

**COURSE OVERVIEW FE0987**

**Thermal Infrared Testing Level II Training & Certification**  
**(ASNT, SNT-TC-1A)**

**Course Title**

Thermal Infrared Testing Level II Training & Certification (ASNT, SNT-TC-1A)

**Course Date/Venue**

Session 1: May 18-22, 2025/ Boardroom 1,  
 Elite Byblos Hotel Al Barsha,  
 Sheikh Zayed Road, Dubai, UAE

Session 2: November 02-06, 2025/ Boardroom  
 1, Elite Byblos Hotel Al Barsha,  
 Sheikh Zayed Road, Dubai, UAE



**Course Reference**

FE0987



**Course Duration/Credits**

Five days (34 hours)/3.4 CEUs/34 PDHs

**Course Description**



***This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.***

The course will provide participants the theory lectures and practical training with a preliminary understanding of Thermal/Infrared Testing as per the ASNT Recommended Practice No. SNT-TC-1A for Personnel Qualification and Certification in Nondestructive Testing.



The course will discuss the heat definition, mode transfer, infrared spectrum and radiosity problems; the thermogram analysis and operating for infrared measurements, speed data collection and equipment for “active” technique; the report and documentation; the temperature measurements applications, energy loss analysis applications and software analysis for special applications; and the pipe and pressure vessel insulation analysis, qualitative and quantitative analysis of infrastructure and industrial equipment analysis.



Further, the course will also discuss the petrochemical industry, basic functions and standards for infrared inspection of electrical systems and rotating equipment; the delta T criteria for electrical systems and absolute temperature criteria for electrical systems; the NETA maintenance testing specifications; the experience-based criteria for electrical system; the practical analysis of electrical and mechanical thermograms; and the developed IR procedures and training programs.

Sample Questions for general examinations will be presented in the question booklet A that was obtained from ASNT headquarters. Participants will further demonstrate familiarity with and ability to operate the necessary equipment for Thermal/Infrared Testing, record and analyse the resultant information to the degree required as well as test flawed specimen and component and analyse the results of NDT as part of the practical training.

At the completion of the course, participants will be appearing for a Level II exam. Each candidate will be a 'Certified ASNT NDT Level II in Thermal & Infrared Inspector' upon successfully passing the examination with a minimum passing composite grade of at least 80 percent (%) which will be administered and graded by Haward Technology through its Certified ASNT Level-III instructors.

### Course Objectives

Upon the successful completion of the course, each participant will be able to:-

- Get certified as a "Certified ASNT Level-II Thermal & Infrared Inspector"
- Discuss heat definition, mode transfer, infrared spectrum and radiosity problems
- Apply thermogram analysis and operating for infrared measurements, speed data collection and equipment for "active" technique
- Review report and documentation and implement temperature measurements applications, energy loss analysis applications and software analysis for special applications
- Carryout pipe and pressure vessel insulation analysis, qualitative and quantitative analysis of infrastructure and industrial equipment analysis
- Discuss petrochemical industry, basic functions and standards for infrared inspection of electrical systems and rotating equipment
- Recognize delta T criteria for electrical systems and absolute temperature criteria for electrical systems
- Review NETA maintenance testing specifications and identify experience-based criteria for electrical system
- Perform practical analysis of electrical and mechanical thermograms as well as review developed IR procedures and training programs

### Exclusive Smart Training Kit - H-STK®



Participants of this course will receive the exclusive "Haward Smart Training Kit" (H-STK®). The H-STK® consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.

**Who Should Attend**

This course provides a wide understanding and deeper appreciation of thermal infrared testing for level I thermographer, plant engineer, quality control personnel, NDT technician and all the personnel in maintenance activities (electrical, mechanical, material testing).

