



The Fiberglass Institute Presents...

FRP 301 – Introduction to Design and Condition Assessment

Course Schedule and Fees

www.frpi.org/Seminars.html

NCEES Authorized



Registered Continuing
Education Program

What are people saying about FRPI seminars?

“The study and case histories of fiberglass failures provided considerable insight and credibility for specs aimed at minimizing probability of future failure.”

“The seminar did not promote a specific manufacturer and was true technology transfer”

“It was like drinking water from a fire hose! Samples, pictures and stories were very helpful learning tools and good reminder the devil is in the details.”



210 Park Avenue, #8; Worcester, MA 01609
508-380-2232

Fiberglass Reinforced Plastics Institute, Inc.

Syllabus

Course: FRP 301 – Introduction to Design and Condition Assessment

Duration: Eight (8) contact hours of instruction, with CEU, PDH and TCH credit opportunities.

Description: This course provides a hands on detailed look at how fiberglass reinforced plastic (FRP) laminates used in the fabrication of chemical process equipment are designed and manufactured, what their properties are and how they typically fail in service as fabricated structures. This information will help seed your knowledgebase for root cause/affect and cost/value tradeoff centered decision processes. Industry standards and certification programs will be discussed. Both theory and practical experience are blended together with case histories to demonstrate good, risky and poor results that can be expected at design, during fabrication or in the field. Photographs, charts, handouts and demonstrations illustrate concepts, making it easy for beginners and experienced alike to sharpen their understanding of tradeoffs associated with specifying, selling, buying, manufacturing, installing and maintaining FRP equipment.

Learning Objectives: After attending this course, participants should be able to:

1. Differentiate and specify good, better and best FRP laminate designs for all applications.
2. Choose industry standards for design, fabrication and inspection purposes.
3. Determine which industry certification programs to use when.
4. Identify all types and compositions of laminates.
5. Assess the design basis for proposed and as built FRP laminates.
6. Describe laminate defects in new and degradation (“corrosion”) in used equipment.
7. Correlate deficiencies in new equipment to failure mechanisms observed in used.
8. Apply concepts to sound decisions that balance cost, risk and public welfare.

Who Should Attend:

- FRP Decision Makers
- Inspectors and QA/QC Personnel
- Designers, Engineers and PE’s
- Owner/User and Resident Engineers
- Specification Writers
- Installers, Operators and Maintenance
- Project Managers
- Salespeople
- Purchasing Agents and Buyers
- Those New to Industry

Prerequisites: No prior knowledge, special areas of study or experience are required. A general understanding of FRP laminate design, industry standards, manufacturing and inspection may result in establishing a broader and deeper learning experience.

Recognition: A completion certificate will be issued to all attendees who participate in the entire program, with eight (8) Professional Development Hours (PDH’s) recorded for Professional Engineers. See Terms and Conditions of Registration for more information pertaining to credit opportunities for Professional Engineers and treatment plant Operators.

Skill Assessment: A quiz will be conducted as the last session, with answers discussed within the group as an ungraded learning confirmation exercise. Attendees desiring PDH and TCH credits will be given a program evaluation survey at the end of the course and required to complete it. All attendees are welcome to participate in the survey.

Instructor: Gary L. Arthur – FRPI Executive Director and President (see Educator Bio/CV)

Fiberglass Reinforced Plastics Institute, Inc.

Biography

Gary L. Arthur – Executive Director and President



Gary Arthur is second generation family member in the fiberglass industry, where his father is remembered as one of industry's founders since the mid 1950's. Gary's first shop floor assignment was in June 1973 at age 14. With 28 years professional industry experience, he has built a knowledge base from 15 years in manufacturing, 8 on his own delivering independent consulting services and as a manufacturer's representative supporting 9 fiberglass equipment suppliers plus 12 overlapping years in fiberglass industry organization leadership. As family member, officer, owner and director of small companies, Gary has had direct hands-on involvement in most aspects related to day to day business operations in the fiberglass process equipment industry. Involvement with new equipment manufacturing ranges from R&D, marketing, cost estimating and sales through design, engineering, fabrication and QA/QC. His construction services

and used equipment work experience includes installation, condition assessment, maintenance and repairs plus alterations on most major brands of equipment.

