VSP technologies

Engineering

Services and Capabilities

Engineered Fluid Sealing Solutions
Products, Systems, and Support

8140 Quality Drive, Prince George, VA 23875
800-334-6013 • vsptechnologies.com

Engineering Services

Effective, Reliable Sealing Performance

VSP Technologies is a sealing products manufacturer, fabricator, supplier, and technical resource.

Engineers incorporate fluid sealing expertise and industry process knowledge to develop problem-solving products that address application and performance challenges.

To achieve effective, reliable sealing, we use VSP-developed analysis tools to ensure the best products are selected for your application

Material & Design Recommendations

VSP selects from a wide array of fluid sealing products and styles from leading manufacturers to meet all application, process, equipment, and performance challenges.

Our refined bolted flange connection expertise helps streamline maintenance activities and mitigates startup leaks.

Bolt Torque Calculator (BTC)

VSP uses the BTC to determine the recommended bolt torque for the mechanic to assemble the connection.

Optimized Flange Connection (OFC)

Using OFC tables, VSP provides recommended torque values for a range of gasket materials on standard ASME B16.5 flanges.

Fugitive Emissions Calculator (FEC™)

Chemical compatibility, temperature, and pressure have traditionally determined the specification of gasket materials without regard to the gasket's initial and long-term tightness (fugitive emissions).

VSP's FEC tool enhances a company's LDAR (finding leaks) program by

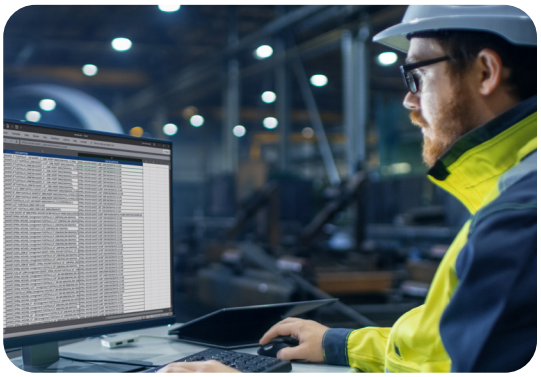
- Comparing the fugitive emissions performance of different gasket materials.
- Allowing a new element (tightness/ emissions) in the gasket specification process.
- Identifying lowest emission gaskets.
- Providing an accurate alternative to published emission factors.

With proactive use of this tool, a plant's environmental focus changes from finding leaks to preventing them.

Support Services
Examining Problematic Applications

VSP's Support Services is a versatile resource providing technical and purchasing support to our customers.

- Emergency callouts (24/7)
- Troubleshooting
- Storeroom surveys
- Management of VMI gasket boards
- Onsite verification of application data



VSP engineers perform extensive analysis to ensure trouble-free, reliable sealing performance

Overall performance analysis

- Chemical compatibility
- Mechanical stability
- Thermal tolerance
- Gasket seating stress envelope
- Flange and fastener limitations
- Complete lifecycle analysis

Pipe specification analysis

Root cause failure analysis and corrective action recommendations

- Execute root cause failure analysis
- Identify non-conforming applications
- Respond to emerging issues

VSP's engineering team optimizes safety and performance by developing sealing solutions with best-in-class materials and proven processes.

We advocate for improved reliability and lower cost of ownership to benefit our customers.

Training Services

Customized On-Site Training Courses

VSP customized training sessions use demonstrations and practical examples for site maintenance and engineering teams.

We provide a comprehensive understanding of all installation types for our customers. Additionally, we discuss overall flange assembly guidelines and the importance of fastener grades, lubrication, and torque guidance.

Through demonstrations and practical examples, VSP teaches the essential concepts of fasteners, torque, and flange assembly

Bolted Flanged Connections and Assembly Best Practices

- Company-specific training, on-site specifications, and industry codes.

Bolted Flanged Joints

- Bolted, Flanged Connections: "What you didn't learn in college" tailored to engineering staff.

Fluid Sealing Process

- A deep dive into gasket materials, explaining performance, cost, and operational efficiencies.

Technical Seminars

- At our Prince George headquarters, includes a laboratory and testing equipment tour.

Manway Securement

- For tank car loading personnel with manway securement/assembly responsibilities.

