



## Client Site Gasket, Bolting and Flange Assembly Training Programs

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A bolted joint is comprised of flanges, bolts and a gasket. All three components must be selected, fabricated and installed properly in order for the bolted joint to provide satisfactory performance. A recent *Six Sigma* Greenbelt project conducted by Virginia Sealing Products, Inc. has identified **Gasket Specification, Craftsman Knowledge of Materials, and Installation** as the three most significant gasket-use process variables that must be controlled in order to insure safe, reliable and repeatable performance of bolted, flanged connections. After working with client engineering, maintenance and purchasing staff to update their gasket specifications, VSP strongly encourages site maintenance personnel and Area and Reliability engineers attend the following training courses:

### **#1) Site Gasket Materials**

An interactive, practical review of the current site gasket materials and standards with emphasis on their identification, handling and use characteristics, performance limitations and failure mode/avoidance. The class duration is typically one hour, depending upon the number of gasket materials in use at the site.

### **#2) Bolts, Fasteners, and Correct Flange Assembly Procedures**

An informative, hands-on class which, through demonstrations and practical examples, teaches important concepts of fasteners, torque, and flange assembly. The use of special test fixtures and equipment including Skidmore Load Tension Testers and a Strain Gauged Flange Fixture result in very meaningful, eye opening examples with long lasting impact on the attendees. The class duration is typically 1-1/2 hours, and addresses the following topics:

Bolt/Fastener Identification and Head Markings- ***Demonstration***

Bolt Strength (Yield, Tensile, Ultimate) - ***Demonstration***

Bolting Materials (Stainless, Alloy, Carbon Steel)

Bolt Loads:

- Torque Relationship- ***Demonstration***
- Effect of Thread and Nut Lubrication- ***Demonstration***
- Effect of Nut and/or Bolt Re-Use- ***Demonstration***

Flange/Component Assembly:

- Flange Alignment and Surface Condition
- Flange Assembly
  - o Effect of (Improper) Single Pass Bolt Loading - ***Demonstration***
  - o Comparative Performance of Star Pattern Bolt Loading - ***Demonstration***
  - o Force x Distance (Torque Estimate) Assembly - ***Demonstration***

The cost for these seminars is shown below. VSP strongly encourages a maximum class size of (15) people.

Site Gasket Materials - \$350

Bolts, Fasteners and Correct Flange Assembly Procedures - \$750.

These training courses are offered free of charge to clients participating in our Comprehensive Fluid Sealing Management Program.

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