

# Safe and efficient tank storage

Practitioner-level to awareness-level training, assessment and competency courses for tank integrity inspectors, assessors, engineers, managers and others responsible for the safe operation and maintenance of in-service storage tanks for bulk fluids.

Based on the acknowledged guidance and good practice of EEMUA 159, *Above ground flat bottomed storage tanks – a guide to inspection, maintenance and repair*, together with regulations and formal standards, such as ISO and API, for a common approach and interchangeable skills across sites, regulatory territories and corporate regimes.

A training portfolio incorporating practical guidance, competency-focused training and other resources for safe and efficient tank storage.

**Practical** – Developed and verified by industry, for industry.

**Flexible** – Training format to suit learners and sites – blended, live online, classroom, e-learning, and in-house. Course timings in synch with the major industrial time zones. Exams to fit in with modern work patterns.

**International** – Delivered in Dutch, English, French and German.

**Authoritative** – Courses taught by leading engineering professionals that are highly experienced in challenging storage tanks work and projects around the world.



**EEMUA 159 TankAssessor.** Practitioner-level – competence certificated via exam.

**EEMUA 159 TankInspector.** Practitioner-level – competence certificated via exam.

**EEMUA 159 Tank Integrity Manager.** Practitioner-level – certificated via assessed group work and exam.

**EEMUA 159 TankBasics.** Basic application competency level – certificated via exam.

**EEMUA 159 e-learning.** Awareness level – short test, certificate of completion (with Continuing Professional Development approval).

# Addressing the needs of today's tank storage industry

Oil and petrochemical industry feedstocks, refinery products, general chemicals and other products have been stored in above-ground, vertical cylindrical tanks for many years.

At first sight these tanks appear of simple design and construction with harmless working environments. However, this is not the case in practice, as witnessed by the many incidents associated with such tanks that continue to occur around the world.

The EEMUA 159 training courses aim to train, assess and help certify as competent, those who have responsibility for the inspection, assessment, maintenance and oversight of tank storage operations.

The EEMUA 159 training has been benefitting the tank storage sector for over twenty-five years and can be readily applied to the new types of installation that the energy transition is requiring.

The training portfolio helps organisations through training set at the competency levels demanded by industry and delivered online, blended, in house, or in classrooms to suit the engineering community and their work needs.

Based on internationally recognised user guides developed by EEMUA and other industry publications, as well as regulations and formal standards, the training is currently offered at Practitioner, Basic application and Awareness competency levels.

## EEMUA 159 TankAssessor

The course is aimed at engineers, operational supervisors and inspectors looking to improve their understanding of and/or become qualified in assessing the integrity of tanks and foundations.

A training and competency course that describes many of the key features of tank design and the common problems that can arise in

TankAssessor is a 4 day course. This does not include the end of course exam, which is registered for separately and held either immediately after the training or at a later date. On successful completion of the prequalification, training, examination and assessment learners achieve a Certificate of Competence in the assessment of storage tank integrity according to EEMUA Publication 159. The certificate is valid for a period of up to five years.

TankAssessor courses are run on set dates and offered as a classroom course (currently run in the UK, Netherlands, France and Germany) and as a live online course. English, Dutch, German and French language courses are available.

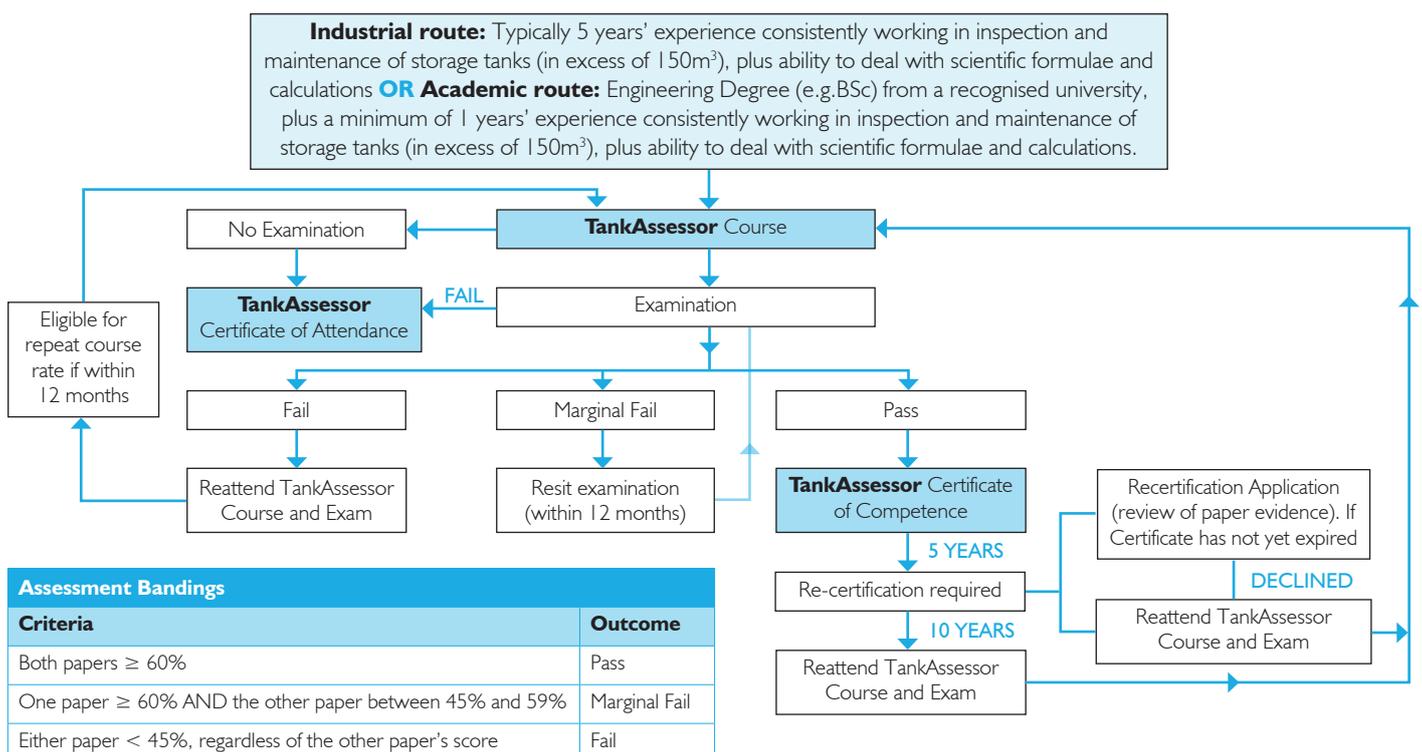
service. The course identifies many of the actions that may be taken to avoid operational problems or remedy the effects.

