

ONLINE

Fleming

LIVE TRAINING COURSE

Corrosion Under Insulation

Fight against the Hidden Threat

Endorsed by
the Institute of
Corrosion (ICorr)



Old Lessons & New Insights

26 - 28 MAY 2021
9:00 - 13:00 CEST

Key topics

- 💡 Understanding key characteristics of CUI
- 💡 Examples of critical CUI failures
- 💡 Elements of reliable CUI management
- 💡 Risk-Based prioritization and prediction methods
- 💡 Design considerations (insulation systems and coatings)
- 💡 Direct and indirect detection and monitoring technology
- 💡 An overview of published guidance
- 💡 Latest innovation status and projects
- 💡 Case Study interactive sessions

Course overview

KAEFER's multidiscipline CUI expert team has created a successful CUI training course to promote industry knowledge share. Dr Clare Watt and Dr Steve Paterson provide this training and cover the latest industry knowledge, guidance and innovation in management, design, prediction, detection and monitoring.

About your prominent trainers



Dr Clare Watt

Principal CUI/RBI Integrity Engineer
KAEFER Isoliertechnik GmbH & Co. KG.

Clare has 20 years operational experience in upstream corrosion & integrity management mostly in operator teams (BP Amoco, Shell) including 12 years in senior staff roles (ExxonMobil, CNR International). Since 2015 she has worked on a wide variety of consultancy projects and joined KAEFER in 2018 to help grow CUI control services. Clare's experience spans different corporate cultures and includes operational integrity improvement programs, failure investigation and problem solving. She has managed CUI inspection and refurbishment campaigns including live equipment TSA upgrades, participated in audits and written CUI risk-based control methods. Clare has lectured for 13 years for the Cranfield University Corrosion Training Program and is a member of the Energy Institute Corrosion Management Committee. She drafted "Guidelines for the Assessment of Corrosion Threats in Risk Based Inspection" and revised CUI content for "Guidance for Corrosion Management in Oil and Gas Production and Processing (April 2019)".



Dr Steve Paterson

Corrosion and Integrity Consultant
Arbeadie Consultants Ltd.

Steve has over 36 years experience in materials, corrosion, welding, inspection and integrity management. He has extensive operational and project experience in the U.K., Netherlands, Norway, Middle East and Malaysia. He was previously materials and corrosion discipline head for Shell's upstream assets in Europe. During this time, he was directly involved in integrity issues with CUI including investigation of significant failures and execution of major refurbishment programmes. He has also been a member and chair of the Energy Institute Corrosion Management Committee including oversight of the production of UK Energy Institute "Guidance for Corrosion Management in Oil and Gas Production and Processing (May 2008)" and "Management of External Coatings for Corrosion". Since retiring from Shell in May 2017 he has taken on a number of consultancy projects related to corrosion management. He has been appointed External Lecturer in Corrosion Management at Robert Gordon University (Aberdeen) and is also a review panel member of the Oil and Gas Innovation Centre. Steve was approached by KAEFER in May 2018 to join as a consultant for the development and delivery of CUI control services.



Key takeaways

- 💡 All delegates receive comprehensive course documentation
- 💡 Understand the options available to combat CUI and their strengths and limitations
- 💡 Learn about common mistakes
- 💡 Learn about the CUI innovation initiatives
- 💡 Is a life expectancy of 25+ years possible?
- 💡 Benefit from the combined experience of our trainers
- 💡 A SPECIAL FEATURE Bring your own Case Study – the training will offer a unique opportunity for participants to bring along their own cases for class review
- 💡 Engage in technical and scientific discussion

Who should attend

- ✓ The world's top Oil & Gas companies attended this format
- ✓ Engineers & managers responsible for the reliable and safe design and operation of insulated or fire-proofed pressure systems. Relevant disciplines include Integrity, Corrosion, Inspection, Maintenance, Process, Safety, Mechanical, Projects and Operations.
- ✓ Personnel from plant owner and operating companies; project engineering and existing plant service providers; regulators. Technicians and maintenance personnel who deal with repair and rehabilitation of existing plant pipework, pipelines and vessels.
- ✓ The course is relevant to new build projects and existing plant of any age including LNG, Petrochemical, Refinery, Upstream Oil & Gas, Onshore and Offshore sectors.

What our past participants said about this training

"Great course, gave excellent insight and provided us with the tools to tackle this problem at our own plant."

Leon Kanters, Reliability Engineer, Trespas, Netherlands

"Excellent course, very informative of theory but backed up by industrial experience."

James Dwan, Principal, Dwan Forensic Engineering, Ireland

"This course gives a total insight on CUI"

Anthony Vervisch, Inspection Engineer, BASF, Belgium

"Overall a very good masterclass!"

Alwin Haverdings, Mechanical Engineer, Shell, The Netherlands



Click Here &



**REGISTER
ONLINE**

Day 1

26 May 2021

UNDERSTANDING CUI

8:30 Online Meeting Room Opens

9:00 Welcoming Note and Opening Remarks from Fleming

9:10 Introduction & Speed Networking
Join with your camera turned on to meet & greet the trainer and participants, as well as to share your experience and expectations from this course.