Gary was partner and owner of Industry's first ASME RTP-1 certified vessel manufacturing operation in 1993 possessing stamp 001, where he is regarded as leader bringing RTP-1 capabilities to market over the past 22 years. He has been performing and managing field services beginning in 1988, with involvement in federal OSHA regulations since their initial development in the early 1990's. Gary has also been an authorized tank inspector working with state agencies and legislators on implementation of aboveground storage tank manufacturing and inspection regulations.

Gary's business, engineering, manufacturing, construction and quality control experience is complemented by additional hands-on knowledge gained through touring resin and reinforcement production and distribution facilities plus working with several materials testing laboratories. His ongoing involvement in vetting capabilities plus auditing engineering and production work for dozens of diverse equipment manufacturing operations across the United States and Canada has further afforded him wide industry insight and vision.



Years of mentoring by Industry gurus back in the late 1980's and early 1990's plus Gary's completion of the fiberglass industry's largest equipment failure study provided him an invaluable foundation for understanding manufacturing variables as they relate with both successful and unsuccessful case histories. Through teaching plus attending, presenting and publishing technical papers at engineering conferences around the US, Gary has accumulated over 900 hours of continuing fiberglass industry education.

In 2003 Gary worked with a balanced group of industry representatives and founded the Fiberglass Reinforced Plastics Institute, where he has been serving as Executive Director and President since inception. With the help of hundreds of supporters now, Gary leads a mission aimed at eliminating risks associated with fiberglass equipment performance.

With thousands of projects under his belt involving all types of fiberglass equipment, Gary possesses a very broad industry and application background with extensive cradle to grave experience. Equipment categories include tanks, vessels, process piping, covers, ductwork, scrubbers, stacks and chimney liners. Applications encompass UL, FM, FDA and NSF regulations as well as span chlorine, die and pigment, pulp and paper, power, pharmaceutical, food, metal processing and plating plus water and wastewater treatment industries. Gary Arthur has been acclaimed to be a fiberglass industry expert by many.

FIBERGLASS REINFORCED PLASTICS INSTITUTE, INC. STANDARD TERMS AND CONDITIONS OF REGISTRATION

COURSE: FRP301 Intro to Design and Condition Assessment

Course registration and payment. The convenient method of course registration is online through our website Seminar page registration portal sponsored by EventBrite, with payment by major credit card. Registration and payment by VISA, MasterCard and company or personal check may be made via email, regular mail, UPS, FedEx or other delivery services, with method of payment and registration form enclosed. Registration forms are available on our website Seminar page. If a membership discount is claimed, then the membership application must be received and fee paid prior to or on the day of course registration. The preferred method of membership payment is online through our website Membership page ecommerce portal "Join Now" button, with payment by VISA or MasterCard and application emailed simultaneously. Membership payment by VISA, MasterCard and company or personal check may be made via email, regular mail, UPS, FedEx or other delivery services, with method of payment and membership application enclosed. Membership payment by check must be received on or before the 7th day preceding course registered for. Membership applications are available on our website Membership page. Full payment must be made at time of registration in US dollars. Fax registrations cannot be accepted, as we no longer support this antiquated technology. Invoicing for registration and membership is only available for 30 days advanced group registrations, where groups are 5 or more, individual registration forms and membership applications are required and payment terms are due on invoice. Course registration fees include handouts, morning and afternoon refreshment breaks plus lunch for full day sessions. Due to planning constraints, FRPI regretfully directs those with special assistance and meal needs to make their own arrangements at their expense. Any and all travel, living and miscellaneous expenses incurred beyond the course registration fee by attendees are for their own account.

Travel arrangements and hotel accommodations. All travel and living expenses are for attendees account. FRPI may negotiate discounts and/or room blocks for hotel arrangements associated with stays concurrent with our courses, details of which will be provided within each course online event description when negotiated. While FRPI may have provided hotel arrangement options, attendees are expected to make their own independent or group travel and living arrangements if needed. Course host hotels are named with links on our website Seminar page.

Registration deadline. All online registrations must be received on or before the 2nd business day preceding the course registered for. All registrations made via email, regular mail, UPS, FedEx or other delivery services must be received on or before the 7th day preceding course registered for. Registration is closed the first business day before and morning of a course.

Registration confirmation. A confirmation of registration will be sent upon receipt of complete information and payment.

