



Materials selection and corrosion control

EEMUA I94 Subsea Engineering Basics

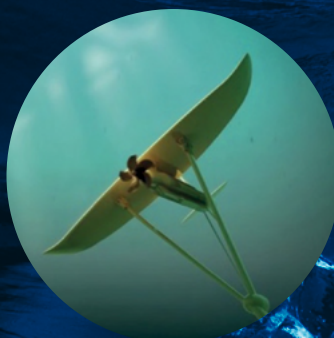
A blended online learning course for engineers and others involved in the design, specification, commissioning, operation, maintenance, repair or refurbishment of underwater energy production equipment and related facilities.

Based on guidance and good practice contained in EEMUA I94 Guide to materials selection and corrosion control for subsea energy equipment.

Developed and verified by industry, for industry.

Online-only training combining live classes, one-to-one tutorials and e-learning, with robust assessment and certification through an end-of-course proctored exam.

Delivering in-depth training to engineers where they work – to give professionals the flexibility to learn on-site, on-call, or working from home.



Addressing the needs of today's subsea engineers

Industrial engineering in the subsea environment presents extraordinary challenges.

Appropriate selection and specification of materials including even small components such as individual bolts is essential for long term reliable operation of subsea energy facilities in increasingly aggressive production streams and hostile seawater environments.

The nature of subsea operations especially in deepwater environments down to 3,000 metres or more make inspection and maintenance difficult and usually prohibitively expensive.

Preventing failures by optimal selection, specification and application of materials from the outset is key to efficient, safe and profitable subsea operations.

Engineers learning how to contend with these highly corrosive conditions, while also attending to the tiny details, require exceptional knowledge and skills development.

The EEMUA 194 Subsea Engineering Basics course encompasses the distilled know how of the industry captured in the practical, 'how to' guidance of EEMUA Publication 194 – developed and verified by industry, for industry.

Who should attend

The course is aimed at engineers and others involved in the design, specification, commissioning, operation, maintenance, repair or refurbishment of underwater energy production equipment and related facilities. The course is also relevant to engineers, managers and quality/integrity assurance engineers from operating companies and specialist subsea contractors.



Delivery

Expert Tutors are at the core of the EEMUA training experience on EEMUA 194 Subsea Engineering Basics – preparing Learners for the exciting and often challenging world of subsea engineering. The Tutors are materials and corrosion specialists, with years of knowledge acquired in major operating companies, who know and understand the challenges Learners will face throughout their careers.

The blended learning methods of live classes and one-to-one tutorials provide real-time interaction in combination with the Tutors' knowledge to ensure that questions are answered promptly, and Learners' correct understanding assured immediately.

Advances in materials, technology and techniques for the subsea engineering environment are frequent and quick. The flexible design of EEMUA's course seamlessly accommodates the latest offshore developments such as wind energy, hydrogen production and distribution, and carbon capture and storage.

The course is overseen by a Technical Steering Board comprising EEMUA Member company representatives to ensure the training meets the requirements of operators, is of high quality both in terms of course materials and Learners'

experience, and is suitably maintained as fit for purpose as technology, techniques and regulations evolve. The EEMUA Materials Technology Committee provides technical oversight for EEMUA Publication 194 which forms the basis of the course.

EEMUA's approach incorporates proven blended learning flexibility with enterprise class online platforms for efficient addition of valuable knowledge to engineers' abilities.

Teaching is delivered by distinct learning items, right-sized for effective and lasting understanding – and to fit within working patterns.

Cycles of learning are spread over an extended period of weeks to aid absorption of knowledge at the pace most effective for each individual Learner.

Engineers' know how is kept at the forefront of industry improvements without disturbing their location or shifts – through learning on-site, on-call, or working from home.

Robust assessment and certification processes enable engineers to demonstrate they have assimilated the knowledge and helping prevent expensive problems from occurring.

Expert-led

This course has been developed and is administered by EEMUA, the international non-profit membership organisation helping companies that own or operate industrial facilities. Through its broad range of activities and its members' breadth and depth of engineering expertise, EEMUA helps improve the safety, environmental and operating performance of these facilities in the most cost-effective way. It does this by focusing its efforts on the most critical issues for owners and operators, helping them maintain the right balance of in-house engineering expertise, promoting a skilled and competent workforce, staying abreast of a broad and an increasingly complex regulatory landscape and operating their capital assets efficiently, effectively and in compliance with relevant legislation, regulation and standards.

Course tutor



Kevin Millican is an engineering metallurgist with 40 years' experience in the oil and gas and wind energy sectors. He began his career at Oilfield Inspection Services in Great Yarmouth (UK) carrying out mechanical testing, metallurgical investigations, weld inspection and on-site post weld heat treatment (PWHT).

In 1989 Kevin joined SLP Engineering in Lowestoft (UK) as a Welding and Materials Engineer and had responsibility for the welding of many offshore platforms until leaving to join Shell in early 2011 as a Senior Materials and Corrosion Engineer. In 2022 he became the Senior Inspection and Maintenance Lead, working on the transition of Shell Nigeria Gas pipelines and facilities from upstream to downstream (T&S) operations, as well as a subject matter expert (SME) for welding and NDE for civil, offshore, and pipelines.

Kevin retired from Shell in June 2023, but continues to work part-time for Shell through Genesis and other work through ASAMS.



Course content

Three Learning Cycles

- **LC1 – Materials selection and corrosion control, wellheads and valves**
 - General principles of materials selection
 - Corrosion and corrosion control
 - Cathodic protection
 - Wellheads and trees
 - Valves
- **LC2 – Subsea pipework**
 - Manifold piping and equipment
 - Flowlines and risers
 - Fasteners and gaskets
 - Flexible pipe
 - Hydraulic control and chemical injection systems
 - Umbilicals
- **LC3 – Coatings and Renewables**
 - Instrumentation
 - Protective coatings and insulation
 - Materials selection and corrosion control for offshore energy facilities

Requirements

- Induction and learning aspects of the course and the exam are conducted solely online. Learners need access to a computer with a large screen and broadband internet connection.
- Learners should be actively engaged in a subsea engineering role, have at least one year's experience in this type of position and hold a relevant qualification.
- EEMUA 194 Subsea Engineering Basics is positioned at the EEMUA Basic application competency level. Therefore, EEMUA strongly recommends that the corresponding (and lower tier) Awareness-level [EEMUA 194 Subsea Materials e-learning course](#) is passed before signing up for this course.
- Learners need proficient written and spoken English. For students whose first language is not English, a minimum score of 6.5 in the International English Language Testing System (IELTS) test is recommended.
- It is assumed that the Learner will have a basic level of mathematical ability.
- The exam will involve online proctoring either via EEMUA Executive staff or an approved online proctoring service.
- Learners must abide by the Code of Conduct for the course.

Learners' time commitment

A Learner's approximate time commitment for the course is estimated to be:

- Induction: **2 hours** to suit working schedules
- Learning: **8 hours per week for 3 weeks** – through 3 Learning Cycles, each taking one week, and including Live Classes: **24 hours**
- Final Assessment: **0.75 hour**

Approximate Total: **26.75 hours over 5 weeks**

Requests for running a materials selection and corrosion control course as in-house training are by arrangement on an individual basis.

Photographs courtesy of Aquamarine Power, Minesto and EEMUA Member companies.



To find out more about EEMUA 194 Subsea Engineering Basics, please contact EEMUA at online-learning@eemua.org, or telephone +44 (0)20 7488 0801, or visit the EEMUA website www.eemua.org

