



The Professional Thermographers Association

Training, Certification and Support Programs For **THERMOGRAPHERS**

**Membership in the
Professional Thermographers
Association**

**Thermal Trend Software Sales &
Support**

**Level I, II, III Training and
Certification**

**Thermal Trend® Database
Software Training and IR
Program Development -
Management Course**

Specialty Courses

On-Site Training



The Professional Thermographers Association

Our Mission

To provide a platform for non-biased information, professional communication and unity, for individuals and organizations involved in providing, or procuring infrared thermographic services, equipment and support.

Our Ethics

We, at the Professional Thermographers' Association are proud of our reputation for excellence, a reputation that is based on years of commitment to the highest ethical standards and professionalism. By visiting our web site (www.prothermographer.com) you will see

it is just one reflection of our commitment to provide quick access to valuable information about the infrared thermographic industry and the guiding business values by which we all abide.



At the Professional Thermographers' Association, all of the business relationships with our members, students, employees, suppliers and host communities rest on a foundation of integrity and trust.

Everyone's success in this industry is dependent upon each individual, their company's commitment to these enduring values, and the understanding that no success is worth the expense of compromising their ethical behavior.

All of our members uphold this commitment to these ethical standards and to a standard of professionalism in their business practices. Our members are committed to providing superior quality services, products and support and to continually raising those standards.

Member Services and IR Program Support

The infrared industry is in a constant state of change as new technologies, products, applications, services, and standards continue to emerge. Individuals involved with this industry rely on the Professional Thermographers Association to provide the technical and professional information, resources, and services to help them along the way.

Members of the PTA community, not only have the opportunity to get the information they are looking for, but also have the opportunity to share their knowledge, resources, and service offerings with others. In addition to a variety of member benefits, the Professional Thermographers Association offers a full spectrum of training, certification and support services and is dedicated to providing the highest standard of infrared instruction on a global scale.

Membership

The Professional Thermographers Association is a member-driven organization built on a foundation of integrity and trust. Our members affirm that everyone's success in this industry is dependent on each individual and that no success is worth the expense of compromising their ethical behavior. All of our members uphold their commitment to these ethical standards and professionalism in their businesses practices.

By joining the Professional Thermographers Association, you will be recognized as someone who is committed to performing to the highest ethical standards and level of professionalism in this industry.

Visit www.prothermographer.com for more information.

Thermal Trend Software Sales & Support

Thermal Trend, the leader in infrared imaging software, offers a complete office suite to manage your Infrared PdM Inspection Program. Imagine... seamless integration of your infrared PdM program with IR cameras, computers/ Pocket PC's, data and web technology.

While Thermal Trend - Image Analyzer allows you to explore manage, view, analyze and report on all of your infrared image files from a variety of infrared camera manufacturers, Thermal Trend - Lean DB, gives you the power of a complete infrared inspection database program in the palm of your hand.

Thermal Trend - Lean DB builds upon the foundation of "Lean Thinking" as it applies to establishing, conducting and managing a truly World Class/ Best Practices Predictive Maintenance Program. It is truly, the Professional Thermographers choice when it comes to establishing, performing, and managing Infrared PdM inspection programs.

Thermal Trend is sold exclusively by The Professional Thermographers Association whose members are leading professionals in the Thermographic industry and specialize in IR program implementation and management. Thermal Trends team of Certified Solutions Providers can assist you with everything from purchasing IR equipment, training and software support.

Visit www.thermaltrend.com for more information or to find a Certified Solution Provider near you.



visit www.thermaltrend.com



The Professional Thermographers Association

Thermographer Training & Certification Services

Our staff of seasoned thermographers have trained individuals worldwide for over 25 years.

Today, The Professional Thermographers Association is a world-wide infrared training institute providing education for all brands of IR instruments and an extensive range of IR applications.

All our trainers are field-proven thermographers so our students learn from experienced, practical infrared enthusiasts.



For this industry to continue in its advancement, new and practicing thermographers need to be informed, educated and updated continually by working professionals.

In addition to our Level I, II and III Thermographer certification courses, which are held on a regular basis, thermographers can also build on these fundamentals by enrolling in a variety of application or software specific courses.

All courses can be conducted at your site or location of choice or at our West Coast Conference and Training Center located in Seattle, WA USA.