The objectives of the TankAssessor course are to enable learners to:

- Gain an understanding of the design, materials and fabrication aspects of tank construction with respect to repair or restrictions of use after degradation in service.
- Understand the principles, output and limitations of inspection methods and techniques.
- Be able to make a sound assessment of the integrity of a storage tank and foundation and offer guidance on the need for repair, its urgency and methods of effecting such repair.
- Understand requirements for overflow protection.
- Understand requirements for secondary and tertiary containment.

### Course content includes:

- An outline of the type of products that might be stored, codes of practice, tank types, materials, design parameters, venting, settlement, jacking and insulation.



- An understanding of EEMUA Publication 159, integrity assessment, methods of repair or restrictions of service.
- In-service problems, such as corrosion, erosion and wear.
- Visual and NDT inspection, reporting and evaluating results.
- Case history and failure studies.

- Repairs, welding processes and qualifications, quality control and testing.
- Use of EEMUA Publication 154 (tank demolition) and EEMUA Publication 180 (frangible roof joints).

## EEMUA 159 TankInspector

A training and competency course that will enable learners to gain the knowledge and understanding of the inspection requirements during various stages of the tank service life – construction, operation, repair/maintenance and demolition. It covers key principles, output and limitations of inspection methods and techniques, together with the relation between all major damage mechanisms and different tank components.

EEMUA 159 TankInspector does not provide the competence required for fitness for service assessment, for which a valid EEMUA 159 TankAssessor certificate is required. The differences between TankInspector and TankAssessor are:

TankInspector	TankAssessor
<ul style="list-style-type: none"> <li>• A training and competency course that will enable attendees to gain a systematic understanding about the inspection requirements during various stages of the tank service life – construction, operation, repair/maintenance and demolition.</li> <li>• Covers key principles, output and limitations of inspection methods and techniques, together with the relationship between major damage mechanisms and different tank components.</li> <li>• Appropriate for personnel in roles such as NDT Inspector, Project Co-ordinator, Operations Supervisor or similar and provides a bridging awareness between service and maintenance.</li> <li>• <b>Does not enable</b> holder to carry out the analysis of tank fitness for service.</li> </ul>	<ul style="list-style-type: none"> <li>• A training and competency course that covers key features of tank design and the common problems and failure mechanisms that are associated in service.</li> <li>• Enables the sound assessment of the integrity of a storage tank and foundation, and the ability to offer guidance on the need for repair, its urgency and methods effecting such repair.</li> <li>• A technically focused course and is suitable for Engineers responsible for tanks during their service life, that equips them with the knowledge and skills to make key critical decisions.</li> <li>• Does enable holder to carry out the analysis of tank fitness for service.</li> </ul>

TankInspector is a 3 day course. This does not include the end of course exam, which is registered for separately and held either immediately after the course or at a later date. On passing the exam, learners achieve a Certificate of Competence in the inspection of storage tanks according to EEMUA Publication 159. The certificate is valid for a period of up to five years.

TankInspector is run on set dates as a classroom course (currently run in the UK, Netherlands, France) and as a live online course. English, Dutch, and French language courses are available.

## EEMUA 159 Tank Integrity Manager

A training course that focuses on developing the knowledge and skills required to assess the dilemmas on making a tank 'fit for purpose' within financial constraints, time limits and legal compliance, and creating a sustainable tank management process including setting up systems and procedures.