**Exam Eligibility & Structure**

Exam Candidates shall have the following minimum prerequisites:-

Initial Training & Experience Levels			
Level	Training Hours	Minimum Hours in Method	Total Hours in NDT
I	32	210	400
II - Building Diagnostics	34	1260	1800
II – Electrical and Mechanical	34	1260	1800
II – Materials Testing	34	1260	1800

**Examinations Category & Criteria**

**Vision Examinations**

- Near-Vision Acuity
  - This examination will ensure natural or corrected near-distance acuity in at least one eye such that the applicant is capable of reading a minimum of Jaeger Number 2 or equivalent type and size letter at the distance designated on the chart but not less than 12 inches (30.5 cm) or a standard Jaeger test chart. The ability to perceive an Ortho-Rater minimum of 8 or similar test pattern is also acceptable. This examination shall be administered annually.
- Color Contrast Differentiation
  - This examination will demonstrate the capability of distinguishing and differentiating contrast among colors or shades of gray used in the method as determined by the employer. This shall be conducted upon initial certification and at five-year intervals thereafter

**General (Written)**

- This examination will address the basic principles of the applicable method
- The NDT Level III will provide appropriate questions covering the applicable method to the degree required by the employer’s written practice
- The minimum number of examination questions that will be given is 50

### Specific (Written)

- This examination will address the equipment, operating procedures and NDT techniques that the individual may encounter during specific assignments to the degree required by the employer's written practice
- The specific examination will also cover the specifications or codes and acceptance criteria used in the employer's NDT procedures
- The minimum number of examination questions that will be given is 40

### Practical

- The candidate shall demonstrate familiarity with and ability to operate the necessary NDT equipment, record and analyse the resultant information to the degree required
- At least one flawed specimen or component shall be tested and the results of the NDT analysed by the candidate
- The description of the specimen, the NDT procedure including check points and the results of the examination shall be documented
- Proficiency shall be demonstrated in performing the applicable NDT technique on one or more specimens or machine problems approved by the NDT Level III and in evaluating the results to the degree of responsibility as described in the employer's written practice. At least ten (10) different checkpoints requiring an understanding of test variables and the employer's procedural requirements will be included. The candidate shall detect all discontinuities and conditions specified by the NDT Level III

*Note: While it is normal to score the practical on a percentile basis, practical examinations will contain check points that failure to successfully complete will result in failure of the examination*

### Additional Criteria

All written examinations will be closed-book except that necessary data such as graphs, tables, specifications, procedures, codes, etc., may be provided during the examination. All questions are approved by the responsible NDT Level III.

### Course Fee

**US\$ 8,500** per Delegate + **VAT**. This rate includes H-STK® (Howard Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

### Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

**Course Certificate(s)**

- (1) Internationally recognized Competency Certificates and Plastic Wallet Cards will be issued to participants who completed a minimum of 80% of the total tuition hours and successfully passed the exam at the end of the course. Successful candidate will be certified as a “*Certified ASNT Level-II Thermal & Infrared Inspector*”. Qualification Certificate is valid for 5 years.

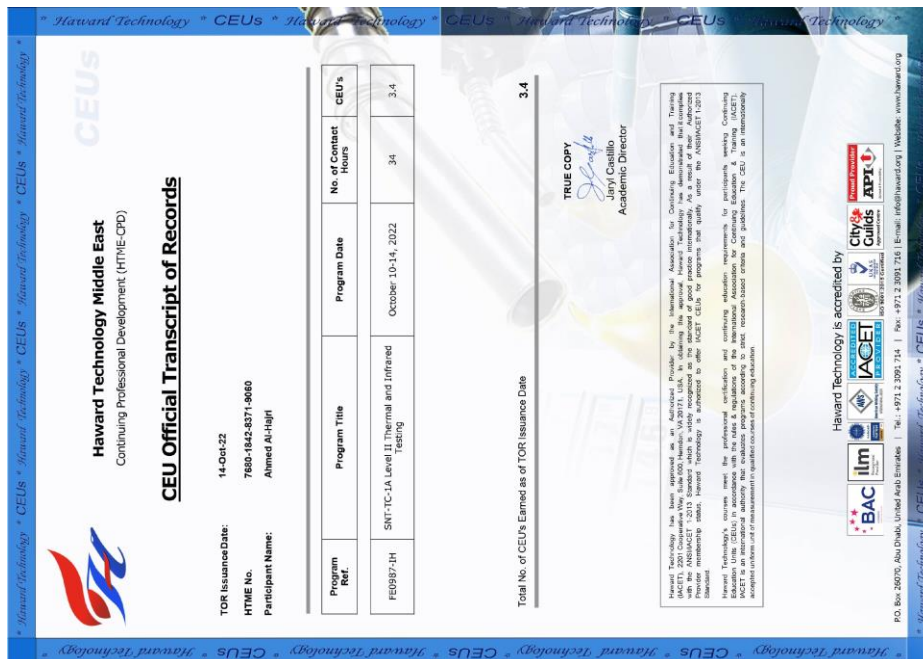
**Recertification is FOC for a Lifetime.**

