ASME L&D LEARNING & DEVELOPMENT

EL607
Bolting Specialist Qualification Program

The Bolting Specialist Qualification Program consists of 3 major pieces: the Online Courses, the online Final Exam and the Hands-On Training and Skills Assessment

eLearning COURSES:

Course 1 – Principles of the Bolted Joint and ASME PCC-1 (3 HOURS)
Chapter 1: The Importance of Bolting
Chapter 2: General Bolting Principles
Chapter 3: ASME PCC-1

Learning Outcomes:
- Explain the importance of bolting
- Identify the types of industrial bolted joints
- Describe common bolting principles
- Explain the advantages of using bolted joints
- Discuss the concepts that underlie a functioning bolted joint
- Describe the contents of ASME PCC-1
- Recognize the importance of following PCC-1 guidelines

Course 2 – Flanges, Fasteners, & Gaskets (3 HOURS)
Chapter 1: Flanges
Chapter 2: Fasteners
Chapter 3: Gaskets

Learning Outcomes:
- Describe functions of the three component groups that make up a pressurized bolted joint
- Understand how components work together as a system to provide a leak free joint seal
- Learn the proper methods to inspect each of the key component groups for correct grade and material conditions
- Learn how to inspect for damage, and the relevancy of PCC-1 appendix in determining thresholds and tolerances

Course 3 – Putting It Together/Taking It Apart (3 HOURS)
Chapter 1: Tightening with Torque
Chapter 2: Tensioning
Chapter 3: Bolting Patterns
Chapter 4: Bolt Loosening
Chapter 5: Corrosion and Galling

Learning Outcomes:
- Recognize torque as it applies to pressurized joints
- Describe methods to correctly tension and torque bolts
- Learn the best practices of manual torque, hydraulic torque, or pneumatic torque equipment for tightening
- Learn the best practices of hydraulic tensioning and mechanical tensioning
- Understand the most common mistakes and safety concerns when working

with powered equipment
- Be able to describe the Legacy patterning method, along with other acceptable substitute patterns
- Identify methods to prevent corrosion and galling

Course 4 – Bolting Safety and Tool Handling (3 HOURS)

Chapter 1: Bolting Safety and Tool Handling
Chapter 2: Manual Bolting Tools
Chapter 3: Pneumatic Bolting Tools
Chapter 4: Hydraulic Wrenches
Chapter 5: Hydraulic Pumps
Chapter 6: Hydraulic Torque Wrenches Chapter 7: Tensioners

Learning Outcomes:
- Explain why bolting safety is important
- Describe the need for planning and preparation in bolting practices
- Describe the safe use and handling of bolting tools, including:
  - Manual Torque Tools
  - Pneumatic Tools
  - Hydraulic Wrenches & Pumps, and
  - Hydraulic & Mechanical Tensioners

BOLTING SPECIALIST APPLICATION AND FINAL EXAMINATION:

Upon completion of the 4 self-paced eLearning courses, learners will need to submit an application to enroll in the Final Exam. In the application, a professional reference is required to complete a form which verifies applicant's completion of at least 6 months of work experience in bolted joint assembly. Once the application is approved, the candidate will be enrolled in the online Final Exam which consists 75 multiple choice questions. A passing grade of at least 90% is required to qualify for the hands-on training and skills assessment. Candidates are allowed multiple attempts to pass the Exam. There is no limit on the number of times to re-take the Exam.

HANDS-ON TRAINING AND SKILLS ASSESSMENT:

This part of the program requires a separate registration with an ASME Authorized Training Provider. Upon completion of this one-day hands-on and competency assessment, learners will have demonstrated their ability to effectively apply the principles of bolted joint assembly as defined in the practical examination requirements of ASME PCC-1, Appendix A to the satisfaction of the ASME-Authorized Training Instructor (ATI).

Working both individually and in small groups, learners will:
- Observe and practice proper procedures as modeled by the instructor
- Perform the key competencies required in each exercise within expected tolerances
- Be able to explain the technical principles underlying the practical competencies

Agenda:
I. Administrative Check-in (15 min)
II. Safety/PPE Discussion (30 Min.)
III. Torque/Load Measurement (30 Min.)
IV. Gasket Identification/Analysis (45 Min.)
V. Manual Torquing Demonstration (60 Min.)

VI. Hydraulic Torque Tool Review (45 Min)
VII. Hydraulic Torquing Demonstration (90 Min.)
VIII. Q&A, Evaluations, Feedback (15 min)