

Manual

Validation Maintenance professions

Background

European industry develops now rapidly with more automation and integrated techniques. More knowledge covering wider technological areas will be needed. Harder competition is a reality. The key to meet this is higher capability in maintenance and automation. The long term goal:

- In cooperation create functionality to work criss-cross branches, sectors and areas
- Meet the international competition
- Support the industry

European Federation of National Maintenance Societies – EFNMS – has a comprehensive development work in Europe to form qualifications based on existing standards and working presidia's. One way in this work is to form certifications as a way to on a practical work establish higher competence.

The three functions of different types of assessment are:

- **Diagnostic**:- to identify strengths and weaknesses
- **Formative**:- to provide feedback to test taker
- **Summative**:- to estimate performance for the purpose of (formal) assessment
 - at the end of a course
 - unit of study
 - EFNMS certificate

Validation covers all type of learning – *Formal, Non-formal and Informal*

Validation areas

On the market we have four different categories skill professions. Two academically oriented and two vocational categories.

1. Maintenance leaders on EQF-level 7
2. Maintenance engineers and supervisors on EQF-level 6
3. Maintenance technicians on EQF-level 5
4. Maintenance mechanics, electricians and automation electricians on EQF-level 4

Four validation steps will be possible. Today existing validation for maintenance leaders aiming to certificate will be ready in IT form. This validation has been in production since 1993 and will be modernized today's techniques. Maintenance engineers and supervisors validation is brand new and a mix between technicians and leaders. Validation of maintenance technicians has been in production since 2006. System for validation of Maintenance Mechanics, electricians and automation electricians is ready but not in production.

Network behind Maintenance validation

A lot of members in EFNMS and industrial companies have during years developed today's capabilities to validate. Some parts in the validation systems are in ten languages. Following countries have been involved:

- Belgium
- Check
- Danmark
- Finland
- Iceland
- Ireland
- Nederland
- Norway
- Slovakien
- Slovenien
- Sweden
- Switzerland

Aim and target

All validation purpose is to support the individuals' development to best competence for the work. Validation has two targets:

1. Individual mapping of competence for training of missing parts
2. EFNMS certificate

For the employer the validation of personnel increase the capability to improve strategical and methodical planning of competence.

The validation system will give following demands. Maintenance database should handle:

- Number of how many times the question have been used
- How many times the question is correct answered
- For Multiple Choice questions (*MCQs*) the distribution statistics on answers on alternatives
- If the questions has been changed on any language
- Which question version is in use
- Information to all languages when the English question is changed
- All questions are marked with EQF-level
- Test should be able to use questions with different EQF-levels
- Questions which require calculations should have a calculator on the screen

Country responsible

One responsible per country is accredit able to manage the database. Country responsible can update validation system own language and English. That person will also handle all changes in questions on local language. If the changes have an influence on the mother question this must be announced to the main responsible. If the system indicates that the mother question is changed the country responsible must analyse the question and create a change if needed.

A summary:

- One responsible person per country and language
- One quality assurance group per language
- Export and import using Excel for handling new and existing questions on own language and English.
- Question status including when it is changed in local language and English.
- Quality statistics for individual question

Test Centre

Every country has to develop a test organization with minimum one Test Centre. This must have a Certified Test leader with capabilities to handle the IT-system and guide the validant into the test. It is important that the Test Centre's are free from influence from trainers, union and employers. The standards ISO 10667 and EN 17024 must be followed. It is also good to read International Test Commission (ITC) document International Guidelines on Test Use.

The issues that ISO 17024 tackles can be summarized as:

- Defining what it is you examine (the competencies)
- Knowledge, skills and personal attributes
- Examination must be independent
- Examination must be a valid test of competence

ISO 10667

ISO 10667 consists of the following parts, under the general title *Assessment service delivery — Procedures and methods to assess people in work and organizational settings*:

- *Part 1: Requirements for the client*
- *Part 2: Requirements for service providers*

The standard establishes requirements and guidance for the client working with the service provider to carry out the assessment of an individual, a group, or an organization for work-related purposes. The standard enables the client to base its decisions on sound assessment results.

The standard also specifies assessment methods and procedures that can be carried out for various work-related purposes made by or affecting individuals, groups or organizations.

Every Test Centre must be capable to handle economy and handling invoices including reports to country responsible. Every country must follow GDPR for handling personal data before the test starts up.

The Test Centre should be equipped with computers with stable Internet.

