

FLUID SEALING NEWS

Prince George, VA | Kingsport, TN | Houston, TX | Parkersburg, WV | Lake Charles, LA



VSP Solves Chronic Leaks/Reliability Issues for Paper Mill

Did You Know?

VSP Opens Fabrication & Support Facility in Lake Charles, LA

VSP Technologies opened our newest facility in Lake Charles, LA to extend our unique service & support to Southwest Louisiana. Current customers and expanding business opportunities made it a logical choice for our newest VSP location.

The facility opened this month. VSP's Lake Charles staff is focused on replicating our unmatched bolted connection expertise and engineered solutions to this market. Our goal is to provide existing customers with even greater support, while introducing our unique programs, products and support service to industries in Louisiana.

VSP's new facility utilizes the same state-of-the-art gasket design and fabrication equipment used in our other four manufacturing locations.



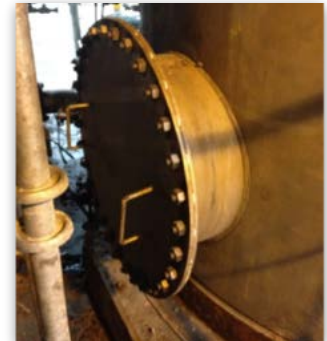
Flange: Side Entry Tank Manway

Size: 24" I.D. x 33" O.D.

Cover thickness: 1/2"

Bolts: (30), 5/8" Ø Bolts ASTM F593-C (Low Strength Stainless Steel)

Problem: Thin wide flanges with limited, low bolt load, makes it difficult to generate enough compressive stress to get conventional gaskets to seal. In addition, the original fiber ring gasket previously used, on this flat face flange, led to flange rotation.



Thin, Flat Flanges+Low Total Bolt Load + Large Gasket Area = Insufficient Compressive Gasket Stress

Significance: Improper gasket (material type and sizing) and low strength bolts can lead to leaks resulting in loss of product (black liquor) and environmental issues. Leakage requires draining the tank, disassembly, replacing the gasket and reassembly of the manway.

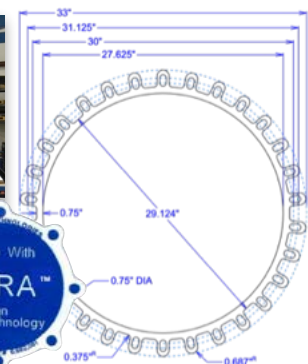
Solution: Select & design gasket material, type and size to match the flange & bolting capabilities. One Piece Reduced Area (OPRA™) technology reduced the gasket area by 1/3. Coupled with 1/8" ePTFE, this resulted in a gasket that required far less bolt load than the original fiber gasket. VSP supplied a better designed gasket, along with engineering support service torque guidance and detailed installation instructions.

Results: Tight, long-lasting, maintenance free seal with no flange rotation. Customer documented \$2,000 cost savings.

CAD controlled cutting allows VSP to produce One Piece Reduced Area (OPRA™) gaskets with tolerances to +/- 0.010".



AREA MINUS BOLT HOLES = 116.566"



OPRA™ - Modifies full face gasket design to match gasket area with the total available bolt load to insure that proper assembly stress is developed for the gasket material.

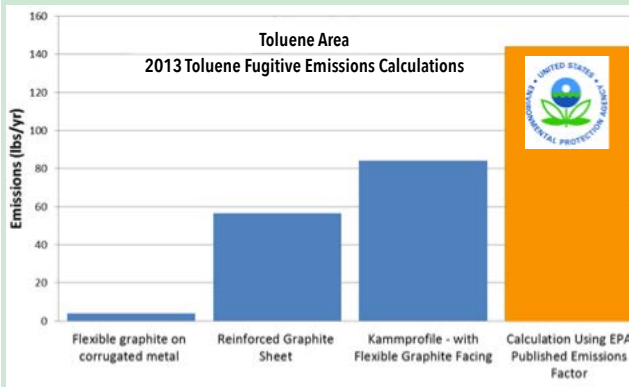
Contact mike.mccarthy@vsptechnologies.com (800) 334-6013

VSP Presents Fugitive Emissions Calculator (FEC™) in Austin, TX

Dale Rice P.E. presented "Method to Estimate Fugitive Emissions for Bolted Flange Connections" at the 4C Environmental Conference in Austin, TX. VSP developed a proprietary Fugitive Emission calculator (FEC™) as a scientifically valid method for estimating flanged connection emissions. This methodology has been peer reviewed by ASME PVP and uses 3rd party published ROTT test data.

Application for the FEC™

- 1) offer an alternative approach to replace the over-conservative Published Emission Factor (PEF) method for estimating fugitive emissions.
- 2) provide useful tool for comparing emissions performance capabilities of different gasket materials.



