

API 936 REFRACTORY QUALITY CONTROL PERSONNEL CERTIFICATION PREPARATION PROGRAM

COURSE DURATION: 4 DAYS

COURSE DESCRIPTION

The API 936 training course will take place over 4 days. The course will be broken up into four different sections, which will be covered during the four days of the course. At the end of the course, all students should be in a position to be able to pass the API written exam.

Whether or not the students choose to take the exam, all the information processed during the course will be a fundamental stepping-stone in the understanding of the refractory process, applications and specifications covered in all industries throughout the world from the petro chemical industry to light industry.

PREPARE YOURSELF TO BE A CERTIFIED API 936 INSPECTOR!

COURSE OBJECTIVES

The objective of the course is to gain the relevant knowledge of the following applications, procedures and processes relating to the uses and installation of refractory materials:

- ✓ Preparation of the unit for refractory installation
- ✓ The installation of refractory and curing methods
- ✓ Inspection of refractory after air drying and firing
- ✓ Testing of refractory as installed
- ✓ Repairs to refractory linings
- ✓ Questions and answers

COURSE OUTCOMES

For The Industry

- Ensures that refractory personnel demonstrate competence in content areas that are relevant to their practices.
- Raises the bar of competence for qualified personnel that demonstrates knowledge of the relevant content of refractory installation and inspection.

For The Personnel

- Provides a method to demonstrate knowledge and experience with refractories and refractory inspection to employers and clients.
- Inspectors and other professionals serving the petroleum, petrochemical, and chemical industries are readily able to provide evidence of proper qualification.



WHO SHOULD ATTEND?

Designed for refineries, chemical & oleo-chemical plants, power plants, etc with boilers (such as auxiliary boilers), heating equipment (such as furnaces, tubular heaters) and other equipments with refractory:

- API inspectors and inspectors of statutory equipments
- Asset Integrity Engineers
- DOSH Officers involved in power plant and equipment inspection (with refractory)
- Inspection Engineers of power boilers with refractory
- Maintenance Technician/Engineers
- Project Engineers
- QA /QC Inspectors

No required class pre-requisites. However, if you wish to pursue the API Certification Exam, a minimal years of experience on subject matter is required depending on your educational qualifications.

Please refer to the Exam Qualification Requirements at:

www.api.org/icp



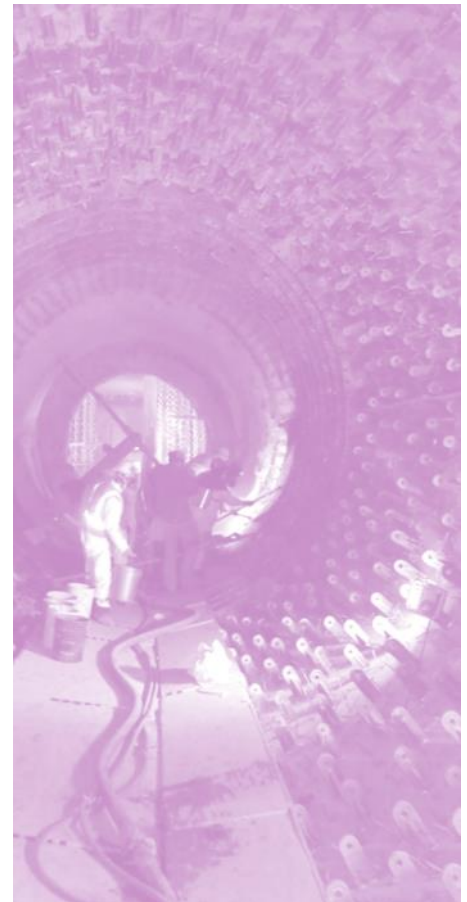
COURSE OUTLINE

DAY 1

1. A summary of all terms and definitions that will be used during the duration of the course.
2. Different installation methods used in industry today eg casting, guniting, ramming, and hand packing
3. The specification for sampling of the refractory material and the sample preparation procedures
4. Procedures to determine water content prior to mixing the refractory.
5. The relevant manufactures information regarding the supplied refractory material
6. The contractor knowledge of the equipment to be utilized, and the qualification process for the contractor prior to work
7. Testing of the contractor with a mock-up test panel procedure.
8. The environmental control issues.
9. The surface preparation requirements and methods.
10. Question and answers.

