

API RP 579 FITNESS-FOR-SERVICE & MECHANICAL INTEGRITY COURSE



Dublin, Ohio USA
September 27 – 29, 2004

Fitness-for-service (FFS) is defined as the ability to demonstrate the structural integrity of an in-service component containing a flaw or material degradation. FFS assessment is used to determine if aged or damaged equipment is fit to continue safe and reliable operation for some desired future period. This three-day course provides an overview of the API Recommended Practice 579 on Fitness-for-Service.

Course Highlights

API RP 579 covers pressure vessels, piping, and aboveground storage tanks. The main topics from API RP 579 that are covered in this course are:

- brittle fracture
- general metal loss
- local metal loss
- pitting corrosion, blisters and laminations
- weld misalignment and shell distortions
- crack-like flaws
- high-temperature creep
- fire damage.

The assessment techniques are intended for pressure containing equipment and aboveground storage tanks used in the refining, oil sands, petrochemical, pipeline, pulp and paper and power generation industries.

This publication supplements the requirements in API 510, 570, and 653 by:

- ensuring safety of plant personnel and the public while older or damaged equipment continues to operate;
- providing technically sound fitness-for-service assessment procedures to ensure that different service providers furnish consistent life predictions; and
- helping optimize maintenance and operation of existing facilities to maintain the availability of older plants and enhance their long-term economic viability.

The assessment procedures in this publication can be used for fitness-for-service evaluation and rerating of pressure containing equipment designed, fabricated and inspected to nationally recognized Codes. These techniques may be extended to

evaluate equipment not designed to recognized Codes.

API 579 prescribes 3 assessment levels in determining fitness-for-service. This course walks the attendee through these Levels using a series of problems to illustrate the increasing analytical effort versus benefit of API 579 evaluation.

Level 3 is presented in increasing depth from basic engineering principles in strength of materials, failure analysis and Code requirements to application of design by analysis methods including the finite element method, among others. The Level 3 approach is not a single rote approach, but rather can be a series of increasingly more complex analytical efforts responsive to problem specifics to ensure economical solution while maintaining applicable Code integrity. The course finally shows how Level 1 and Level 2 are approximate derived methods of the Level 3 approach.

Attendees will be able to apply their learning to writing the API Inspector Certification exams (<http://www.api.org/>).

Who Should Attend

Engineers, inspectors, maintenance and engineering supervisory personnel in Owner, maintenance contracting, inspection contracting, engineering consulting, and regulatory organizations who need to know how to extend or approve the extension of the safe operating life of plant pressure containing equipment.

Materials

Participants are encouraged to purchase their own copy of API RP 579 and bring it to the course. Participants will receive course notes to supplement

the API RP 579 contents and discuss some of the many examples in API RP 579.

Location and Schedule

Dates: September 27, 28, and 29, 2004
Times: 8:30 AM to 4:30 PM

Location: Embassy Suites www.embassysuites.com
5100 Upper Metro Place
Dublin, OH 43017
Phone (614) 790-9000 or 1-800-362-2779

A block of rooms is being held until 5:00 PM EST, Sept. 5, 2004. Callers must identify themselves as being with CC Technologies in order to qualify for the group rate of \$109 per night.

Cost and Registration

The course fee is \$1200 US per person. Registration and payment are due by **August 27, 2004**. The course is subject to cancellation if insufficient registration is received by that date. **Registrations made after August 27, 2004 are subject to surcharge \$150.** Continental breakfast and lunch will be served daily. A reception will be held the evening of September 28, 2004. Send your completed registration form and payment to:

Linda Schmidt
CC Technologies
6141 Avery Road
Dublin, Ohio 43016-8761 USA
Phone (614) 761-1214
Fax (614) 761-1633
E-mail lschmidt@cctechnologies.com

Please make your checks payable to **CC Technologies** and attach and send with your registration information.

Registration Information:

Name	
Title	
Affiliation	
Address	
Phone	
Fax	
E-mail	

Instructors

Dr. Carl E. Jaske, P.E. received his B.S. degrees in General Engineering and Mathematics and M.S. degree in Theoretical and Applied Mechanics from the University of Illinois. He received his Ph.D. in Metallurgical Engineering from The Ohio State University. Dr. Jaske is Senior Group Leader at CC Technologies (<http://www.cctechnologies.com/>) in Dublin, OH USA. He has extensive experience in estimating the remaining service life of furnace tubes, heat exchangers, steam lines, boiler tubes, and other components operating at high temperatures. His related experience includes projects for the US Department of Energy, the Electric Power Research Institute (EPRI), the Materials Technology Institute (MTI) of the Chemical Process Industries, electric utilities, and a number of industrial organizations. Dr. Jaske has developed a model for applying fracture mechanics to the assessment of creep-fatigue crack growth and written computer codes for predicting the creep life of steam pipes, pressure vessels, and furnace tubes. He has also developed a computer code for evaluating the integrity of piping and vessels subject to local corrosion or stress-corrosion cracking.

John Aumuller, P.Eng. received his B.Sc. degree in Mechanical Engineering from the University of Waterloo. He has extensive experience in pressure vessels, piping, tankage, steam generation equipment and their auxiliaries and fired heater systems in refineries, oil sands facilities, petrochemical, and power generation plants. He has completed numerous Level 3 FFS assessments to solve recurring maintenance problems, to extend the life of damaged equipment and to improve plant reliability. John is principal of EDA Ltd. (<http://www.engineer.ca/>), an engineering consulting firm specializing in serving the energy and hydrocarbon processing industries.

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