Qualified Service Provider (QSP)

- Designed for bulk equipment service providers to promote an understanding of bolted joint performance and assembly.

- The course content and interactive demonstrations are integral to the RideTight® Fluid Sealing Management Program.

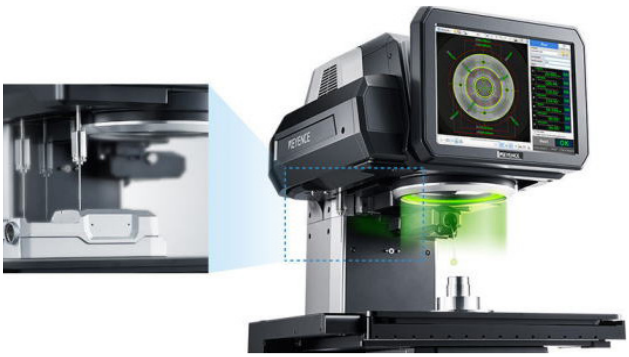
Lab Equipment Testing

Optimal Product Technology Identification

VSP improves reliability, updates standards, and develops new products using in-depth troubleshooting and root cause failure analysis.

Lab testing equipment is used for

- Optimal technology identification for specific applications.
- Verifiation and validation of materials.



Our state-of-the-art testing lab allows engineers to understand the performance and limitation of products and technologies

TEMES Multifunctional Test Rig

The worldwide industry-standard gasket testing module.

- VSP is the only gasket distributor in the US to house this advanced technology.
- This fixture evaluates materials to domestic and international gasket test standards.
- Tests simulate customer specific operating conditions.

Agilent Cary 630 FTIR Spectrometer

- Diamond and Germanium ATR for material identification.
- Material verification/validation of elastomer compounds.

Keyence IM-7030T

Image dimension measurement system.

- Parts are cataloged, including tolerances for rapid evaluation.

Shore Rex Durometer DD-5 Shore

- Automatic digital durometer gauge.

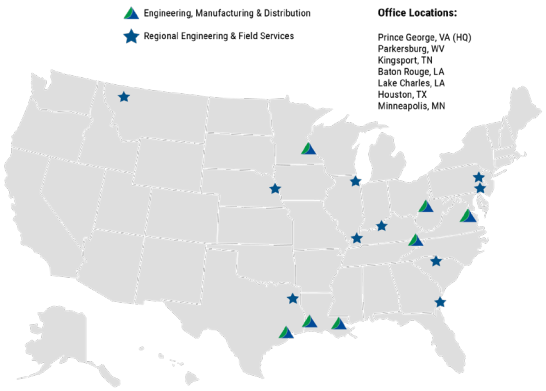
VSP Engineering

Industry-Recognized Professionals

VSP's industry-recognized BFC engineers and professionals are dedicated to improving overall operational efficiencies.

Team members are involved in various industry standards and technical committees that actively drive BFC improvements.

Involvement in these committees ensures engineers are up to date on codes, standards, and requirements.



VSP Office & Branch Locations

VSP's ongoing involvement in industry-recognized technical committees helps enhance training to reflect current

Position Held	Committee
Former Chair	ASME B16 Committee G (Gaskets)
Member	ASME B16
Member	Association of American Railroads Manway Cover Business Leader Task Group
Member	Association of American Railroads NAR Task Group
Member	Association of American Railroads Root Cause Analysis Task Group
Member	ASTM Committee F3 (Gaskets), Participating
Member	ASME NPPS NM-2 Task Group on Lap Joint Flange Design (Non-metallic pressure piping)
Member	ASME RTP-1 (Reinforced Thermo Plastic Lower Pressure Vessel Design) Committee
Member	ASME PCC-1 Appendix F revision task group
Member	ASME PVP Computer Technology & Bolted Joints Technical Committee
Member	ASME Section XII - Transportation Equipment
Co-Chairman	ITCA (Intermodal Tank Container Association)
Member	ITCO (International Tank Container Organization) – Manufacturing & Design Group
Member/Officer	ASTM Committee F3 (Gaskets)
Member	ASME PVP Computer Technology & Bolted Joints Technical Committee Assembly