DAY 2

1. Execution of plan and detailed knowledge of the design and specifications
2. Storage and packaging of the refractory material
3. The job specifications and application standards
4. The surface requirements and the procedures prior to casting
5. The lay-out of the anchors and the marking of areas
6. Welding of the anchors as per specifications
7. The frequency and methods of the sampling for guniting, casting and hand packing
8. The water content, quality and temperature of the water and the mixing procedure
9. The addition of fibre and the percentages as per the specifications
10. The responsibility of the contractor and the documentation requirements
11. The inspection and information collection procedure
12. The refractory lining design and the installation requirements
13. The visual and non- destructive methods for testing and qualification of the refractory lining
14. The traceability and verification of the refractory material
15. The acceptable refractory repair procedures
16. Acceptable refractory lining and reject refractory criteria



COURSE DURATION

- 4 Days Training

DAILY SCHEDULE

- 8:30am - 5:30pm (Workshop)

ITEMS TO BRING

- Calculator
- Lots of Questions
- A "CAN-DO" Attitude
- **Codes/Standards (in hardcopy)**
* Please refer to 936 Publications Effectivity Sheet at http://www.api.org/~media/Files/Certification/ICP/ICP-Certification-Programs/936/April%20936-PublicationsEffectivitySheet-April%20-%20Dec%202017_201706.pdf

Stationeries such as pen and highlighter will be provided.



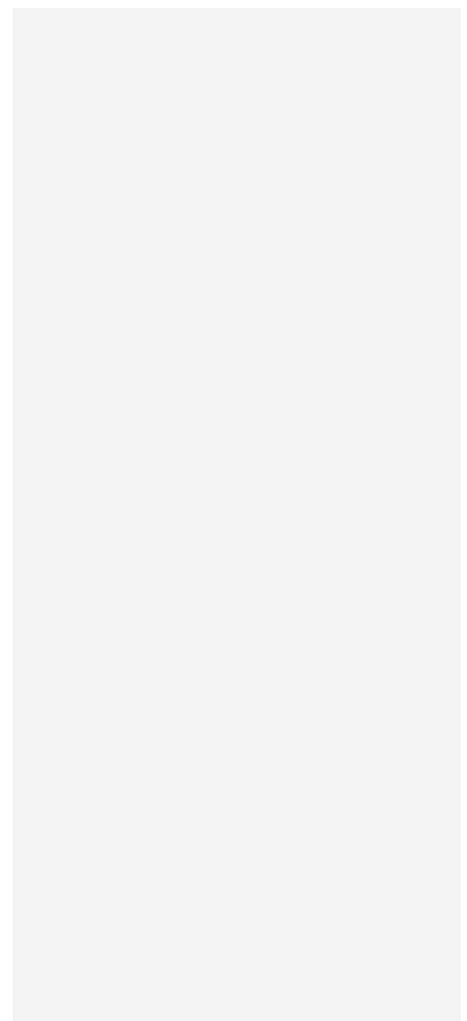
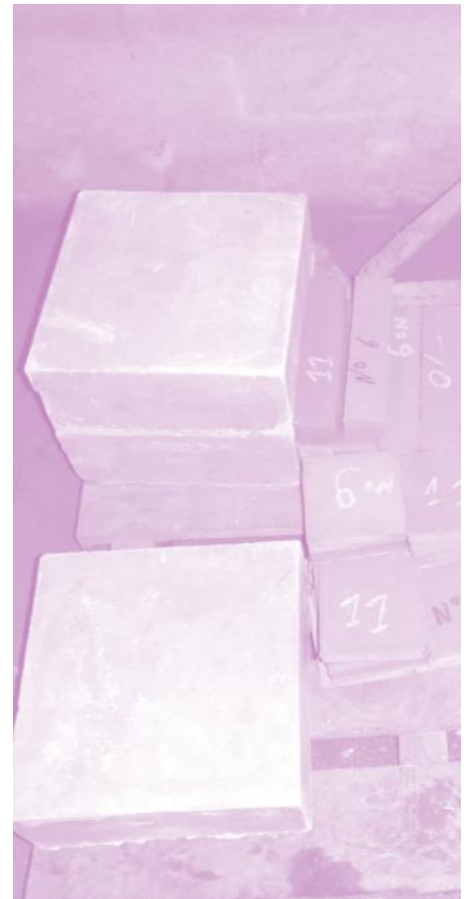
17. The dry-out procedures and curing methods
18. The dry-out procedure requirements for the test samples.
19. The responsibility of the inspection personal and the contractor
20. The responsibility of record keeping by the inspection and contractor personal
21. Environmental control of the temperatures eg heat and cold
22. Questions and answers

