INSTITUTE OF MATERIALS, MALAYSIA

IMM Mechanical Joint Integrity Certification Scheme

Certified Technician in Mechanical Joint Integrity for Flange Bolted Connections

Code: MJI-FL *HRDF claimable*

This certification program is designed to equip workers with knowledge concerning typical flange/clamp bolted connections, covering supplementary health, safety and environment, fundamental theoretical knowledge, assembly and reinstatement, post assembly checking/testing, and periodic inspection. It covers both theoretical knowledge and hands-on skills relevant to LOPC prevention and repair in flanged bolted connections. It provides the theoretical basis and practical competencies required by a worker to sit for assessment so as to be a certified competent technician in Mechanical Joint Integrity (MJI) for Flange Bolted Connections.

Reference standards (reference used shall refer to the latest published document):

- **TBA**

Who should apply

This program is for those who have to execute installation, assembly and dis-assembly, maintenance and repair, operations, works supervision and inspection of flange/clamp bolted connections, such as:

- Frontline flange assemblers for pipeline, pipework and process equipment, pressure vessels, towers, rotating machinery
- Fitters/riggers
- Mechanical technicians
- Site team leaders
- Quality and inspection personnel
- Maintenance and construction team leaders, supervisors

Objectives

The objective of this certification program is to assess and certify workers on their knowledge and hands-on skills/competency concerning flange/clamp bolted connections, which covers supplementary health, safety and environment, fundamental theoretical knowledge, dis-assembly, inspection, assembly and reinstatement, post assembly checking/testing, and periodic inspection.

Examination topics

Supplementary health, safety and environmental knowledge when carrying out the works. Grounding knowledge required to carry out the works, covering flanges, gaskets, bolts, torqueing, inspection aspects, testing aspects, manual torque wrench hydraulic torque wrench, clamp connector.
Hands-on skills in using a manual torque wrench and hydraulic torque wrench:

- Preparation and set-up of the works
- Reading and interpreting P & ID and isometric drawings
- Preparing a simple work pack if there is no work pack provided for the works
- Reading and selecting correct torque value from a torque table
- Disassembly
- Inspection of the tools, flanges, bolts, gaskets, lubricants used
- Assembly and post-assembly inspection and testing
- Periodic inspection

Examination format

The exam/assessment consists of the following format:

(a) Examination paper – to complete answering the 35 multiple choice questions within 45 minutes
(b) Practical (hands-on) assessment 1 – using a manual torque wrench, including inspection, set-up, using torquentable, checking the validity of the calibration certificate, setting the wrench, actual disassembly, assembly, post-assembly inspection and testing.
(c) Practical (hands-on) assessment 2 – using a pneumatic-powered hydraulic torque wrench, including inspection, set-up, using torque table, checking the validity of the calibration certificate, setting the wrench, actual disassembly, assembly, post-assembly inspection and testing.
(d) Practical (hands-on) assessment 3 – using a clamp connector (*e.g.* Grayloc), including inspection, set-up, referring to the manufacturer's instructions, setting the wrench, actual disassembly, assembly, post-assembly inspection and testing.

Examination duration

1 day

Examination fee

As specified on the IMM website.

Candidate's criteria

Candidate should have

- Minimum academic qualification - SPM or equivalent* OR
- Minimum 5 years working experience at site (offshore or for onshore plant/construction site) AND
- Have used manual torque wrench or supervised workers using manual torque wrench and hydraulic torque wrench for flange bolted connections AND
- Able to read and understand in English

*Candidate fulfills the minimum academic qualification without working experience at site (offshore or onshore plant/construction) is considered as a candidate without experience.

Pre-requisite training

A candidate without experience is required to attend IMM approved/recognized Mechanical Joint Integrity for Flange Bolted Connections training course with a minimum duration of 2 days (16 hours) which prepares and provides comprehensive guidance and practice aligned to the topics covered in the examination.

A candidate with experience is encouraged to attend an IMM approved/recognized Mechanical Joint Integrity for Flange Bolted Connections training course for examination preparation and scheme alignment.

Note: Evidence of training completion (where applicable) shall be submitted to the IMM prior to examination approval.

Criteria for certification

The candidate must pass in all the following 4 parts:

(a) Examination paper – Achieve minimum 70% mark
(b) Practical (hands-on) assessment 1 – Passed as competent
(c) Practical (hands-on) assessment 2 – Passed as competent
(d) Practical (hands-on) assessment 3 – Passed as competent

Certificate awarded

IMM Certified Technician in Mechanical Joint Integrity (MJI) for Flange Bolted Connections

Validity period of certificate

5 years

Re-sit of examination

A candidate who had failed in one or more of the examination parts can apply to re-sit for the failed component(s) of the examination within a year from the date of the first examination. The candidate shall have to pay the full examination fee for the re-sit and without the need to attend any pre-requisite training course.

Information on re-certification

Candidates may submit a recertification application up to six (6) months before or within six (6) months after the certificate expiry date. Applications submitted within this period will be processed as usual and may require attendance at a refresher course, if applicable.

Applications submitted more than six (6) months after the certificate expiry date require the candidate to:

- Attend the refresher course, if applicable; and
- Retake the certification examination, regardless of work experience.

Candidates may apply to renew their certification for an additional five (5) years within six (6) months prior to the expiry of the certification period (after either the initial 5-year certification or the subsequent 5-year renewal) by:

- Providing proof to IMM of employment in a related field; and
- Attending the refresher course, if applicable.

Candidates who have been out of the profession for more than eighteen (18) months at any point during a 5-year certification or recertification period must retake the certification examination.