Intensive, Professional Training

Training courses by the Professional Thermographers Association (PTA) are the most rigorous of all thermography courses available today. We offer Level I, Level II, and Level III Thermographer Certification courses along with a variety of application and software-specific courses.

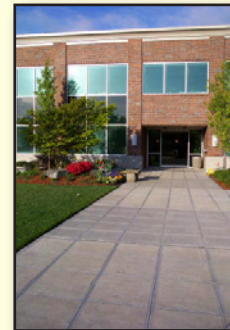
All courses can be conducted at your site or location of choice or at our West Coast Conference and Training Center located in Seattle, WA.

Exceptional Results

The PTA trainers approach their students as professionals, and expect high levels of participation; in return, students achieve an exceptional level of thermographic proficiency in a relatively short time frame.

About our West Coast Conference and Training Center

Our West Coast Conference and Training Center



allows us to provide better end user focused, hands on learning environment that is specifically tailored to the needs of the student and infrared community. Great care and attention to detail have gone in to creating

the ultimate learning experience, and we are sure that you will agree!

It is located just 5 minutes from the Seattle-Tacoma International Airport and is located within 1 mile of 8 major Hotels, which all provide 24 hour shuttle service to and from the Airport and the surrounding area.

You will also find a vast assortment of restaurants, shopping centers and entertainment in the immediate area.



The Professional Thermographers Association

Regular Course Offerings

Level I Thermographer Certification Courses:

This four-day course is designed to meet the SNT-TC-1A recommended practice for Level I Infrared Thermography. Level I Infrared Certification instructs students how to properly use infrared cameras to collect quality data. Students learn how to calculate accurate, repeatable temperature measurements.

This course covers critical camera parameters such as emissivity, reflected ambient and distance to target. Students trained by The Professional Thermographers Association learn infrared thermographic interpretation through class exercises and supervised in-field examples. A wide variety of thermography applications are covered in these courses.

Fee: \$1,595.00 includes tuition, materials, testing, certification, and a one-year student membership in the Professional Thermographers Association.

Level II Thermographer Certification Courses:

This four-day course is designed to meet the SNT-TC-1A recommended practice for Level II Infrared Thermography.

This hands-on course will assist you in furthering your operating skills, developing new inspection procedures and applications, advancing your infrared P/PM program or consulting services, utilizing IR trending or software programs, performing advanced NDT applications and attaining superior measurement skills for improved accuracy and diagnosis. Advanced theory, applications, equipment operations, thermal analysis and inspection techniques, marketing, plus much more, is presented in a simple, easy to learn, hands-on fashion.

Fee: \$1,595.00 includes tuition, materials, testing, certification, and a one-year student membership in the Professional Thermographers Association.

Level III Thermographer Certification Courses:

This four-day course is provided to advance a Level II Thermographer to the level where they are able to initiate and manage an Infrared Thermographic Program.

The course material will give them an advanced understanding of the information necessary to direct other thermographers to provide written procedures and purchase suitable equipment.

Fee: \$1,595.00 includes tuition, materials, testing, certification, and a one-year student membership in the Professional Thermographers Association.

Thermal Trend® Database Software Training and IR Program Development/ Management Course:

This two-day course is designed to provide an advanced understanding of the intricacies of the Thermal Trend Database Software and how builds upon the foundation of "Lean Thinking" as it is used to establish, conduct and manage a truly World Class/ Best Practices Predictive Maintenance Program.

In addition to creating and synchronizing site databases, students will learn how to create and enter inspection data, view and create inspection routes and test statuses, associate problems with appropriate equipment, track and trend problem status over multiple inspections, record detail information about items, and view and analyze infrared and visual images with Image Analyzer.