 FEC™ Based on 3rd Party ROTT Published Gasket Factors

 EPA Published Emission Factor Method

Contact

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Engineering Support Services Root Cause Analysis & Corrective Action Spiral Heat Exchanger

Application: Waste Heat Recovery Heat Exchanger

Problem: Chronically leaking blue filled PTFE gaskets on both covers of waste heat recover exchangers leaked and required complete overhaul & gasket replacement every 2-3 months. VSP engineers were asked to identify the cause of poor service life & performance prior to a scheduled 2-day gasket replacement equipment outage.



VSP Engineer Providing On-Site Field Support

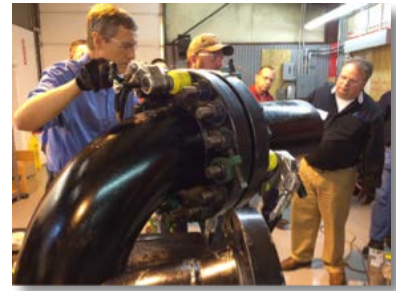
Root Cause Analysis: VSP inspected the leaking spiral heat exchanger flange, bolting and gasket, checked for proper torque/compression, and interviewed the three mechanics who installed the last gasket. Inspection showed that the bolts were significantly under-torqued, with limited lubrication and that the nuts were installed backwards leading to friction/compression issues, all of which contributed to poor gasket performance.

Corrective Action: VSP documented these findings and recommended to plant reliability engineers and mechanics to remove one bolt at a time, lubricate the bolts and turn the flat side of the nut toward the washer/flange before re-assembly / re-torquing. VSP specified an assembly procedure including final torque.

Result: Customer documented \$15,600 in cost savings.

Training: VSP supplies on-site Bolted Flange Connection (BFC) training with modules targeted to specific users; engineers, mechanics, and operations/procurement.

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ASME Qualified : Bolted Joint Assembler Certification

The ASME Certificate Course has been completed, and VSP engineering personnel were selected to participate in the first Beta-Test of the course. On Thursday January 22, six VSP engineers participated in the Beta-Test of the hands-on training course held at the Hytorq Texas training facility, and were among the first people to complete this ASME Certificate Course.

Goals of this certification are to:

Increase Craftsmanship in the Trades

ASME PCC-1-2013 Appendix A establishes uniform criteria for training and qualifying bolted joint assembly personnel. ASME Training & Development division is in the process of completing an ASME certificate course to meet the training and qualification requirements of Appendix A.

Ensure a Base of Knowledge Prior to Hands-on Training

The certificate course consists of four on-line learning modules covering; teaching principles of bolted joints including flange types, gasket material capabilities and failure modes, fasteners, flange assembly best practices and manual, hydraulic and pneumatic torquing and tensioning techniques.

Provide Hands-on Training

After successful completion of the on-line learning, course participants are required to attend a hands-on flange assembly training course at an Authorized Training Provider (ATP). An ASME "Qualified Bolted Joint Assembler" certificate is awarded upon successful completion of both training components.

VSP Actively Leads in Development

VSP's Vice President of Sales & Engineering, Jerry Waterland, is a member of the PCC-1 S/C on Flange Joint Assembly that developed Appendix A, and was identified as a Subject Matter Expert (SME) and selected to serve on the ASME Training & Development Advisory Group that developed the Appendix A Certificate Course.

VSP Engineers in Attendance

Jerry Waterland - Prince George, VA | Charles Darnell - Kingsport, TN | Dale Rice - Wilmington, NC
Everett Demorier - Dover, DE | Mandi Elkins - Parkersburg, WV | Dan Reid - Houston, TX

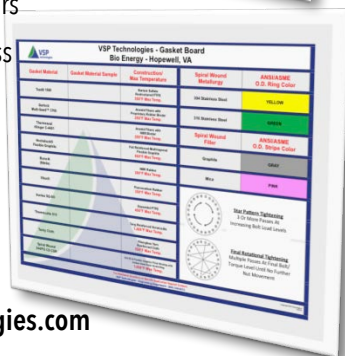
Contact

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VSP Engineering Support

Our Support Services Engineering Group (SSEG) is comprised of 10-Degreed Engineers & Technicians who focus on supplying bolted flange connection expertise & technical support to our customers. Working in the field and in our regional & corporate offices, the SSEG provide the following value added services.

