

# API 653 Certification Preparation



## INTRODUCTION

Do you need to become an API 653 Authorized Inspector? If so, this class is for you!

This class will help you prepare for the API 653 exam. Plus you will gain additional skills and knowledge that are important for your success on the job! We specialize in providing knowledgeable trainers who keep the classroom interesting.

## COURSE OVERVIEW

The course prepares the student for the API 653 exam. The course is an intensive one-week course with a heavy emphasis on the use of the codes and mathematical calculations. This course content includes:

- ◆ Using API 650 & API 653
- ◆ Performing Tank Calculation
- ◆ Reviewing WPS' & WPQ's per ASME Sect IX
- ◆ Using other miscellaneous Tank Codes
- ◆ Practice Exam similar to the API 653 Exam

## OBJECTIVES

The course provides participants with the knowledge necessary to:

- ◆ Successfully pass the API 653 storage tank inspector certification exam
- ◆ Effectively use major codes, API 650 and ASME B&PV sections V & IX
- ◆ Perform all tank calculations needed for the API exam
- ◆ Use API's requirements during inspection, repairs, and alterations of tanks
- ◆ Review welding procedures (WPS/PQR) and welder performance qualifications (WPQ)

## WHO SHOULD JOIN

This class is designed for pressure equipment inspectors and engineers working in refineries, chemical & industrial plants, gas plants, pipeline terminals, and oil fields.

## NOTES

This is an intense course with daily homework and a final exam. A study guide is issued to direct participant's pre-class study. "Download **pre-class Study Guide** from [www.msts-training.com](http://www.msts-training.com)"

## SPEAKER'S BACKGROUND

Mark Smith has worked in the petrochemical industry for 25 years and in the pressure equipment discipline for 16 years. He has been instructing inspection classes since 1992. Certifications obtained include: API 510/570/653.

Currently about 150 students per year attend one of his API courses. He is committed to helping each student achieve success.

## ABOUT MSTs

MSTs is a company specializing in providing the needed practical training for petrochemical pressure equipment inspectors and engineers.

Currently, MSTs provides eleven courses specifically designed to help pressure equipment personnel improve their technical knowledge and skills.

MSTs instructors are selected for their technical and "wake-ability" skills. ("Wake-ability" – the ability to minimize snores during long, boring technical training.)

## API TRAINING

MSTs most popular courses are the API certification classes. MSTs offer classes prior to each API exam.

These classes and exams are not easy, so only individuals who are serious about their pressure equipment career should participate.

**MSTs students generally have a 90% passing rate.**

## CLASS PARTICIPANTS

**\*Enrollment is limited to 20 students.**

Students who wish to apply for the API Exam should have at least 3 years of experience at a petro-, chemical- or industrial facility and have at least 1 year of inspection experience.

However, participants who do not meet this requirement are also welcomed to attend this Training to further their knowledge in the related areas.

Students should begin study for the exam about 6 weeks prior to the class. Our pre-class study guide is available to help you focus your efforts effectively.

Organized by:

**IDC**  
Training House Sdn Bhd

594752 (M)

HRD Approved Training Provider (AO470)  
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## FEEDBACK FROM PAST PARTICIPANTS

My API training with MSTs made me confident to know now that I am doing my job the right way. Mark not only explains the standards but also shares his own experiences as he teaches the class. My training also allowed me to meet and interact with my own peers and thus now have my own network worldwide. I would only complete my API trainings and reviews with MSTs.

*Malou M. Baluyut  
Senior Engineer  
Shell Guam, Inc.*



Have attended 2 API classes taught by Mark Smith. As advertised, Mark is one instructor from MSTs that has a very good technical and "wake ability" skills. He blends his unique humor well in the class and is successful in keeping everyone from snoring away in a week-long boring and yet intensive session.

I like Mark's training slides, they contain summaries of easy to understand and digestible notes which is important for the exam. Mark is very well verse with codes and standards. Backed by his past working experience and hands-on in the field, he is able to impart the requirement knowledge to all the course participants. There are lots of examples and stories relevant to the topics given which allow knowledge level individual to understand easily.

My success in API examination attributed much to the quality of his teaching and dedication in ensuring we are prepared in the exam hall.