Fee: \$1,300.00

Additional Course Offerings

Application Courses

- Electrical / Mechanical Predictive Maintenance Inspection Methods
- Building Envelope / Roof Moisture Inspections
- Refractory and Process Heater / Boiler Inspections
- Ultraviolet Corona imaging

Software Courses

- Mikron: MikroView, MikroSpec Report Generation Software Training
- Infrared Solutions: SnapView, FlexView Report Generation Software Training
- FLIR: IRwin, ThermaCam Reporter Software Training

visit www.prothermographer.com or call us at 206-328-3930 for our latest course schedule



The Professional Thermographers Association

Course Outline

Level I Training Outline

(based on the ASNT Thermal/Infrared Testing Method--Training Course Outline SNT-TC-1A)

Basic Physics Course

- 1.0 The nature of heat – what is it and how is it measured/expressed?
 - 1.1 Instrumentation
 - 1.2 Scales and conversions
- 2.0 Temperature – what is it and how is it measured/expressed?
 - 2.1 Instrumentation
 - 2.2 Scales and conversions
- 3.0 Heat Transfer Modes Familiarization
 - 3.1 Heat conduction fundamentals
 - 3.1.1 Fourier's law of heat conduction (concept)
 - 3.1.2 Conductivity/resistance basics
 - 3.2 Heat convection fundamentals
 - 3.2.1 Newton's law of cooling (concept)
 - 3.2.2 Film coefficient/film resistance basics
 - 3.3 Heat radiation fundamentals
 - 3.3.1 Stefan-Boltzmann law (concept)
 - 3.3.2 Emissivity/absorptivity /reflectivity/transmissivity basics (Kirchhoff's Law)
- 4.0 Radiosity Concepts Familiarization
 - 4.1 Reflectivity
 - 4.2 Transmissivity
 - 4.3 Absorptivity
 - 4.4 Emissivity
 - 4.5 Infrared radiometry and imaging
 - 4.6 Spatial resolution concepts
 - 4.6.1 Field of view (FOV)
 - 4.6.2 Instantaneous field of view (IFOV) – ref. ASTM E-1149
 - 4.6.3 Measurement Instantaneous Field of View (MIFOV)
 - 4.7 Error potential in radiant measurements (an overview)

Basic Operating Course

- 1.0 Introduction
 - 1.1 Thermography defined
 - 1.2 How infrared imagers work
 - 1.3 Differences among imagers and alternative equipment
 - 1.4 Operation of infrared thermal imager
 - 1.4.1 Selecting the best perspective
 - 1.4.2 Image area and lens selection for required details
 - 1.4.3 Optimizing the image
 - 1.4.4 Basic temperature measurement
 - 1.4.5 Basic emissivity measurement
 - 1.5 Operation of support equipment for infrared surveys
- 2.0 Checking Equipment Calibration with Blackbody References
- 3.0 Infrared Image and Documentation Quality
 - 3.1 Elements of a good infrared image
 - 3.1.1 Clarity (focus)
 - 3.1.2 Dynamic range of the image
 - 3.1.3 Recognizing and dealing with reflections
 - 3.1.4 Recognizing and dealing with spurious convection
 - 3.2 Recording
 - 3.2.1 Video tape
 - 3.2.2 Photographic images
 - 3.2.3 Video photo cameras
 - 3.2.4 Digital recording
- 4.0 Support Data Collection
 - 4.1 Environmental data
 - 4.2 Emissivity
 - 4.2.1 Measurement
 - 4.2.2 Estimation
 - 4.2.3 Surface modification
 - 4.3 Surface reference temperatures
 - 4.4 Identification and other

Basic Applications Course

- 1.0 Detecting Thermal Anomalies Resulting from Differences in Thermal Resistance (Quasi-steady-state Heat Flow)
 - 1.1 Large surface-to-ambient temperature difference
 - 1.2 Small surface-to-ambient temperature difference
- 2.0 Detecting Thermal Using System or Environmental Heat Cycles
- 3.0 Detecting Thermal Anomalies Resulting from Differences in Physical State
- 4.0 Detecting Thermal Anomalies Resulting from Fluid Flow Problems
- 5.0 Detecting Thermal Anomalies Resulting from Friction
- 6.0 Detecting Thermal Anomalies Resulting from Nonhomogeneous Exothermic or Endothermic Conditions (Non-uniform, Heat Releasing or Heat Absorption Conditions).
- 7.0 Field Quantification of Point Temperatures
 - 7.1 Simple techniques for emissivity
 - 7.2 Typical (high emissivity) applications
 - 7.3 Special problem of low emissivity applications



The Professional Thermographers Association

Course Outline

Level 2 Training Outline

(based on the ASNT Thermal/Infrared Testing Method--Training Course Outline SNT-TC-1A)