**Sample of Certificates**

The following are samples of the certificates that will be awarded to course participants:-



- (2) Official Transcript of Records will be provided to the successful delegates with the equivalent number of ANSI/IACET accredited Continuing Education Units (CEUs) earned during the course




**Certificate Accreditations**

Haward Technology is accredited by the following international accreditation organizations: -

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The American Society for Nondestructive Testing (ASNT)

Haward Technology has certain instructors who are certified by **The American Society for Nondestructive Testing (ASNT)** and are authorized to conduct ASNT's certification programs for specific NDT methods. ASNT is the world's largest technical society for nondestructive testing (NDT) that provides a forum for exchange of NDT technical information, NDT educational materials and programs, and standards and services for the qualification and certification of NDT personnel.

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British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

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The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units (CEUs)** in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **3.4 CEUs** (Continuing Education Units) or **34 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

**Course Instructor(s)**

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:



**Mr. Luis Lopez** is a **Senior Inspection Engineer** with extensive experience within the **Oil & Gas, Petrochemical** and **Refinery** industries. His expertise widely covers in the areas of **Thermography, Thermal Infrared Testing, Radiographic Film Interpretation, Visual Testing, Phased Array Ultrasonic Testing, Ultrasonic Testing, Magnetic Particle Testing, Liquid Penetrant Testing, Non-destructive Testing, NDT Methods & Applications, Electromagnetic Testing, Hydrostatic Leak Testing, Eddy Current Testing, Valve Inspection & Testing, Codes & Standards Interpretation, Corrosion Engineering, Corrosion & Metallurgy, Welding & Corrosion Engineering, Welding Metrology, International Welding Codes, Practical Welding Technology, Plastic Pipe Welding, Welding Inspection, Welding Defects Analysis, Welding Joints & Coating Inspection, Post Weld Heat Treatment, Hardness Testing, Welding Electrodes Monitoring & Control, Pipe Testing, Piping System, Steel Structures, Metals Casting, Crane Functional Testing & Load Testing, Hydrotesting, Pressure Testing Procedure, Pressure Equipment Calibration, Stream Inspection, Corrosion Evaluation, Casting Products Inspection and Raw Materials Inspection.** He is currently the **Senior NDT Instructor** of **SETE** wherein he is deeply involved in thermography, NDT qualification and certification of personnel.

During his career life, Mr. Lopez gained his practical and field experience through his various significant positions and dedication as the **Technical Manager, NDT Instructor, NDT Manager & Instructor, NDT Inspector, NDT Offshore Inspector & Quality Control, Phased Array Ultrasonic Technician** and **Radiographic Testing Technician** for various international companies such as the JP Inspections, Nova Inspection, NSD Services, Cotemar, UNISPEC Inspection and Ruiver.