It is important that all tests are supervised in order to avoid misuse and cribbing. Only one test taker is approved per screen. A test taker is forbidden to take photos of the screen and create screen dumped of questions.

Test takers will have a mail with testing eligibility code for test at Test Centre. This code will be guilty for open up performed test during a fixed period.

Different types of validation questions

Today five types of questions can be used:

- Text question with four to six answers, (Multi Choice) there one is correct and the others near correct. The quality in the method requires specific balance between correct and incorrect answers.
- Text questions based on drawings with alternative answer A, B, C, D, E, F. Text in drawings must be in English. All pictures must be in JPG-format.
- Text questions there the test taker click in the picture for correct answers.
- Text question with a problem to solve with calculated numerical answers.
- Text questions with a problem description. The answers is free text, a handmade drawings or/and a calculation. Correct answer is hidden and only visible when correcting the test.

Question number

Every question has unique question number. This number follows the question in all language. By these common validation for certificate can be carried out. Statistics per language can be shown and per individual question irrespective of language.

If the local question is changed and differ from the mother question in English the questions will have a new number and must be translated to English.

EQF marking

European Qualification Framework – EQF – is the European Union – EU – scale for education and training.

Every question must be marked with EQF level. A test can mix question with different EQF levels. Some knowledge will be required on more than one EQF-level. Maintenance technicians and Supervisors have common technical platform. When forming tests mix of different EQF levels can be used.

Subject staircase

All subjects in the database cover all EQF levels. All subjects follow the EFNMS Body of Knowledge - BoK and standards EN 17007 and EN 15628 and subjects from previous validation work. In additional to these documents also existing subjects in older IT systems are added.

Test takers log

Every test taker has an own log

- Theoretical tests based on random selection of questions in a database
- Theoretical tests with manual correction based on hidden correct answer
- Practical tests and paper used tests with registration of results

In test taker log all tests must be registered with final scores apart from used methods and follow the General Data Protection Regulation – GDPR.

Instruction for country responsible

Only one per involved country is approved to handle the database with updating with new questions and changing in existing questions. This responsible in the country is project leader for all handling of Excel templets and handling into the database. Country responsible is also responsible to form national validation tests and supervise validation activities in the country.

Here is the address to the maintenance validation:

<http://startmz.com/maintenance>

When you are logged in, click on "Country responsible". Write your password given from system manager.

New organization in validation

If you do not has an acceptance, please send an E-mail to Swedish Maintenance with name, Maintenance organization, full address and phone number for open up the possibility.

Instruction for Test leaders

Here is the address to the maintenance validation:

<http://startmz.com/maintenance>

When you are logged in, click on “test leader information”.

Generate activation codes

The test leader has to generate an activation code for the total test. The test leader has possibilities to form the total test with components from database. The code has to be given to the test taker. Before a test taker can carry out a validation test the test taker must be restarted in the IT-system.

1. Click on “Test leader information”
2. Click on “Create activation code”
3. Decide which parts should be in the activation code
4. Click on “Create Code”. The code is ready for use.

Note; Activation codes must be carefully handled. If this code is spread open up for illegal use. Use sort period of validity.

If the test taker has forgotten the password the test leader can support the test taker;

1. Try to find the test takers name by use of your test leader function.
2. Click on test takers name. Now you have information about actual test taker.
3. Close to the information about test taker is test takers name and password showed.
4. The test leader can change password by click in “Change password”

Instructions for Test Takers

The address to the IT-tool for maintenance is

<http://startmz.com/maintenance>

First time log in

First step to log in for the first time is to be recorded as a Test Taker. You create an users account for all coming validation activities.

Here are your steps:

1. Go to <http://startMZ.com/maintenance>
2. Klick on "Register new user"
3. Follow the steps on the screen
4. Decide users name and password
5. When you are ready with the registration you are automatically logged in.

Registration for a validation test

Use the code for the test you have got from the test leader on your start page on the screen.

1. Your lest leader hand over the activation code for the test
2. Use the code in your start page and click on the arrow to the left
3. Accept the content in activation code.

Note; Your code can comprise many separate tests

When you have stated a theoretical test starts the time for the test. You have no possibility to stop the test.

1. On your start side under the headline "To do" you will have all theoretical tests in clouded in the validation.
2. Click on the test you will start on
3. Follow the instruction text on the screen

Note; A validation test can comprise of many tests. You have the possibilities to have a brake between the tests.