Intermediate Physics Course

- 1.0 Basic Calculations in the Three Modes of Heat Transfer
 - 1.1 Conduction – principles and elementary calculation
 - 1.1.1 Thermal resistance – principles and elementary calculations
 - 1.1.2 Heat capacitance – principles and elementary calculations
 - 1.2 Convection – principles and elementary calculations
 - 1.3 Radiation – principles and elementary calculations
- 2.0 The Infrared Spectrum
 - 2.1 Planck's law/curves
 - 2.1.1 Typical detected bands
 - 2.1.2 Spectral emissivities of real surfaces
 - 2.2 Effects due to semitransparent windows and/or gasses
 - 2.3 Filters
- 3.0 Radiosity Problems
 - 3.1 Blackbodies – theory and concepts
 - 3.2 Emissivity problems
 - 3.2.1 Blackbody emissivity
 - 3.2.2 The graybody and the non graybody
 - 3.2.3 Broadband and narrowband emitter targets
 - 3.2.4 Specular and diffuse emitters
 - 3.2.5 Lambertian and non-Lambertian emitters (the angular sensitivity of emissivity)
 - 3.2.6 Effects of emissivity errors
 - 3.3 Calculation of emissivity, reflectivity and transmissivity (practical use of Kirchoff's law)
 - 3.4 Reflectivity problem
 - 3.4.1 Quantifying effects of unavoidable reflections
 - 3.4.2 Theoretical corrections

- 3.5 Transmissivity problem
 - 3.5.1 Quantified effects of partial transmittance
 - 3.5.2 Theoretical corrections
- 4.0 Resolution Tests and Calculations
 - 4.1 IFOV, FOV and MIFOV measurements and calculations
 - 4.2 MRTD measurements and calculations
 - 4.3 Slit response function – measurement, calculations, interpretations and comparisons
 - 4.4 Resolution versus lens and distance
 - 4.5 Dynamic range
 - 4.6 Data acquisition rate/data density
 - 4.7 Frame rate
 - 4.8 Image data density
 - 4.8.1 Lines of resolution
 - 4.8.2 IFOVs/line
 - 4.8.3 Computer pixels/line

Intermediate Operating Course

- 1.0 Operating for Infrared Measurements (Quantification)
 - 1.1 Simple infrared energy measurement
 - 1.2 Quantifying the emissivity of the target surface
 - 1.3 Quantifying temperature profiles
 - 1.3.1 Use of blackbody temperature references in the image
 - 1.3.2 Use of temperature measurement devices for reference surface temperatures
 - 1.3.3 Common sources of temperature measurement errors
 - 1.4 Computer processing to enhance imager data
- 2.0 Operating for High Speed Data Collection
 - 2.1 Producing accurate images of transient processes
 - 2.2 Recording accurate images of transient processes
 - 2.3 Equip. selection and operation for imaging from moving vehicles

- 3.0 Operating Special Equipment for “Active” Techniques
 - 3.1 Hot or cold fluid energy sources
 - 3.2 Heat lamp energy sources
 - 3.3 Flash-lamp energy sources
 - 3.4 Electromagnetic induction
 - 3.5 Laser energy sources
- 4.0 Reports and Documentation
 - 4.1 Calibration requirements and records
 - 4.2 Report data requirements
 - 4.3 Preparing reports

Intermediate Applications Course

- 1.0 Temperature Measurement Applications
 - 1.1 Isotherms/alarm levels – personnel safety audits, etc.
 - 1.2 Profiles
- 2.0 Energy Loss Analysis Applications
 - 2.1 Conduction losses through envelopes
 - 2.1.1 Basic envelope heat-flow quantification
 - 2.1.2 Recognizing and dealing with wind effects
 - 2.2 Mass transfer heat exchange
 - 2.2.1 Location
 - 2.2.2 Quantification
- 3.0 “Active” Applications
 - 3.1 Insulation flaws
 - 3.2 De-Lamination of composites
 - 3.3 Bond quality of coatings
 - 3.4 Location of high heat-capacity components
- 4.0 Filtered Applications
 - 4.1 Sunlight
 - 4.2 Furnace interiors
 - 4.3 Semitransparent targets
- 5.0 Transient Applications
 - 5.1 Imaging a rapidly moving process
 - 5.2 Imaging from a vehicle



