TECHNICAL EDUCATION ACADEMY

School of Engineering

COURSE PROGRAMME

000442

MECH024 - Bolt Tightening Foundation

As we all know, in the Oil & Gas industry we are using bolts and nuts for a lot of applications.



Learn from the Best in the Business!

Course overview

Foundation level

Why take this course

As we all know, in the Oil & Gas industry we are using bolts and nuts for a lot of applications. In Drilling Operations, Work Overs, Production, Maintenance and Petroleum Equipment construction.

However, this does not stop at the Oil & Gas market. Wherever we look, plenty of things are being kept in place by bolts and nuts. From truck tires to forklifts, ships to airplanes, windmills to pumps and bridges to buildings.

The overall purpose of this course is to provide practical training in bolt tightening and shimming techniques and tools. Through the use of different types of exercises performed individually and/or in small groups the ability to safely and competently perform torqueing and tensioning of bolts as well as shimming are achieved.

Who it is for and how it helps

This course is designed for anyone involved in the assembly, disassembly or quality assurance of bolted joints.

What you will learn

- Know how to find documentation applicable to torqueing, tensioning and shimming
- Skilled in using torque wrenches correctly to tighten bolts
- Skilled in inspecting, assembling/dismantling and adjusting the hydraulic torque and tensioning tools
- Skilled in using hydraulic torque and tensioning tools correctly to tighten bolts using the two-stage bolt tightening procedure
- Skilled in inspecting, measuring and filling in checklist as part of shimming
- Know how to use shimming tools for filling air gaps by following the applicable procedure
- Select technical manuals and documentation for bolt tightening and shimming tasks to be performed under supervision
- Safely operate specialized tools used for bolt tightening and shimming
- Suitably fill out appropriate checklists when working in the turbine

Curriculum

Modules 01–05

01 Introduction to bolt tightening

- What is flange management?
- Joint Integrity
- Definitions/ abbreviations
- Codes and standards of manufacture
- Safety

02 Piping bolted joints

- Flanges
- Flange Gasket Faces
- Identifying Flange Rating
- Blinds, Spectacle Blinds & Spacers
- Flange Alignment
- Flange spreaders

03 Gaskets

- Spiral Wound or Raised face Gaskets
- Ring Type Joint
- Metal Jacket Gaskets
- Care, Handling and Storage of Gaskets

04 Bolt Theory

- Stud bolts
- Thread Engagement
- Bolt & Nut Material and grade
- Fastener Failure Modes
- Washers

05 Bolt Tension / Torque Loads

- Torque verses Tension

Curriculum

Modules 05–09 · Module 05 — continued

- Torque relationship with friction
- Lubrication coatings
- Bolt Tightening Sequence

06 Bolting Tools

- Torque wrench
- Torque Multiplier
- Hytorque
- Tensioning tool
- Calibration

07 Joint Assembly Procedure

- Prior to Assembly of Flanges
- Flange Condition
- Flange Surface Indentations
- Flange Surface Indentations
- Joint Assembly Procedure
- Bolt Joint Issues

08 Leaking Flange Procedure

- Safety Precautions
- Leaking Flange Tightening
- Hot Bolting

09 Quality Assurance

- Documentation to be provided on completion of work
- Qualification

Participation and contacts

Joining the programme

Contact the Academy and quote course code 000442 to confirm dates, delivery format, prices and enrolment terms.

Training for your team

Tell us your business goals, the roles and number of participants, and your preferred dates and location. This will help us discuss the right training option.

Preparing for the programme

The published programme does not specify any prerequisites. Contact us before enrolling to confirm how to prepare.

Discuss your training needs

mail@tecedu.org
www.tecedu.academy

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