

# BECHT ENGINEERING – techTraining Courses 2012

Becht Engineering specialists teach a variety of technical courses around the world. Becht's instructors are industry experts, who have spent their careers in pace setting owner-operator organizations. Arrangements can be made for any of the courses listed below to be taught at or near your site and can be modified to custom suit your training needs. Current courses that are open to the public are listed in Becht's 2012 Training Schedule at [www.techtraining.info](http://www.techtraining.info). Courses are considered introductory, unless the title is preceded by an asterisk. \*Indicates advanced courses. For courses designated as advanced, it is recommended the participants have a working knowledge (but not required) of the subject matter presented.

## 1. \*Application of Risk Based Inspection (RBI) to Reduce Maintenance Cost, Reduce Risk and Improve Reliability;

**Instructor:** L. Louis Loushin, P.E.

This course provides participants with a "HOW-TO MANUAL" to optimize plant inspection to achieve better reliability and reduced risk without sacrificing cost. Specific exercises will give participants the opportunity to examine important aspects for implementation of a RBI system that is tailored to the individual needs of their process plant facility.

## 2. Application of Codes and Standards in Pressure Vessels and Piping for Nuclear Power Plants

**Instructor:** George Antaki, P.E.

This course reviews the application of the ASME Boiler and Pressure Vessel Section III code for the design of nuclear plant components: vessels, tanks, piping systems, pumps and valves. It addresses the roles and responsibilities of the Owner, the designer, the regulator, and the authorized nuclear inspector. The course reviews the design methods, equations, and criteria, with example applications. The course also provides the regulatory requirements which apply to these components and a historical perspective on the evolution of the design and regulatory rules.

## 3. ASME B31.3 Piping Flexibility Analysis

**Instructor:** Don Frikken, P.E.

This course provides a foundation of knowledge necessary for those responsible for performing and managing piping flexibility analysis of new and existing systems. The expected outcome of this course is for the participants to be able to perform piping flexibility analyses of piping systems according to the requirements of ASME B31.3 using the CAESAR II piping flexibility analysis computer program. The course covers Code requirements for support, flexibility and reactions.

## 4. ASME B31.3 Process Piping - Design, Construction, and Mechanical Integrity

**Instructor(s):** Don Frikken, P.E. or Charles Becht IV, PhD, P.E.

This introductory course is designed to provide participants with a complete and up-to-date overview of the area of Piping Technology with an emphasis on process piping.

## 5. ASME B31.4 Liquid Pipelines and ASME B31.8 Gas Pipelines

**Instructor:** George Antaki, P.E.

This course covers the requirements and practices of the oil and gas pipeline codes ASME B31.4 and ASME B31.8, and evaluation of corroded pipelines per B31G.

## 6. ASME Section VIII, Pressure Vessels; Design Fabrication, Inspection, Flaw Detection and Repair

**Instructor:** Kamran Mokhtarian, P.E.

This course will cover all significant requirements of the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1. Participants will learn how to apply the design and fabrication rules to this Code, as well as the basis for some of the rules.

## 7. \*API 579 / ASME FFS-1 Fitness-for-Service

**Instructor:** George Antaki, P.E., L. Louis Loushin, P.E.

This course will cover the methods for the evaluation of the integrity and remaining life of damaged and corroded tanks, vessels, piping and pipelines, using API 579/ASME FFS-1 Fitness-for-Service.

## 8. \*Elements of Applied Process Engineering

**Instructor:** Gennaro J. Maffia, PhD

This course introduces the concepts that are needed to understand the performance and design of unit operations in Chemical Process Plants. The key principles of process engineering and how they are applied to the design, evaluation and operation of chemical plants will be covered.

## 9. \*Engineering Problem Solving for the Process Industry (Process Plant Troubleshooting)

**Instructor:** Joe Bonem

Course participants will be introduced to problem solving techniques that have been proven to be successful in solving problems that were too complicated to be solved by classical techniques. In addition, students will learn the basics of formulating theoretically correct and practical working hypotheses.

