

Who Should Attend

This course provides an overview of all significant aspects and considerations of piping for those who are involved in the design, analysis, fabrication, installation, maintenance or ownership of piping systems. Engineers, maintenance, quality assurance, and manufacturing personnel who work in the chemical, petroleum, utility, plastic processing, paper, manufacturing, environmental, heat and air conditioning fields will find it a time-saving means to broaden and update their knowledge of piping. Those who must comply with Code requirements will benefit from the practical approach presented in this course in obtaining satisfactory and economical piping systems.

Learning Objectives

Upon completion of this course, you will gain an understanding of the physical phenomena which affect the design of piping systems: the ASME Code formulas and other methods by which these phenomena can be analyzed to determine resulting stresses, evaluation of those stresses relative to ASME Code limitations, the methods by which piping systems are fabricated, inspected and tested, and the additional requirements which need to be in a fabrication/installation specification to ensure adequate and proper installation.

Course Description

The course will review the *basic* requirements of the various sections of the ASME B31 Code for Pressure Piping with emphasis on B31.1, *Power Piping*; B31.3, *Chemical Plant and Petroleum Refinery Piping*; and the piping portions of ASME Section III, *Nuclear Power Plant Components*, Classes 2 and 3. General topics in the course include: pressure design, flow and sizing considerations, flexibility analysis, dead loads, equipment loads, dynamic loads, and supports and restraints. Applications of these concepts, including simple hand analysis methods and computer-based analysis methods, will be demonstrated. Examples of the required analysis and sources of further information will be provided. The practical aspects of material selection and fabrication will be considered, including materials for high and low temperature service, cutting, bending, welding processes, heat treatment requirements and nondestructive examination. Code requirements and the practical limitations of each operation will be discussed, as well as the economics of material selection and alternate fabrication processes.

Each session will be conducted in a lecture/discussion format designed to provide intensive instruction and guidance on understanding Code requirements, and also on developing an awareness of other considerations in the design, analysis, fabrication and installation of piping which is not covered by the Codes. **There will also be a demonstration of computer software that can be used to assist in piping analysis.** The faculty will be available following each day's session to provide participants with further opportunity for discussion and consideration of specific problems.

JULY 10-12, 2001 • NEW BRUNSWICK, NEW JERSEY

COURSE OUTLINE

Piping Design, Analysis and Fabrication

▼ FIRST DAY

Overview of Piping Codes

- Historical Development of Codes for Pressure Piping
- Current ASME B31 Codes
- ASME Section III, Piping

Design Methods—Piping Design

- Code Requirements
- Allowable Stress Basis
- Pressure Design
- Flow Rate and Diameter Considerations

Piping System Analysis/Static Loading—Part 1

- Types of Static Loads
- System Expansion
- Simplified Manual Analysis
- Equipment Nozzle Loads
- Flexibility Methods
- Application to an Actual System

Piping System Analysis/Static Loading—Part 2

- Weight Analysis
- Wind Loading
- Supports
- Application to an Actual System

▼ SECOND DAY

Piping System Analysis/ Dynamic Loading—Part 1

- Nature of Dynamic Loads
- Seismic Loads
- Application to an Actual System

Piping System Analysis/ Dynamic Loading—Part 2

- Hydraulic Transients
- Relief Valves
- Application to an Actual System

Piping Deadweight and Thermal Analysis Using PC-Based Software

Piping System Materials

- High Temperature and Low Temperature
- Corrosion
- Materials Specifications

▼ THIRD DAY

Fabrication Practices

- Cutting
- Bending
- Welding Processes
- Heat Treatment
- Cleaning
- Painting
- Storage
- Pressure Testing

Inspection Practices

- Visual Inspection
- Liquid Penetrant
- Magnetic Particle
- Radiographic
- Ultrasonic Examination
- Cost Effectiveness of Examination Method

Comparison of Fabrication Requirements

- Review of Variations Between Codes Regarding Fabrication and Examination Requirements and Accept/Reject Criteria

To Register For This Course On Line

Point your browser to www.cfpa.com. At “**Quick Jump to Course Information**” enter the number **0496**, then follow the prompts to register.

Registration Form For: **0107-203**

Piping Design, Analysis and Fabrication

July 10-12, 2001 • New Brunswick, NJ

Registration Code (for office use only):

Dr. Mr. Ms. _____

Job Title _____

Company/Institution _____

Company Address _____ Street _____

City _____ State _____ Zip _____

Business Phone _____ FAX Number _____

Email Address _____

Tuition and Payment Methods

Tuition \$1355

**Discounted Tuition \$1300*

****The discounted tuition is for two or more enrollments from the same company, for the same offering.***

- Register on line at www.cfpa.com
- Register by Phone: 732-613-4500; or Fax: 732-238-9113
- Register by Mail: Please make checks payable to:
The Center for Professional Advancement and mail to: **Box 964, East Brunswick, NJ 08816-0964**
- Purchase order # _____
Purchase orders must be received in advance of the course
- Pay by Credit Card: Visa Mastercard Am. Ex.