The Professional Thermographers Association

Course Outline

Thermal Trend® Database Software Training and IR Program Development/Management Course:

- Thermal Trend Overview
 - o Concept
 - o Desktop
 - o Pocket PC
 - o Reporting
 - o Lean Thinking/Lean Thermography
 - o History of Thermal Trend
 - o Synchronization
 - o Deployment
- Intro to Tab Navigation
 - o Data Structure
 - o Sites
 - o Routes
 - o Items
 - o History
 - o Details
 - o Images – Image Analyzer
- Data Entry Overview
 - o Site
 - o Import
 - o Inspection
 - o Route
 - o Bar-coding
 - o Asset ID's
 - o GPS
 - o Searches
 - o Items
 - o History
 - o Details
- Data Output
 - o Exports
 - o Reports
 - o Email
- Route - Inventory
 - o Hierarchal Structure
 - o Location
 - o Equipment
 - o Color Coding
 - o Test Status
 - o Re-ordering Route
- Overview of Item Types
 - o Thermal
 - o Visual
 - o Baseline/Trending
 - o Roof
 - o Corona
 - o Ultrasound
 - o Regulators
 - o Transformers
 - o Breakers
 - o Batteries
 - o Pole Trending
 - o Inspection Notes
 - o Schedule Repair
 - o Repair Made
 - o Closed
- Items Data Structure
 - o Item Tab
 - o History Tab
 - o Details Tab
 - o Images Tab
- Item/Problem Status (Work orders)
 - o Open
 - o Schedule Repair
 - o Repair Made
 - o Closed
 - o Re-open (resurrect)
- Advanced tools
 - Equipment Table
 - o Schedule - duration - setup
 - o Criticality to Operation
 - o Equipment Table
 - Sites
 - o Fix DB
 - o Work order Search
 - o Change “server”
 - o Synchronize
 - o Import “TTLite Database Import”
 - Inspections
 - o Task Tracking
 - o Setup
 - o Store Folder
 - o Locations
 - o Reports
 - o Image Display
 - o Cost/Benefit
 - o IR & Photo Files
 - Comments – Drop Down Lists Setup
 - Cost Benefit Analysis
 - o Defaults
 - o Button View
 - o Schedule Repair
 - o Repair Made
 - Working with Attachments/EDMS
 - Deployment
 - o Options for set up
 - o Synchronization options
 - o Database Back up



The Professional Thermographers Association

Thermographer Training & Certification Registration Form

Pre-requisites:

- Level I – None
- Level II – Level I Course Completion Certificate
- Level III – Level II Course Completion Certificate

Please complete this form and return via fax, mail, or email to:

Professional Thermographers Association
 2014-A East Union Street, Seattle, WA 98122
 Fax: 206-568-4437
 Email: andrea.acosta@prothermographer.com

Equipment Required:

Registrants are requested to bring the camera they generally operate, along with any peripherals for report generation. All other materials will be supplied by the trainers.

Register:

visit www.prothermographer.com or call us at 206-328-3930 for our latest course schedule

#	Sign up for:	Dates and Locations (please indicate the date(s) and location(s) you are signing up for)	Price US
	Level I Certification Course		\$1,195.00
	Level II Certification Course		\$1,195.00
	Level III Certification Course		\$1,195.00
	Thermal Trend Database Software Training and IR Program Development/Management course		\$1,195.00

Your Contact Information:

Name(s) _____

Company _____

Address _____

Phone _____

E-mail(s) _____

Method of Payment:

Check
 Credit Card (Visa)
 Credit Card (Mastercard)
 Bill Me

Purchase order/Credit Card Number CC exp.date _____

Name/Title of authorized purchaser _____

Signature:

Date _____ Signature _____

(Note: you will need Acrobat 7 or later to utilize the digital signature and save features of this form. If you do not have a full version of Acrobat, feel free to print the form and send it back to us by mail or fax.)



The Professional Thermographers Association

Membership Application Form (Part 1)

Please complete both pages of this form and return via fax, mail, or email to:

**Professional Thermographers Association
2014- A East Union Street, Seattle, WA 98122
Fax: 206-568-4437**

Email: andrea.acosta@prothermographer.com

Name: _____

Company Name: _____ Job title: _____

Address 1: _____ E-Mail: _____

Address 2: _____ Country: _____

City: _____ State/Province: _____ Postal Code: _____

Hm. Phone: _____ Wk. Phone: _____ Fax: _____

Website: _____

Code of Ethics:

At the Professional Thermographers Association, we are proud of our reputation for excellence. This reputation is based on years of commitment to the highest ethical standards and professionalism in the infrared industry, and the guiding business values and ethics that we must all abide by.