## 10. \*Failure Prevention, Repair & Life Extension of Piping, Vessels and Tanks

**Instructor:** George Antaki, P.E.

This course provides the technical and ASME Code basis to understand the causes of failure, optimize inspections, calculate margins and remaining life of degraded components (tanks, vessels, boilers, piping systems and pipelines), and select and implement the optimum repair techniques

## 11. Fundamentals of Process Engineering

**Instructor:** Gennaro J. Maffia, PhD

An introductory course which provides an overview of the field of process engineering from the development of a process flow schematic to the evaluation of operating and proposed technology.

## 12. Introduction to Welded Steel Storage Tank Design, Fabrication, Installation and Inspection using API 620, API 650, and API 653

**Instructor:** Radha Radhakrishnan or Jack Mooney

An essential course for engineers and inspection and maintenance personnel involved in the design, purchasing, fabrication, repair, alteration, reconstruction, or maintenance of new atmospheric and low-pressure steel tanks to meet API Code requirements.

## 13. Operation, Maintenance and Repair of Plant Piping Systems

**Instructor:** George Antaki, P.E.

This course covers the fundamentals of design, layout, fabrication, examination and testing as it relates to preventative repairs and modifications of piping systems.

## 14. Piping Vibration Analysis & Practical Engineering Solutions in Process Plants

**Instructor:** Charles Becht IV, PhD, P.E.

This course provides a background on fundamental causes of piping vibration and how to identify sources of vibration, rules of thumb and simplified methods for evaluating vibration severity, and methods of treatment. A wide variety of causes of vibration are covered in order to enable the participant to properly evaluate the variety of piping vibration problems that can occur in piping systems.

## 15. \*Process Hazard Analysis Methods and Leadership

**Instructor:** William F. Kenney or John Hauser

To provide participants with the knowledge and leadership skills to lead teams in effective Process Hazards Analysis (PHA) Studies. Course includes content based upon OSHA 29CFR Part 1910; Process Safety Management (PSM) Regulations.

## 16. Refining 101 - The Primer on Refinery and Petrochemical Industry Equipment

**Instructor:** Ted Princiotto

This introductory course will present an overview of the types of equipment used in the refining and petrochemical industry. The emphasis will be on equipment key features, terminology and design requirements. While any one piece of equipment is worthy of a five day course, this course is intended to present the fundamental concepts of operation and design and role that codes and standards play in equipment selection and design.

## 17. Refinery and Petrochemical Industry Material Selection and Corrosion

**Instructor:** Tony Scribner

An essential course for engineers, designers, inspection and maintenance personnel to understand basic corrosion and metallurgical concepts, deterioration mechanisms, recognition and evaluation techniques to avoid failures and costly downtime.

## 18. \*Seismic Design and Retrofit of Equipment and Piping

**Instructor:** George Antaki, P.E.

The three-day course addresses methods, criteria for the seismic design and retrofit of systems and components, in accordance with the international building code, and ASCE, ASME, AISC, ACI, IEEE and ICBO standards. Participants will learn seismic qualification techniques based on analysis, shake table testing, and use of lessons learned from the effects of real earthquakes applied to the major categories of distribution systems, mechanical equipment and electrical equipment. The course includes real equipment qualification examples for preparing the qualification specification, selecting the methods and criteria, performing the qualification, and interactions assessments.

## 19. \*Thermal-Hydraulic Transients in Piping Systems

**Instructor:** Frederick J. Moody, PhD

A practical course to understand and predict transients and hammers in piping systems, including 2-phase flow and trapped gas effects.

## 20. Welding Engineering, Fabrication, and Inspection - AWS, ASME and API Codes

**Instructor:** Harry Ebert, P.E.

This course is designed to introduce equipment-oriented engineers and technicians to the basic principles and applications of welding engineering – a subject not covered by standard engineering college programs. It is loaded with practical experience and introduces students to the AWS, ASME and API codes which govern welding.

For questions regarding any of these courses or to schedule an in-house course for your organization, please contact our training coordinators at (949) 660-1480 or [info@becht.com](mailto:info@becht.com).