*Lim Chon  
Senior Inspector  
Shell Refining Company  
Port Dickson, Malaysia*

I have attended numerous classes taught by Mark Smith (MSTs). I have always found the classes to be very interesting and extremely informative. Mark has a gift when come to teaching that makes everyone feel comfortable with the material and he can teach at any level.

In many classes I have attended, he has had a wide variety of skill levels and knowledge in his students and he has the ability to make sure that everyone can follow along and he keeps everyone participating in the class material. He can sense when a student may be falling behind or not fully understanding the material and makes it a point to bring them back up to speed.

I would highly recommend to anyone interested in succeeding in the inspection field to put their faith in Mark Smith. I personally attribute much of my success in this industry to Mark and his ability to teach!

*James Moore  
Senior Inspector  
Motiva Enterprises  
Convent, Louisiana*

I have sent my employees to other training classes and have had little positive feed back from the employees. This was reflected on their test scores. I then sent three other employees and I myself attended a MSTs class and was very pleased with the manner in which the subject matter was presented. All of my employees left with a real understanding of the subject matter, and confidence that they would pass their API exams!

*Robert G. Maddox  
Vice President of Operations  
Materials Technology Group L.L.C*

As I go along with MSTs, I found that it is really a worth investment for your future career. The more you listen to Mr Mark Smith, the more eager you want to be certified for API Certification. He is really a good teacher with a very wide knowledge and experience and for me, I can say **he's the No. 1 Lecturer** so far. I really appreciate IDC for its good service and support that has been given to me.

*CM Yahya  
Plant Inspector  
Ethylene Malaysia Sdn Bhd*

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## DAY 1

### 1) Welcome & Introduction

### 2) API 650 - Tank Fabrication Code. Understand the following key concepts.

- ◆ Purpose of the Code
- ◆ Scope of the Code
- ◆ Organization of the Code
- ◆ Key tank terminology
- ◆ Uniqueness of major tank components
- ◆ Qualification requirements specified by the Code
- ◆ Fabrication limits
- ◆ Inspection & Testing methods
- ◆ Tips on how to find needed information in the Code

### 3) API 650 - Calculations & Charts

- ◆ Minimum Design Temperature
- ◆ Impact Testing Limits
- ◆ New Shell Thickness
- ◆ RT's of new Shell Welds

#### Evening Session: API 650 Homework

Covers API 650 questions that are typical of those on the API exam and practice all Calculations covered in class.

## DAY 2

### 1) Review Homework from Day 1

### 2) API 653 - In-Service Tank Code. Understand the following key concepts.

- ◆ Purpose of the Code
- ◆ Scope of the Code
- ◆ Inspection Types & Inspection Schedules
- ◆ Risked Based Inspection (RBI)
- ◆ Suitability for Service Evaluations

### 3) API 653 - Calculations & Charts

#### Learn how to successfully determine the following:

- ◆ Corrosion Averaging for a Shell Corroded Area
- ◆ Minimum Thickness of a Shell Corroded Area
- ◆ Minimum Thickness of a Shell Course
- ◆ Maximum Shell Pit Depth
- ◆ Minimum Bottom Thickness at Next Inspection

#### Evening Session: API 653 Homework

Covers API 653 questions that are typical of those on the API exam and practice all Calculations covered in class. Also complete study Guide "*The Inspector's Calcs*" (covers Corrosion Rates, Remaining Life, and Next Inspection Date Calculations)

## DAY 3

### 1) Review homework from Day 2

### 2) API 653 - In-Service Tank Code. Understand the following key concepts.

- ◆ Types and results of Tank Settlement
- ◆ Brittle Fracture Evaluation for Existing Tanks
- ◆ Requirements and Limits of Bottom Repairs
- ◆ Requirements and Limits of Shell & Nozzle Repairs
- ◆ Requirements and Limits of Roof Repairs
- ◆ Design & Erection of Reconstructed Tanks
- ◆ Shell Hot-Tapping Limitations

### 3) API 653 - Calculations & Charts

#### Learn how to successfully determine the following:

- ◆ Shell Repairs - Weld Spacing Limits
- ◆ Bottom Repairs - Weld Spacing Limits

#### Evening Session: API 653 Homework

Covers API 653 questions that are typical of those on the API exam and practice all Calculations covered in class. Also start the Study Guide "*The API 575 Study Guide*".