Mr. Lopez holds a **Diploma in Professional Mechanical & Electrical Technician**. Further, he is a **Certified Instructor/Trainer, a Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership and Management (ILM)**, a **Certified ASNT-NDT Level III Inspector** in Infrared & Thermal Testing (IR), Liquid Penetrant Testing (PT), Magnetic Particle Testing (MT), Ultrasonic Testing (UT), Visual Testing (VT), Radiography Testing (RT), Leak Testing (LT), Electromagnetic Testing (ET), **Certified Welding Inspection & Metallurgy Professional (API 577)** and a **Certified AWS-CWI Welding Inspector**. He has further delivered numerous trainings, courses, workshops, seminars and conferences internationally.



**Training Methodology**

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures
- 20% Practical Workshops & Work Presentations
- 30% Hands-on Practical Exercises & Case Studies
- 20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

**Course Program**

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

**Day 1**

0730 – 0800	<i>Registration &amp; Coffee</i>
0800 – 0815	<i>Welcome &amp; Introduction</i>
0815 – 0830	<b>PRE-TEST</b>
0830 – 0930	<b>Heat Definition &amp; Mode Transfer</b>
0930 – 0945	<i>Break</i>
0945 – 1200	<b>The Infrared Spectrum</b>
1200 – 1300	<i>Lunch</i>
1300 – 1400	<b>Radiosity Problems</b>
1400 – 1500	<b>Thermogram Analysis</b>
1500 – 1515	<i>Break</i>
1515 – 1650	<b>Operating for Infrared Measurements</b>
1650 – 1700	<b>Recap</b>
1700	<i>End of Day One</i>

**Day 2**

0730 – 0930	<b>Operating for Speed Data Collection</b>
0930 – 0945	<i>Break</i>
0945 – 1200	<b>Operating Equipment for “Active” Technique</b>
1200 – 1300	<i>Lunch</i>
1300 – 1400	<b>Report &amp; Documentation</b>
1400 – 1500	<b>Temperature Measurements Applications</b>
1500 – 1515	<i>Break</i>
1515 – 1650	<b>Energy Loss Analysis Applications</b>
1650 – 1700	<b>Recap</b>
1700	<i>End of Day Two</i>





**Day 3**

0730 – 0930	<i>Software Analysis for Special Applications</i>
0930 – 0945	<i>Break</i>
0945 – 1200	<i>Pipe &amp; Pressure Vessel Insulation Analysis</i>
1200 – 1300	<i>Lunch</i>
1300 – 1400	<i>Qualitative &amp; Quantitative Analysis of Infrastructure</i>
1400 – 1500	<i>Industrial Equipment Analysis</i>
1500 – 1515	<i>Break</i>
1515 – 1650	<i>Petrochemical Industry &amp; Basic Functions</i>
1650 – 1700	<i>Recap</i>
1700	<i>End of Day Three</i>

**Day 4**

0730 – 0930	<i>Standards for Infrared Inspection of Electrical Systems &amp; Rotating Equip</i>
0930 – 0945	<i>Break</i>
0945 – 1200	<i>Delta T Criteria for Electrical Systems</i>
1200 – 1300	<i>Lunch</i>
1300 – 1400	<i>Absolute Temperature Criteria for Electrical Systems</i>
1400 – 1500	<i>NETA Maintenance Testing Specifications</i>
1500 – 1515	<i>Break</i>
1515 – 1650	<i>Experience-Based Criteria for Electrical System</i>
1650 – 1700	<i>Recap</i>
1700	<i>End of Day Four</i>


**Day 5**

0730 – 0845	<i>Practical Analysis of Electrical &amp; Mechanical Thermograms</i>
0845 – 0900	<i>Break</i>
0900 – 1000	<i>Developed IR Procedures &amp; Training Programs</i>
1000 – 1200	<i>Theoretical Examination</i>
1200 – 1300	<i>Lunch</i>
1300 – 1400	<i>Theoretical Examination (cont'd)</i>
1400 – 1430	<i>Break</i>
1430 – 1630	<i>Practical Examination</i>
1630 – 1645	<i>Course Conclusion</i>
1645 – 1700	<i>Presentation of Course Certificates</i>
1700	<i>End of Course</i>



**Simulators (Hands-on Practical Sessions)**

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using the Thermal Imaging Camera.



