Fitness-For-Service Assessment to Prolong Asset Life
For Pressurised Plant & Equipment

This course presents a complete method for analysing, evaluating & monitoring pressurised equipment for streamlining operations & prolonging asset life. Examine how the disciplines of stress analysis, materials engineering & non-destructive evaluation interact & apply to API 579-1/ASME FFS-1 2007.

Expert International Course Director
Annette Karstensen, PhD, CEng
Annette is a Chartered Engineer with more than 18 years’ experience in structural integrity assessments & the application of API 579-1/ASME FFS-1 2007 to assess fitness for service in industrial plant.

Key Learning Outcomes
- Review the sections of API 579-1/ASME FFS-1 2007 used for assessing brittle fracture, crack-like defects, corrosion and creep
- Understand and apply background information on FFS assessment
- Analyse, evaluate, and monitor pressurised equipment for continued operation
- Examine damage mechanisms and the importance of identification
- Solve example problems on the practical application of the techniques incorporated in API 579-1/ASME FFS-1 2007
- The relationship between API 579-1/ASME FFS-1 2007 and other FFS standards
- Overview of remaining life assessment, remediation, and methods to extend the life of damaged equipment

2009 2 Day Course Dates
Brisbane 5–6 May
Adelaide 1–2 September
Perth 10–11 November
Melbourne 1–2 December

Incredible knowledge on the subject, both fun and friendly!
Operations Specialist, Hismelt Corporation

The presenters were all able to hold my interest... real life case studies were helpful
Principal Mechanical Engineer, BHP Billiton

HOW TO SAVE
4+ participants 20% see overleaf
8+ participants up to 40% on-site & customised

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Fitness-For-Service (FFS) assessment is a multi-disciplinary quantitative engineering approach to determine whether equipment is suitable for continued operation.

The pressurised structure or component of interest may contain flaws or other damage, or may be subjected to more severe operating conditions than anticipated by the original design.

The outcome of a FFS assessment is a decision to run the component as-is, alter it, repair it, or replace it.

A remaining life assessment may be performed as part of a FFS evaluation in order to determine how long the asset can be operated safely or to define appropriate inspection intervals.

This course provides training on the application of API 579-1/ASME FFS-1, a standard jointly published by the American Petroleum Institute (API) and the American Society for Mechanical Engineers (ASME).

Example problems will be worked through to provide participants with a detailed understanding of the various FFS calculations.

Who Should Attend

This course is intended for engineers and engineering management engaged in the operation, design, analysis, and maintenance of pressurised plant or equipment in industry.

Job titles include: plant, mechanical, civil, structural, reliability, project engineers, metallurgists and maintenance employees who design or operate pressurised plant or equipment that may develop cracks in service or at the time of manufacture.

About the Course

About the Course Director

Annette Karstensen, PhD

General Manager Structural Integrity, Quest Reliability Limited, New Zealand (NZ).

Dr Karstensen is a fracture mechanics expert with 18 years experience as researcher, and practitioner of fracture mechanics and Fitness-For-Service methods.

Annette presently works for Quest Reliability Limited in NZ, a company providing specialised structural integrity and materials consulting services, commercial software and technologies to the refining, petrochemical, syngas, power, pipeline and manufacturing sectors globally.

Annette arrived in New Zealand to work for MPT Solutions in 2003 as a consultant structural integrity engineer. In 2006 Quest Reliability acquired MPT Solutions and Annette was made responsible for the Structural Integrity Team globally.

Before joining MPT Solutions, Annette was a principal consultant at TWI (formally The Welding Institute) in Cambridge, England where she work with fitness for service assessments for 7 years.

She was awarded a PhD in Fracture Mechanics from Glasgow University in 1990.

Understanding the principals behind the FFS code and recognising this presents and excellent way of quantifying remaining life

Principal Mechanical Engineer, BHP Billiton

About IIR Executive Development

IIR Executive Development is Australia’s learning & development division, delivering technical & core skill training in a variety of formats. Our training is facilitated by carefully selected practitioners – experts in their respective fields, contracted to deliver targeted, timely information that fosters knowledge & learning transfer.

www.iired.com.au

Resources, Infrastructure, Engineering & Maintenance Curriculum

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1 = Intermediate  A = Advanced. For specific dates, locations & timing please contact 02 9080 4050. Select courses are on-site only.