## DAY 4

### 1) Review homework from Day 3

### 2) API 653 - In-Service Tank Code. Understand the following key concepts.

- ◆ Use of NDE for In-Service Tanks
- ◆ Hydrotest Requirements and Exemptions

### 3) ASME B&PV Section V - NDE. Understand the following key concepts.

- ◆ Purpose of the Code
- ◆ Organization of the Code
- ◆ RT Techniques
- ◆ Purpose & Selection of IQI's
- ◆ RT Film Density Requirements
- ◆ Key terms discussed in the Code
- ◆ Tips on how to find needed information in the Code

#### Evening Session: API 653 & ASME Sect. V Homework

Covers API 653 & ASME Sect V questions that are typical of those on the API exam. Continue on the Study Guide "*The API 575 Study Guide*".

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## DAY 5

- 1) **ASME B&PV Section IX - Welding Code: Understand the following key concepts.**
  - ◆ Purpose of the Code
  - ◆ Roles of the Inspector
  - ◆ Organization of the Code
  - ◆ Welding Positions - Test and Field
  - ◆ Testing Requirements and Acceptance Criteria
  - ◆ Welder Qualification Process and Restrictions
  - ◆ Weld Procedure Qualification Process and Restrictions
- 2) **Review and Evaluate a WPQ (Welder Performance Qualification)**
  - ◆ Repairs, Alterations & Rerating
  - ◆ Underground Piping
- 3) **Review and Evaluate a WPS (Welding Procedure Specification) and the associated PQR (Procedure Qualification Record)**

### Evening Session: Section IX Homework.

Covers ASME Sect IX questions that are typical of those on the API exam. Includes evaluating 2 WPQ's, and 1 WPS/PQR.

## DAY 6

- 1) **Review homework from Day 5**
- 2) **API 651 - Tank Cathodic Protection (CP)**
  - ◆ Basic Parts of a Corrosion Cell
  - ◆ Types of CP (with Advantages & Limitations)
- 3) **API 652 - Tank Coatings**
  - ◆ Types of Coatings (with Advantages/Limitations)
  - ◆ Causes of Lining Failure
  - ◆ Coating Installation Requirements

### Evening Session: API 651 & 652 Homework

Covers API 651 & 652 questions that are typical of those on the API exam. Continue on the Study Guide *"The API 575 Study Guide"*.

## DAY 7

- 1) **Review Homework from Day 6**
- 2) **Final Review**
- 3) **Practice Exam**
  - ◆ Closed Book Exam similar to the API 653 Exam
  - ◆ Open Book Exam similar to the API 653 Exam
  - ◆ Evaluate one WPS/PQR

## HOTEL ACCOMODATION INFORMATION

Status	Hotel	Single	Double	Walking Distances from Hotel to IDC / Amcorp Mall
2 stars	<b>SingahSana Hotel</b> <a href="http://www.hspj.com.my">www.hspj.com.my</a> Tel:(603)-7956 2100 Fax:(603)-7954 2041	RM 125.00 Approximately USD35 with breakfast		About 15 mins walking distance (just across the road).
2 stars	<b>Shah Village Hotel</b> <a href="http://www.shahsresorts.com">www.shahsresorts.com</a> Tel:(603)-7956 9322 Fax:(603)-7955 7715	RM 138.00 Approximately USD 40 with breakfast	RM 195.50 Approximately USD 56 with breakfast	About 10 mins walking distance (just across the road).
4 stars	<b>Armada PJ Hotel</b> <a href="http://www.armada.com.my">www.armada.com.my</a> Tel :(603)-7954 6888 Fax:(603)-7956 8088	RM 253.00 Approximately USD 77 With breakfast	-	Has to go by train, only 1 station away *near Aeroline station in PJ
4 stars	<b>Crystal Crown Hotel</b> <a href="http://www.crystalcrown.com.my">www.crystalcrown.com.my</a> Tel :(603)-7958 4422 Fax:(603)-7958 8408	RM 184.00 Approximately USD 53 With breakfast	RM 207.00 Approximately USD 60 With breakfast	About 15 mins walking distance. By taxi, about 8 mins.
5 stars	<b>Hilton PJ Hotel</b> <a href="http://www.hilton.com">www.hilton.com</a> Tel :(603)-7955 9122 Fax:(603)-7955 3909	RM 350.75 Approximately USD 100 with breakfast	RM 402.50 Approximately USD 115 with breakfast	About 15 mins walking distance. By taxi, about 8 mins.

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