1. Bolted Flange Connection (BFC) Expertise
 - a. Torque Recommendations & Assembly Patterns
 - b. Material Recommendations
 - i. Gasket Consolidation
 - ii. Fastener Compatibility
 - c. Root Cause Analysis/Corrective Action
 - d. Product & Service Index Review
 - e. Management of Change (MOC) Support
2. On-site Application/Installation Assistance
3. Storeroom Surveys
4. OEM/Reverse Engineering
5. Customer Specific Programs
 - a. Torque Cards Based on Company Pipe Codes
 - b. Pricing Programs
6. Mechanic/Engineer Focused Flange Assembly Training
7. Gasket Standards Visualization Tools
8. Cost Savings Analysis & Documentation
9. Material Application Testing
 - a. Stress to Seal
 - b. Creep & Torque Loss
 - c. Nut Friction Factors
 - d. Flange Max Stress
 - e. Leakage
10. Gasket Stress Analysis



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VSP RideTight® Making North America's Rails Safer

As North American rail car traffic continues to increase, rail safety and Non-Accident Releases (NAR) continues to gain governmental attention.

VSP's RideTight® program uses a 6-Sigma approach to manage the elimination of the leading causes of NARs.



Focusing on the problems while delivering components designed to help companies meet FRA compliance, has resulted in over 100,000 manway securements without an NAR, and customer documented cost savings of over \$18,000,000.

Key RideTight® Program & Deliverables

- 1) Detailed Purchasing & Engineering Specifications
- 2) On-Site Program & Assembly Training for Shippers, Repair Shops, & 3rd Party Loaders
- 3) QA Documentation & Traceability Certification
- 4) VSP Cross-Check Ensures Materials & Dimensions Meet Client Standards

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VSP Technologies Deploys an Expert Team of 32 Engineers and Fluid Sealing Specialists



Mike McCarthy - VSP's Regional Sales Manager has been in the fluid sealing industry for over 30-years, with 25-years at VSP Technologies. After graduating from UT-Chattanooga, Mike worked for J.H. Frischkorn as a Chesterton specialist. Over the years, he has attended and participated in numerous product training schools and seminars related to the fluid sealing industry including gaskets, mechanical seals, and expansion joints. Mike has lead VSP efforts in industry specific equipment such as heat exchangers, pumps, valves, and mixers. Mike has managed fluid sealing requirements for notable clients such as DuPont, Dominion Power, Alstom, & Honeywell. Mike and his wife Clara reside in Chesterfield, VA.



James Frew - VSP's Transportation Business Director graduated from Mississippi State University with a BS in Nuclear Engineering. He developed a strong foundation for his extensive fluid sealing background through his years as a Nuclear Consultant with Pacific Nuclear and Vectra. Jim began his career with VSP as our Site Engineer at Eastman Chemical. He utilized years of industrial fluid sealing experience to solve chronic sealing issues in the transportation industry. Jim led the inception and development of our Transportation Division and is actively involved with the Association of American Railroads (AAR) and a member of the Non-Accidental Release (NAR) Committee. He has authored several fluid sealing papers for ASME and holds three U.S. Patents. Jim and his wife Christy reside in Kingsport, TN.



Tim Heartwell - VSP's Senior Support Services Engineer graduated from Virginia Commonwealth University with a degree in Mechanical Engineering. He began his career with VSP as a summer intern while still in school. Tim leads our Site Services Engineering group who's tasks include; field & engineering support, root-cause failure analysis, and product testing. Currently, Tim is focused on providing deliverables associated with our large multi-site national clients. He participates in various technical associations and recently co-authored and presented a paper to ASME Pressure Vessel Research Council titled "Variables Affecting Nut Factors for Field Assembled Joints." Tim and his wife Kim currently reside in Chester, VA.

Engineer Training Seminars

VSP Technologies 8140 Quality Dr. Prince George, VA 23875

“What You Didn’t Learn in Engineering School” Bolted Flange Connection Engineering and Potential Pitfalls

June 24, 2015 | July 29, 2015 | August 26, 2015

2.5 Professional Development Hours

A review of the ASME design rules for flanged connections and pipe flanges including an in-depth understanding of the caveats that contribute to many of the sealing and reliability issues with bolted flange connections. This training session presents a fundamental review of real-world experiences and understanding of:

- Flange Design
- Gasket Material Limitations
- Gasket Testing
- Bolt Torque Calculation Methods
- Flange Assembly

Agenda

8:00 - 8:30: Registration

8:30 - 11:00: Seminar

11:00 - 11:15: Break

11:15 - 12:00: Materials & Fabrication Techniques

12:00 - 12:30: Lunch

12:30: Depart



Class Size is Limited Call VSP Today to Reserve a Spot (800) 334-6013



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Support Locations**

**32 Degreed Engineers and Fluid
Sealing Specialists Deployed
Across the US**

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Innovative Products**

Bolted Flange Connection Expertise

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