### FLIR E4, E5, E6, E8 with MSX® Enhancement

FLIR E4, E5, E6, E8 with MSX® Enhancement

- Display: 3" color LCD
- On-board 640 x 480 Digital Camera
- Easy-to-use, weighs only 1.2lbs
- 2% accuracy
- File format: Radiometric jpg
- Swappable Li-ion Battery with 4 hour life
- Spot Measurement mode
- Simultaneous storage of IR/Visual/MSX images
- Picture in Picture image (E6 and E8)
- Area Box Measurement mode (E5, E6 and E8)

Each includes power supply/charger with four plugs, rechargeable battery, FLIR Tools software, USB cable, and hard transport case. E8 also includes extra battery and external battery charger.

FLIR E4

- 4,800 pixels (80 x 60)

FLIR E5

- 10,800 pixels (120 x 90)

FLIR E6

- 19,200 pixels (160 x 120)

FLIR E8

- 76,800 pixels (320 x 240)



**New Exclusive MSX Thermal Imaging Technology Made Affordable for Everyday Use**

What is MSX?  
 Multi-Spectral Dynamic Imaging (MSX) for easier interpretation of an image - adds visible spectrum definition to IR images by detecting the edges of objects and including that detail in the thermal image. Text becomes clearly visible so that you can read a label or identifier within the IR image. This exclusive function provides extraordinary thermal detail that instantly highlights and orients problem locations and eliminates the need to refer back to a visual image for detail.



Breaker Panel  
E8 with MSX



Missing Insulation - Summer Day  
E6 with MSX



Warm Drain Pipe in Wall  
E4 with MSX

### Imaging Specifications

FEATURES	FLIR E4	FLIR E5	FLIR E6	FLIR E8
IR Pixel Resolution	4,800 (80 x 60)	10,800 (120 x 90)	19,200 (160 x 120)	76,800 (320 x 240)
Thermal Sensitivity	<0.15°C	<0.10°C	<0.06°C	<0.06°C
Temperature Range	-4 to 482°F (-20 to 250°C)			
Measurement modes	Centerspot	Centerspot, Area Box, Auto Hot/Cold detection	Centerspot, Area Box, Auto Hot/Cold detection	Centerspot, Area Box, Auto Hot/Cold detection
Frame Rate	9Hz			
Field of View	45° x 34°			
Focus	Focus free			
Auto Hot/Cold Detection	No	Auto min/max markers within area	Auto min/max markers within area	Auto min/max markers within area



Included in All Models



Additional Accessories Included with E8



Optional Accessories

### Ordering Information

- 63901-0101 ..... FLIR E4 Compact Thermal Imaging Infrared Camera with MSX® Enhancement (80x60)
- 63901-0101-NIST ..... FLIR E4 with Certificate Traceable to NIST
- 63905-0501 ..... FLIR E5 Compact Thermal Imaging Infrared Camera with MSX® Enhancement (120x90)
- 63905-0501-NIST ..... FLIR E5 with Certificate Traceable to NIST
- 63902-0202 ..... FLIR E6 Compact Thermal Imaging Infrared Camera with MSX® Enhancement (160x120)
- 63902-0202-NIST ..... FLIR E6 with Certificate Traceable to NIST
- 63903-0303 ..... FLIR E8 Compact Thermal Imaging Infrared Camera with MSX® Enhancement (320x240)
- 63903-0303-NIST ..... FLIR E8 with Certificate Traceable to NIST

#### ACCESSORIES

- T198529 ..... Pouch
- T198530 ..... Replacement battery
- T198531 ..... External battery charger
- T198532 ..... Car Charger
- T198534 ..... Power supply/charger with EU, UK, US and AU plugs
- T198533 ..... USB cable
- T198528 ..... Hard Transport Case



10-Year Detector Protection  
5-Year Battery  
2-Year Parts & Labor

### Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: [mari1@haward.org](mailto:mari1@haward.org)