SAVE up to 40% call 02 9080 4077
This course examines step by step and in detail the contents of the API/ASME standard. The sessions are not necessarily equal in length, the main focus will be on some of the more commonly used sections in API579. However, the level of detail examined will be dependent of the requirements and experience of the participants. Most case studies examined throughout the course will be pre-worked to improve productivity and maximise learning transfer through group discussion. However, there will be opportunities for participants to work through a number of limited problems individually and in group work. Participants are encouraged to bring specific problems of interest to them to discuss during the course, to assist with problem solving and benchmarking against best practices and lessons learnt.

### Course Outline

#### Introduction & overview

**Assessment of brittle fracture**
- Levels 1 and 2
- Case study examination
- Participant questions / problems / discussion

**Assessment of general metal loss**
- Level 1, 2, and 3 assessment
- Case study examination
- Participant questions / problems / discussion

**Assessment of local metal loss**
- Level 1, 2, and 3 assessment
- Case study examination
- Participant questions / problems / discussion

**Assessment of pitting corrosion**
- Level 1, 2, and 3 assessment
- Case study examination
- Participant questions / problems / discussion

**Assessment of crack-like flaws**
- Level 1, 2, and 3 assessment
- Case study examination
- Participant questions / problems / group discussion

**Assessment of creep damage**
- Level 1, 2, and 3 assessment
- Case study examination
- Participant questions / problems / group discussion

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It is extremely relevant to day to day plant maintenance issues. Gives good guidance on return to service/repair decisions.

*Plant Engineer,*

*IPM Operations & Maintenance*
Venus

- Brisbane
  5–6 May 2009
  Address TBA
- Adelaide
  1–2 September 2009
  Address TBA
- Perth
  10–11 November 2009
  Address TBA
- Melbourne
  1–2 December 2009
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Brisbane 24 March 2009
Adelaide 21 July 2009
Perth 29 September 2009
Melbourne 20 October 2009

YES! Please Register Me for Fitness-for-Service Assessment to Prolong Asset Life

1st Participant Name: (Mr/Mrs/Ms)
Job Title:
Telephone: Fax:
Email:
YES! I would like to receive free email information on relevant events.
NO! I would not like to receive free email information on relevant events.

2nd Participant Name: (Mr/Mrs/Ms)
Job Title:
Telephone: Fax:
Email:
For additional participants please photocopy this form or register online.

Company Name:
Company Address:
Postcode: Country:
Telephone: Fax:

Approving Manager: (Mr/Mrs/Ms)
Job Title:
Telephone: Fax:
Email:

Booking Contact: (Mr/Mrs/Ms)
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Telephone: Fax:
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I do not wish to receive any further mailings from IIR.

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   Card Number ------------------
   Cardholder's Name: ------------------
   Signature: ------------------
   Expiry Date: ------------------
   Amount: ------------------

A confirmation letter and invoice will be sent upon receipt of your course registration. Please note that full payment must be made upon receipt of the invoice and at least 10 working days prior to the course. Only those participants whose fees have been paid in full will gain admittance to the course.

Cancellation Policy: Should you be unable to attend, a substitute participant is always welcome at no extra charge. Alternatively, a full refund, less $440 (inc GST) service charge, will be made for cancellations received in writing (letter, fax, email) up to two weeks prior to the event. Regrettably, no refunds can be made less than 15 days before the event. For any event cancelled by IIR, registration fees are fully refundable. IIR is not responsible for participant flights or accommodation if a course is canceled.

4+ Participant Discounts: Conditions apply. Contact (+61 2) 9080 4050 for details.

Discounts: One discount per person applies. IIR Executive Development MUST receive payment by the early bird date to claim the early bird discount. For those companies with a complex accounting system, a credit card payment is advised to ensure your discount.

Program: IIR Executive Development reserves the right to alter the venue/instructors.

Fitness-For-Service Assessment to Prolong Asset Life

VIP Code

Event Code
GI4022