The course deals with the theory behind the Probabilistic Preventive Maintenance (PPM) methodology, which is based upon two underlying methodologies: Risk-Based Inspection (RBI) and Reliability-Centred Maintenance (RCM). This will create the knowledge required to be an effective member of an RBI team. The course identifies many of the actions that may be taken to create a sustainable tank management process.

While Tank Assessor and Tank Inspector focus on current integrity, Tank Integrity Manager focuses on assuring integrity in the future.

Tank Integrity Manager is a 5 day course set between an online induction and final examination. It is made up of face-to-face teaching, online materials to support the learning content, assessed group work, and daily tests for understanding; all to prepare Learners to apply their knowledge in a real-world setting.

Online induction (4 hours maximum) three weeks before course starts.

D1 – Introduction to Risk-based Inspection (RBI) and Reliability Centred Maintenance (RCM), tank design and management, damage mechanisms and typical failures

D2 – Tank operation, health safety and environment, RBI theory and practice

D3 – In-service tank inspection, fitness for service assessments, RCM theory and practice, emission control and legal requirements, tank turnarounds

D4 – Health safety and environment, learning from incidents. Preparation for group assignments and exam

D5 – Group work on assignments.

Two-part online proctored examination (no later than one week after end of course) comprising multiple choice exam and scenario-based test.

The course is run in English on set dates as a classroom-based course which makes use of some online elements.

By the end of the Tank Integrity Manager course, the Learner knows how to effectively translate the inspection results into a structured tank maintenance strategy.

On successful completion of the portfolio of work and the examination, the Learner achieves a Certificate for EEMUA 159 Tank Integrity Manager. The certificate is valid for five years.

## EEMUA 159 TankBasics

A blended online training course providing an introduction to industrial-scale storage tanks. It gives learners a basic understanding of the different tank designs, and how tanks should be inspected, assessed, operated, maintained and repaired, without going into the detailed calculations. It is strongly recommended that TankBasics is passed before advancing to either the TankInspector or TankAssessor courses.

TankBasics delivers in-depth training to engineers where they work – to give professionals the flexibility to learn on-site, on-call, or working from home. The course uses enterprise-class online technology to deliver effective training that is time-efficient for learners and their work.

The course is run on set dates, usually twice a year. A variety of learning activities are undertaken over five weeks, including live online classes, followed by a proctored online exam at the end. The course is positioned at the EEMUA Basic application competency level, i.e. above Awareness but below Practitioner.

It is strongly recommended that the corresponding (and lower tier) Awareness-level EEMUA 159 e-learning course is passed before signing up for TankBasics. Learners should also be actively engaged in a storage tanks role, have at least one year's experience in this type of position and hold a relevant qualification.

## EEMUA 159 e-learning

A short (can be completed in 30 minutes) online awareness-level course introducing learners to the inspection, maintenance and repair of above ground flat bottomed storage tanks as described in EEMUA Publication 159. The e-learning is taken online at the learner's pace and convenience.

The course is recommended for all levels of employees who are just starting to work with storage tanks, as well as tank farm

managers, safety representatives and supervisors. On completion of the desktop version, immediate certification is provided.

It is strongly recommended that the EEMUA 159 e-learning is completed before advancing to the TankBasics course.

Available in English and Dutch language versions.

Approved for Continuing Professional Development (CPD) by the Society of Operations Engineers (SOE).

All the EEMUA 159 training courses are backed by appropriate course certification demanded by industry, or with Continuing Professional Development (CPD) approval.

Course	Level	Delivery	Languages	Duration	Assessment	Qualification
EEMUA 159 TankAssessor	Practitioner	Classroom course Live online course	English Dutch French German	4 days	Exam – taken after course	Certificate of Competence in the assessment of storage tank integrity according to the EEMUA 159 User Guide
EEMUA 159 TankInspector	Practitioner	Classroom course Live online course	English Dutch French	3 days	Exam – taken after course	Certificate of Competence in the inspection of storage tanks according to the EEMUA 159 User Guide
EEMUA 159 Tank Integrity Manager	Practitioner	Classroom course Some online elements	English	5 days	Assessed group work on morning of Day 5 and online exam taken after course	Certificate for EEMUA 159 Tank Integrity Manager
EEMUA 159 TankBasics	Basic application	Blended online learning	English Dutch	Approx. 22.75 hours over 7 weeks	Online exam – taken at end of course	Certificate of Completion
EEMUA 159 e-learning	Awareness	Online learning	English Dutch	Approx 30 mins – completed at learner's pace and convenience	Short online test at end of course	Certificate of Completion

Established in 1998, the EEMUA 159 training scheme has become recognised internationally by leading companies operating in the tank storage sector. Thousands of candidates have successfully completed the courses since that time.

EEMUA Publication 159 is used widely by key regulators around the world. Requests for running an EEMUA 159 training course as in-house training are by arrangement on an individual basis.



To find out more, contact:  
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 or visit the EEMUA website [www.eemua.org](http://www.eemua.org)