9:30 **MODULE 1: CORROSION UNDER INSULATION OVERVIEW**

- Introduction
- Examples of critical failures
- CUI Myths
- Key lessons learned over 70 years
- A history and overview of published guidance
- CUI management challenges
- An overview of the modern CUI toolkit

10:15 Break

10:30 **MODULE 2: CUI MECHANISM AND KEY INFLUENTIAL FACTORS**

- Mechanism of CUI
- Carbon steel
- Stainless Steels and stress corrosion cracking
- Water sources & contaminants
- Primary CUI temperature ranges
- Hot fingers & Cold fingers
- Cyclic service
- Humidity & Dewpoint, global location & climate
- Influence of design
- Controllable factors
- Failure modes & morphologies

11:30 Break

11:45 **MODULE 3: DESIGN CONSIDERATIONS FOR INSULATION SYSTEMS**

- General approach to design and influencing factors
- Design guidance and standards
- Insulation types and installation
- Thermal insulation coatings
- Novel insulation
- Protective coatings including TSA, immersion grade and conventional coatings
- Weather protection, cladding systems & sealants
- Novel technologies and coatings
- Inhibitors

12:30 **FEEDBACK AND Q&A SESSION**

- Review of key learning from Day 1
- Q&A session on the topics from Day 1

13:00 End of Day 1



Day 2

27 May 2021

MANAGING CUI

8:45 Online Meeting Room Opens

9:00 **MODULE 4: CUI MANAGEMENT - Part 1**

- Key elements of a CUI management strategy
- Risk Based Assessment methods
- Data structure and gathering
- Identifying equipment CUI risk
- How to define inspection intervals, methods and coverage
- Stainless vs carbon steels
- Challenging the need for insulation
- Risk Based Methodologies for managing CUI

10:00 Break



10:15 **MODULE 4: CUI MANAGEMENT - Part 2**

- An example of a reliable CUI inspection scheme
- CUI economics
- Communicating CUI risk: case history illustration for an onshore marine plant
- CUI published guidance differences
- Prediction considerations and limitations
- Common CUI RBI method pitfalls
- Practical CUI management considerations
- The importance of plant data and platforms for improved knowledge share
- Use of data analytics as a lever for more effective CUI management

11:15 Break



11:30 **INTERACTIVE SESSION**

- Bring your own Case Study or a topical presentation for class discussion
- Share your ideas and engage in technical and scientific discussion with the trainers

12:30 **FEEDBACK AND Q&A SESSION**

- Review of key learning from Day 2
- Q&A session on the topics from Day 2

13:00 End of Day 2



Day 3

28 May 2021

TECHNOLOGY AND INNOVATION

8:45 Online Meeting Room Opens

9:00 **MODULE 5: NON-DESTRUCTIVE CUI DETECTION TECHNIQUES**

- Advantages of NDE
- Current uncertainties relating to cost and reliability
- Overview of the CUI innovation landscape
- Current industry NDE projects
- Strengths and weaknesses of NDE technologies
- Terahertz spectral imaging & microwave sensing
- Guided wave & acoustic emission
- Acoustic resonance, electrochemical impedance spectroscopy & sniffer dogs
- Full length CUI sensor products (microwave sensing and sacrificial wire)
- Radiographic techniques & Pulsed Eddy Current (PEC)
- Thermography & Neutron Backscatter
- Detailed examples for RTR and PEC

10:00 Break

10:15 **MODULE 6: PERMANENTLY INSTALLED MONITORING SYSTEMS**

- Types of monitoring systems
- Current remote digital sensor innovations and landscape

10:45 **MODULE 7: CHALLENGES FACING THE ADOPTION OF TECHNOLOGY**

- Summary of key challenges for each technology
- Generating confidence in new technology
- CUI innovation projects and activities
- Key requirements to move forwards

11:15 Break

11:30 **INTERACTIVE SESSION**

- Review of key learning from Day 3
- Bring your own Case Study or a topical presentation for class discussion
- Engage in technical and scientific discussion with the trainers

12:30 **LESSONS LEARNT, KEY TAKEAWAYS, CLOSING REMARKS**

- Overview of key learning from Days 1 to 3
- Final Q&A session

13:00 End of the Training Course



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Are you looking for something more specific? Create your own In-House Training customized to the specific issues your company and your employees need to understand and resolve. Save time and cost while increasing implementation with an In-House Training held in the privacy of your company.

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*Do you need a different topic,
venue or date?*

*Create your own
custom-made training.*

In-House Training

- ✓ Specific industries face specific problems. They require niche information and solutions. **In-House Training** is precisely tailor-made to your needs.
- ✓ We find a trainer, draft topics, and then find the premises and dates which match your needs.
- ✓ Taking place in the privacy of your company, including real-life case studies and best practices, the course is led by an independent industry expert.
- ✓ Provide your employees a unique learning experience without having to leave the office.



*"Knowledge is important,
but implementation is crucial."*



The team behind:

We are delighted to bring you the
Corrosion Under Insulation

Click on the ticket below to sign up

Or write to
event.inquiries@fleming.events
to get in touch with a member of
our team

Darius Slavik
Production Director

Monica Jones
Marketing manager



- ✓ All sessions of this unique course online
- ✓ Live interaction options between the delegates and trainer
- ✓ Available via mobile, tablet or laptop

REGISTRATION

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FROM
1296 €

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You will be transferred to secure payment gateway