Cancellation, transfer or substitution by attendees and refunds. All cancellation notices by attendees must be in writing, with written acknowledgment by FRPI. Refunds of registration fees offered for cancellation are as follows: 100% with 14 days prior notice and 75% with 7 to 13 days prior notice. Attendees may transfer into another course or name a substitute with written notice to FRPI, registration form for substitute if applicable and \$50 rescheduling fee payment received up to 7 days prior to course. Acceptance of transfer or substitution request is contingent upon course availability as is applicable and acknowledgment by FRPI in writing. Transferring may only be done once per attendee per course. No refunds, transferring or substitutions are permitted within 6 days prior or for partial or non-attendance the day of the course. Cancellation within 6 days of course resulting from special circumstances such as acts of god or substantial extraordinary events proven beyond attendee's or their employer's reasonable control may receive special refund, transfer or substitution consideration.

Rescheduling, cancellation or instructor changes by FRPI and refunds. FRPI reserves the right to reschedule and cancel courses or change instructors. It is FRPI's intent to provide programs as advertised. However, circumstances that arise beyond FRPI's control may warrant unexpected changes. Registered attendees will receive a 100% registration fee refund for canceled courses and rescheduled courses if the registered attendee cannot transfer or name a substitute. In the very unlikely event an instructor change must be made, no refunds are available. Any losses or damages incurred by registered attendees as a result of FRPI course changes are for the attendee's account.

Continuing education credit for Professional Engineers. FRPI has met the standards and requirements of the Registered Continuing Education Providers Program (RECP). RECP is an online service initially provided by a partnership between the National Council of Examiners for Engineering and Surveying (NCEES) and American Council of Engineering Companies (ACEC). In order to meet RECP criteria and be listed in their directory, FRPI had been initially vetted by NCEES and nor RCEP on an ongoing basis in order to ensure a high level of instructional quality, adherence to high standards and effective practices in

professional training. Credit earned on completion of FRPI programs will be reported to RCEP. A RCEP certificate of completion will be issued to each participant desiring credit. The certificate does not include content that may be deemed or construed to be an approval or endorsement by NCEES or RCEP. RCEP certificates will only be issued to Professional Engineers who participated in the complete course. Course sign in will be required. No partial credit will be given. RCEP and FRPI do not guarantee state board acceptance of FRPI course credit towards state Continuing Professional Competency (CPC) requirements for renewal of Professional Engineer licenses. Professional Engineers desiring state board credit for Professional Development Hours (PDH's) earned through participation in FRPI courses are encouraged to verify state board acceptance of the FRPI program in advance. RCEP offers a directory of state board contacts at the following website link: <http://www.rcep.net/Licensing-Requirements/Directory-of-State-Boards-1118.htm>.

Training contact hours' credit for Operators. FRPI will issue a certificate to those Operators who participated in the complete course. Course sign in will be required. No partial credit will be given. Operators of wastewater and water treatment plants desiring state organization (i.e. Department of Environmental Conservation, Department of Environmental Protection) credit for Training Contact Hours (TCH's) earned through participation in FRPI courses are encouraged to verify state acceptance of the FRPI program in advance and must present a photo ID and copy of their operator's license upon signing in at the course if credit is desired. FRPI will make every effort reasonable to assist Operators with getting TCH credit for course completion. FRPI does not guarantee state acceptance of course credit.

Dress. Business casual.

Equal Opportunity. It is FRPI's policy that no person will be discriminated against or denied course participation due to race, color, religious belief, sex, marital status, national origin, ancestry, sexual orientation or disability.

Copying and recording course material. All individual and collective works presented and distributed during the course are copyright protected. Copying material plus audio, still and video recording of any or all course works is prohibited. Recording devices will not be permitted in the room used for the course, including cameras, camcorders and cell phones.

Personal property. Attendees are responsible for their own personal items brought to or left at the location where the course is conducted. FRPI cannot assume responsibility for missing or damaged items.

Course offers. Content and pricing are subject to change.

Tax deduction. Consult with your accountant or financial advisor and be sure to take advantage of tax deductions that may be available for continuing education.

Standard Terms and Conditions. All course sales are subject to FRPI Terms and Conditions published through the FRPI website and herein. In the event of conflicts arising between published FRPI Terms and Conditions, the following order of precedence shall govern: first Standard Terms and Conditions of Sale, second Online Event Details and third this Standard Terms and Conditions of Registration.