changes in temperature and pressure. It is easy to install and does not require re-torquing. A self-locating design is available to fit multiple classes certain pipe diameters, which helps to reduce gasket inventories. Selco gaskets exceed current and projected EPA Fugitive Emission Requirements, and are certified to conform to various size standards.

In some applications, maintaining proper gasket seal is a serious and chronic problem. In boilers used by the power industry, for example, problems with manway gaskets are very common. Because boilers are constantly cycling, the conventional spiral-wound-type of manway gasket has very little bolt recovery and is therefore prone to leakage and blowouts. The Selco seal’s gasket design requires minimum seating stress on bolts (under 3,000 psi), resulting in high recovery and a very reliable seal in boiler applications.

OEM applications

OEM suppliers can realize substantial manufacturing savings and added sales by purchasing components or subassemblies based on orders for their own products. "For our operation that means very quick turnaround with a well-engineered product that can be used reliably in applications with working pressures up to 6,000 psi," says Robert Davenport, Vice President of Cornerstone Valve USA, Houston, TX, a producer of specialty ball, swing check, choke and rotary control valves for the power, oil and gas, and petrochemical sectors as well as various NASA- and Navy-related services.



"We use Selco seals in our bonnet-to-valve body seals because we can get very fast turnaround on orders," says Davenport. "Plus, the seal design provides multiple sealing along potential leak paths, so it is very efficient and very reliable."

Heat exchanger applications

Heat exchangers used in power system applications provide many challenges that highlight the benefits of this advanced gasket design. With flanges having two opposing temperature zones, due to the hot and cold sides of the heat exchanger, there are differing loads on both sides of the gasket. The resulting stresses translate into a "live load" requirement that results in frequent service, including gasket changes that are cumbersome and time-consuming. However, when used in conjunction with a proper live loading program, the Selco Steel Trap™ gasket will hold as strongly as a weld for three years.

"These gaskets have proven to be a successful solution to preventing leaks in several heat exchangers," says George Pyros, an engineer with Siemens Westinghouse. "These gaskets prevent leakage whether of the gas or the water from the heat exchangers, which are typically used on combined cycle power plants."

Joint leakage and blowouts can result from bolt elongation as well as gasket failure. Fabsco Shell and Tube LLC, Tulsa, OK also manufactures heat exchangers, including those that are commonly used for gas heaters in the power industry. "These are very cyclic operations," says Fabsco Chief Engineer Ron Shipman. "In any type of high-pressure application we use the Selco gasket rather than standard solid iron gaskets. They don't require as much torque, and if a joint loosens due to bolt elongation, the gasket is still going to maintain a good seal. In the overall, we've had the greatest success with the Selco product."

Custom gasket designs

When power system applications require custom gasket designs, lead times can be critical. This is especially important when gasket failures lead to shutdowns, which often result in lost productivity, angry customers and very expensive replacement costs.

"One of the important advantages in specifying Selco gaskets is the lead times are generally very short," says Greg Gravenmier, Product Specialists for Sealing Specialists of Missouri. "Selco also does custom shapes, sizes and designs. So, for equipment that is old and worn, they can retrofit the gasket to seal in portions of the flange face that are not damaged. Also, while deliveries for special orders often require extended manufacturing time, we usually have a very quick turnaround from Selco."

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