



Case Study

Reduced Downtime

Digesting the Savings

Challenge

Batch digesters were frequently taken out of service for gasket change outs. The customer was currently using Monel Double Jacket (DJ) gaskets. Monel DJ gaskets were being installed with impact wrenches and the fasteners were being re-used. This method of changing gaskets led to numerous leaks throughout the digesters as the gaskets were being overtorqued and bolts were stressed beyond their yield.

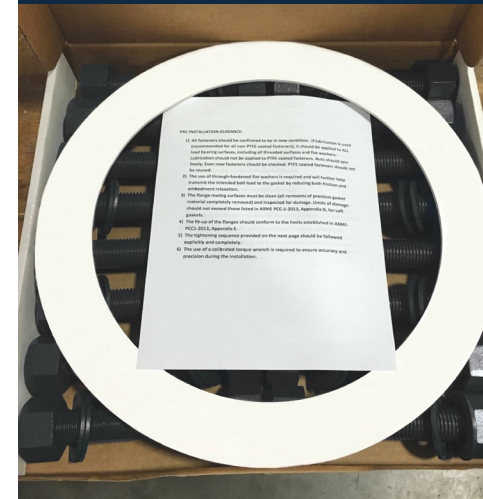
Solution

Met with reliability to discuss a precision maintenance approach to reduce and eliminate gasket change outs that were resulting in lost digester cooks. Presented gasket kits with corrugated metal core and ePTFE faced gaskets. These gasket kits contained a B7 non-coated stud, nut, and washer combination, corrugated metal core and ePTFE faced gaskets, and installation guide. The installation guide contains recommendations for pre-install, which is to examine the condition of the flange face and looking for pipe strain or misalignment. Further, the guide provides a visual reference to the proper install technique to tightening the studs in the proper sequence. Lastly, a torque chart according to gasket size is given so that gaskets and bolts are not stressed beyond their limits.

All gaskets were replaced with the corrugate metal and ePTFE faced gasket kits in sizes ranging from 2" to 18". The gasket kit with installation documents were recommended to ensure the best chance for a consistent and precise install. This was also accompanied by an agreement that the mill would replace eroded flanges and fix any and all pipe strain or misalignment.

Bottom Line

Flange change outs have reduced significantly, resulting in less lost digester cooks. Two digesters have run from annual outage to annual outage with zero lost cooks. Progress is still on going as we assist the mill in flange erosion issues along with surveying digesters for misaligned piping and severe pipe strain.



FAST FACTS

Customer Profile:

One of the world's leading makers of tissue, pulp, packaging, building products and related chemicals

Challenge:

Batch digesters were frequently taken out of service due to leaking gaskets.

Solution:

LGG Industrial developed a gasket kit along with bolting instructions to eliminate these leaks

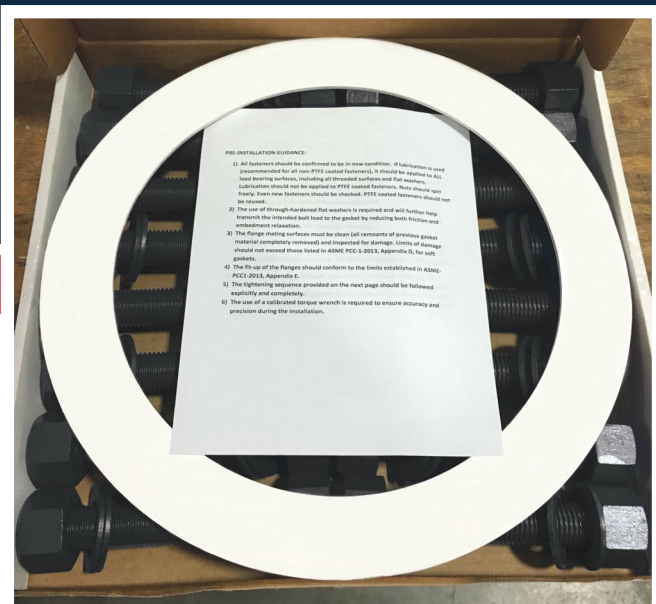
Bottom Line:

The customer has saved over \$300,000 in the last year by eliminating leaking gaskets.

Our know-how of sealing solutions and installation techniques has eliminated gasket leaks for the customer resulting in a savings of \$318,941.90.

Batch Digesters in Paper Mills

Product Information Bulletin



SOLUTION FOR: Batch Digesters in Paper Mills

LGG Industrial has developed a kitted solution to eliminate leaks on the batch digester applications in pulp & paper mills.

Batch digesters in pulp & paper mills are large pressure vessels that cook, digest, or convert wood chips to stock or pulp with steam (temperatures up to +400 °F and pressures up to 300psi) and with the aid of various chemicals. This process takes approximately 2-3 hours and can create tremendous strain on the piping system. Direct steam lines, liquor lines, and the digester blow lines are notorious leakers.

Traditionally, metallic gaskets such as spiral wound gaskets have been used due to the severe application. These flanges typically are in poor condition due to pitting and erosion. The overall movement in the system due to tremendous surges in both temperature and pressure further complicates the sealability.

WHAT IS THE LGG INDUSTRIAL SOLUTION FOR THIS APPLICATION?

LGG Industrial has partnered with its suppliers to implement a solution to this problem, providing a corrugated metal core ePTFE faced gasket. The metal core corrugation design creates a lower stress to seal gasket while lending itself to flange irregularities and system operating nuances. The design produces a more spring like action, helping to keep flanges taut and creating a more effective seal. The soft ePTFE facings seal extremely tight on the “less than perfect” flange faces.

The corrugated or machined grooved core performs two important tasks:

1. The concentric peaks provide multiple contact rings where the gasket stress is concentrated, over the entire surface of the raised face area of the flange.
2. This design compensates for some of the flange movement (created by thermo-cycling and hammer reducing gasket stress), offering a more resilient response to system temperature and pressure fluctuations. As tested by the EN 13555 testing method, our corrugated metal and ePTFE gasket effectively seals at reduced gasket stresses.

LGG Industrial combined the proper gasket (corrugated metal core with ePTFE facing) and fasteners (A193 B7 studs, A194 2H nuts, and through hardened washers, (all well lubricated) along with the proper installation procedure to create a successfully sealed system. Installation procedures developed by ASME and detailed in their document ASME - PCC 1 – 2013 should ALWAYS be used. Pre-tightening guidance and detailed installation procedures are provided by the manufacturer for each size flange and are included in each kit. Other engineered gasket designs can be substituted in the kits with customer approval.