



MODERN GASKETS CAN LOWER O&M COSTS

In the face of spiraling fuel costs, regulatory and environmental issues, the power industry is always looking for better technologies and enhanced system integration. But while power plant 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.

The gasket is a subassembly where failures can have expensive and even hazardous consequences. Blowouts and chronic gasket failures continue to plague power plants. Gasket failures can lead to dangerous leakage problems, productivity loss and untimely shutdowns. Constant concerns about gasket integrity lead to tedious, repetitive gasket replacements and costly gasket inventories.

"If a power plant operator could install a flange gasket and not worry about blowouts and leakage for a long time, it would mean a major savings of time and money," says Wayne Boyd, a field specialist with A.W. Chesterton Company that supplies gaskets to Georgia Power. The Southern Company operating subsidiary has specified Selco Seals, produced by Sealing Corp., as best practice. "These gaskets go into turbines, where any leakage creates a problem because those units operate under vacuum," he says.

Among other major utilities that use the seals are Duke Power, Ontario Hydro, Con Edison, Baltimore Gas & Electric, Florida Power & Light and Hoosier Energy. Many of these utilities report they have plants on track to achieve at least five years of leak-free, trouble-free, no-maintenance operation of steam generator flanges and Selco manway gaskets. Operating conditions of 1000 F and 1900 psi are common for these applications. Extending the time between maintenance cycles from approximately two to five years not only increases the profitability but also eliminates the cost of downtime and repair.

It might be reasonable to assume that a huge range of gasket materials and configurations are

necessary because gasket applications involve many complex factors, including friction, materials, mechanical design, fluid mechanics and heat transfer. But technological advances achieved in development of U.S. Air Force fighter aircraft have led to the design of a leak-proof mechanical gasket system that can be used with a wide thermal cycle and control range.

The universal applicability is achieved because flexible graphite and the groove pattern of the Selco Seal provide the versatility to apply the gasket to every condition and media. The

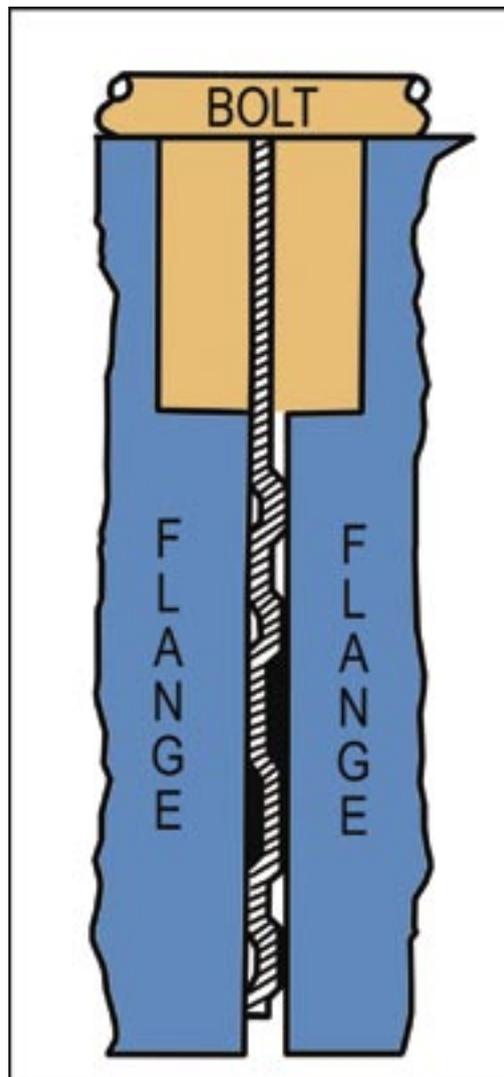
minimum seating stress (2850 psi) and the 40 percent compression/20 percent recovery of the flexible graphite allow the system of the flange, bolts and seal gasket to operate at the mid point or below on the bolt's yield curve. Consequently wide changes in pressure and temperature do not degrade the bolts. The 20 percent recovery and essential encapsulation of the sealing material prevents cold flow or extrusion of the sealing material and thereby leak-free (< T3) operation and protection from possible media induced erosion or chemical attack.

"Up to 70 percent of gasket cost is installing them," says Mel Lowry, vice president and general manager of Sealing Corporation. "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."

Boiler problems with manway gaskets are common in the power industry. Because many power units today cycle more than they used to, the conventional spiral wound type of manway gasket is prone to leakage and blowouts due to the fact that it has very little bolt recovery capability. Lowry says his firm's unique gasket design requires minimum seating stress on bolts – less than 3,000 psi – resulting in high recovery and a very reliable seal in boiler applications.

Heat exchangers used in power system applications provide

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As flanges are closed by tightening bolts, the walls of the channel are reformed until the Graphoseal gland bears the full closing pressure and tilts the channel entirely. The clamping force, transferred to the seating element, exerts a unit pressure far greater than that of an ordinary gasket. The steel walls of the channel thus lock in the seal and give additional protection from oxidation, corrosion and blow-out. Illustration courtesy of Sealing Corp.

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many challenges that highlight the benefits of the 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 the

gasket. The resulting stresses translate into a live load requirement needing 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, says Lowry.

"These gaskets have proven to be a successful solution to preventing leaks in several heat exchangers," says George Pyros, an engineer with Siemens. "They prevent gas and water leakage from the heat exchangers used on combined-cycle power plants."

Joint leakage and blowouts can result from bolt elongation as well as gasket failure. Fabsco Shell and Tube also manufactures heat exchangers for 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." PE

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MERGERS & ACQUISITIONS

Tenaska Capital Management has agreed to acquire **Calumet Energy Team, LLC** and **CET One**, owners of a 308 MW gas-fired peaking facility in Chicago, from **Wisconsin Energy Corporation**.

Thermo Electron has purchased **NITON LLC**, a provider of portable X-ray systems for metals, petrochemical and environmental markets.

Reliant Energy has agreed to sell its six Houston area landfill-gas-fueled power plants, representing a combined capacity of about 30 MW, to **Viridis Energy Capital**.

Texas Genco has completed purchase of generation assets formerly held by **CenterPoint Energy**. The purchase includes a 30.8 percent share of the **South Texas Project** nuclear plant and coal plants previously owned by CenterPoint.

James River Coal Company has entered into a definitive agreement to acquire all of the stock of **Triad Mining Inc.**, which owns and operates six surface mines and one underground mine in Southern Indiana. PE