Card # _____

Exp. Date: _____

Cardholder Name _____

Signature _____

How did you learn about this course? Direct Mail
 From Supervisor Passed On _____

Please return this application to ensure enrollments. Applicants may cancel up to ten (10) working days before the first day of the course for a full refund. Cancellations received later than ten days prior to the course are subject to a \$100 service charge. Those who have not cancelled two working days prior to the course, and “no shows” are subject to the entire fee. Substitutions may be made at any time. A \$25.00 surcharge will be assessed if invoiced or if payment is made after the course begins. *The Center reserves the right to modify course material or schedule or substitute speakers without notice.*

ID #0496 CO-255

Course Co-Directors

Lawrence A. Loziuk, P.E. is President of Piping Technology Consultants, Inc., a consulting firm specializing in the design, analysis and trouble shooting of piping systems. During his thirty-one year career, he worked for a number of large Consulting Engineering firms including Duke Engineering & Services, ABB Impell, Sargent & Lundy, and GDS Associates. Mr. Loziuk served as the Chairman of the ASME Working Group on Fiberglass Pipe and was a member of ASME Section III Subgroup on Design. He is currently a member of ASME QME Working Group on Dynamic Restraints. He holds six patents related to WEAR™ (Wire Energy Absorbing Rope) Pipe Restraint.

Walter J. Sperko, P.E. founded Sperko Engineering Services, Inc. in 1981. He has extensive experience in welding engineering, metallurgical engineering, design, failure analysis, and quality assurance. Mr. Sperko's industrial experience primarily involves piping, pressure vessels, storage tanks and structural steel.

Mr. Sperko worked for Ebasco Services in the Materials Engineering and QA group, for ITT Grinnell Industrial Piping as manager of Piping Fabrication Technology and Standards, and for Richmond Engineering Company as Corporate Welding Engineer and branch plant Quality Control Manager. He is a member of the ASME Boiler and Pressure Vessel Code, Subcommittee IX, *Welding and Brazing Qualifications* and several of its subgroups: Subgroup on Materials, Fabrication and Examination of Subcommittee III, *Nuclear Components*; ASME Subcommittee B31.9, *Building Services Piping*; the American Welding Society Committee D-10, *Welding of Piping and Tubing*. He holds two U.S. patents and has published articles in the *Welding Journal*, *Welding Design and Fabrication* and *The Fabricator*, and co-authored the Piping Design Section of the *Standard Handbook of Plant Engineering*.

Continuing Education Units

The Center for Professional Advancement has been reviewed and approved as an Authorized Provider of continuing education and training programs by the International Association for Continuing Education and Training (IACET). 1.8 Continuing Education Units (CEU) will be awarded for participation in this course. This is based upon ten classroom contact hours per unit. For further information, ask for our brochure, "The Continuing Education Unit."

ID: 0496-10A; CD: 1807-D1, 1808-D1

Who We Are

The Center for Professional Advancement is the largest technical training organization in the world, with a curriculum of over 600 short courses. Since our founding in 1967, we have successfully trained more than a quarter million people worldwide, in subjects ranging from Chemistry to Engineering, from Pharmaceutical Technology to the Chemical Process Industries, and from R&D to Quality and Manufacturing.

What sets us apart is our consistent practice of offering only pragmatic, application-oriented programs, which evolve as rapidly as the technologies that they cover. These programs will provide you with up-to-date information that you will successfully put to practice the day you return to your job.

Course Location

This course will be held at our Academic Center, in the Hyatt Regency New Brunswick hotel, New Brunswick, New Jersey. A limited block of rooms will be held for our registrants until three weeks before the course. Participants must, however, make their own reservation; the cost of hotel accommodations is not included in the course fee. Hotel information will be included with your acceptance. To receive The Center's rate and room block, please mention that you will be attending one of our courses. For reservations call 800-449-2533; outside U.S. call 732-873-1234.

Course Schedule

Pre-enrolled participants may register at 8:00 a.m. on the first day. The program consists of all-day sessions, starting at 8:30 a.m., until approximately 3:30 p.m. on the last day. An evening session is usually scheduled.

Tuition \$1355

Tuition payable in U.S. Funds, net of all charges and taxes, includes luncheon, beverage breaks and course notes. See registration form for terms, conditions and discounts for multiple registrations.

CFE Association for FACILITIES ENGINEERING

Recertification Credit

To maintain status as a Certified Plant Engineer, a CPE must earn credits within each five year period of certification. By attending this course, the CPE can earn one of the required eight credits. Simply submit a copy of the CEU Certification when applying for recertification.



Society of Manufacturing Engineers

MECI Certified Manufacturing Engineers (CMfgE) and Technologists (CMfgT) may earn 18 recertification credits for attending this program. Certification is valuable to everyone in industry. It is a recognized method of maintaining knowledge and skills in your field. For complete details on MECI Certification, contact Diane Wrobel, Coordinator, SME, Manufacturing Engineering Certification Institute, One SME Drive, Dearborn, MI 48121, 313-271-1500, ext. 516.

Understand the physical phenomena which affect the design of piping systems

Explore the methods by which piping systems are fabricated, inspected and tested

Learn the necessary requirements for fabrication/installation specifications



The CENTER for PROFESSIONAL ADVANCEMENT

For Registration Only:
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For all Other Requests:
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Includes Piping Analysis
PC Software Demonstrations

Piping Design, Analysis and Fabrication

per ASME B31 Code
for Pressure Piping and
ASME Boiler Section III

A Three-Day
Intensive Course

July 10-12, 2001
New Brunswick, New Jersey

Directed by Larry Loziuk, P.E., President,
Piping Technology Consultants, Inc.
and
Walter J. Sperko, P.E., Founder,
Sperko Engineering Services, Inc.



Continuing Education
Through Total Involvement
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