DAY 3

1. Terms and definitions relating to the following
2. The responsibility of the personnel and the specific documentation requirements
3. Becoming familiar with the dry-out requirements
4. Refractory sealing requirements
5. Application methods for applying the curing membrane
6. The required environmental conditions for the curing of the refractory
7. The heating equipment and required procedures
8. The placement of the temperature thermocouples
9. Knowing the manufactures heat up and cool down schedules and requirements
10. The applicable heating curve requirements for different classes of refractory
11. Assessing the lining integrity and the techniques for refractory lining inspection
12. The different test requirements and the methods to carry out the required testing
13. Testing for the material qualifications
14. The necessary testing equipment required
15. Dimensions and technique requirements for test specimens
16. The acceptance and the grounds for rejection of test samples as per the specifications
17. Questions and answers

DAY 4

1. Terms and definitions & glossary revision session.
2. Test





TRAINER'S PROFILE

ANTHONY BENSON

Anthony manage his own limited company as a Freelance Civil Engineering Project Manager / Inspector and have extensive experience within the construction industry on both large and small projects notably as Section Agent on (CTRL) Channel Tunnel Rail link in Kent, UK, and 1999 to 2006.

His expertise on Civil Engineering, Building, and Oil Refinery includes: Site Management, Co-ordination, Inspection, QA, Health and Safety, Engineering and Design Co-ordination, in Heavy Civils, Consulting for Oil Refinery FCCU shutdowns and New-Builds (including both Civil and Refractory Concretes).

SCOPE OF EXPERIENCE

Contract Management as Agent /Project Manager / inspector / Site Engineer / Engineering Co-ordinator

- Concrete Structures (Bridges, Canals, Water Retaining Structures) New Build
- Heavy Foundations including Piling
- Infrastructures Roads major and minor
- Water and Sewerage Treatment Plants New Build and maintenance
- Deep Drainage Storm and Foul Pipelines including Pipe-jacking, No-dig directional drilling
- Major Earthworks, Reinforced Earth Embankments,
- Structural Steel fabrication management (workshop) and erection on site
- Building (Commercial) – supermarkets etc
- Site Engineering (Setting-out dimensional control and Land Surveying)
- Health, Safety, Environment, Ecology as normal Site Practice
- Quality Assurance including Auditing
- Specialist Oil Refinery Inspection/Consultancy FCCU-Refractory
- Concretes /associated welding

EDUCATION & QUALIFICATIONS

- ✓ H.N.D (Civil Engineering) Kingston University Surrey 1975
- ✓ CSCS Managers card
- ✓ CCNSG Site Safety
- ✓ CITB - Construction Site Managers Safety Cert training (SMSTS 5 day)
- ✓ First Aid current (St Johns)
- ✓ API 936 - American Petroleum Institute Refractory Concrete Practitioner Certificate
- ✓ City and Guilds Concrete Technology 1979