At the Professional Thermographers Association, all of our business relationships with our members, students, employees, suppliers and host communities rest on a foundation of integrity and trust. Everyone's success in this industry is dependent on each individual, and their company's commitment to these enduring values and understanding that no success is worth the expense of compromising their ethical behavior. All of our members uphold this comment to these ethical standards and professionalism in their businesses practices.

Membership Questionnaire:

I am a Certified Thermographer: Yes No:

If yes, what is your current level of certification? _____

Where did you obtain this certification? _____ Year Certified: _____

I am involved with Infrared Thermography:

As someone who provides services, products, or information to people and companies in the field of infrared imaging

(Check all that apply):

- Manufacturer* *Instructor*
- Manufacturer Representative* *Infrared Consultant*
- Related Technology Vendor* *Other* _____

- As someone who is involved with an in-house infrared imaging program
- As someone who is just getting started in the field of infrared thermography
- As someone who had been an active thermographer in the past and now enjoys contributing to the industry

Other _____

What applications are you involved with or do you expect to be involved with?

(Check all that apply)

- Electrical Process Monitoring & Control
- Mechanical Research and Development
- Roofs Thermal Night Vision
- Building Envelope Government/Military
- Nondestructive Materials Testing Equine
- Refractory Medical
- Quality Control/Quality Assurance

Other _____



The Professional Thermographers Association

Membership Application Form (Part 2)

Please print both pages of this form and return via fax, mail, or email to:

**Professional Thermographers Association
2014-A East Union Street, Seattle, WA 98122**

Fax: 206-568-4437

Email: andrea.acosta@prothermographer.com

Please check the membership box that applies to you:

Individual Standard annual membership to the PTA - \$25.00 US

Individual Standard Memberships are for individuals who want the ability to post messages on the message boards as well as have the ability to access online infrared reference material and have their name listed under a corporate account listing.

Individual Student annual membership to the PTA - \$100.00 US (Cost included in PTA Training Fee)

Individual Student Memberships are for individuals who have chosen training through the Professional Thermographer's Association. This membership provides the same benefits as the Individual/Standard members plus the ability to gain access to online PTA Infrared Training Resources, Materials, and Exams for certification. **The cost of this membership is included in the student's PTA training fee. For information on our training opportunities, visit www.prothermographer.com.**

Individual Professional annual membership to the PTA - \$100.00 US

Individual Professional Memberships are for individuals who want the same benefits as the Individual/Standard members plus the ability to have their corporate account listing linked to an individual membership profile web page, which would include a detailed biography, work history, certification status, and photo.

Corporate Standard annual membership to the PTA - \$125.00 US

Corporate Standard Memberships are for companies who want their corporate account listing linked to an expanded corporate profile web page that would include details on the Company Name, Address, Phone, Fax, Email, and Web Site address. The Corporate Standard membership includes one Individual/Standard membership with all the associated benefits. Corporate Standard members also have the ability to add additional individual member listings to their corporate profile web page.

Corporate Executive annual membership to the PTA - \$150.00 US

Corporate Executive Memberships are for companies who want the same benefits as the Corporate Standard membership plus the ability to expand their corporate web profile page to include their company logo and a company brief. Corporate Executive members also have the ability to add additional links from their corporate profile web page to individual membership profile web pages.

Signature:

By signing this application I hereby agree to abide by the code of ethics of the Professional Thermographers Association, and vow to uphold these values of integrity and trust in my every day business practices.

Date _____ Signature _____

Method of Payment:

Enclosed please find my payment for \$_____ for my one-year membership in the Professional Thermographers Association.

Check Credit Card (Visa) Credit Card (Mastercard) Bill Me

Purchase order/Credit Card Number CC exp.date _____

Name/Title of authorized purchaser _____

(Note: you will need Acrobat 7 or later to utilize the digital signature and save features of this form. If you do not have a full version of Acrobat, feel free to print the form and send it back to us by mail or fax.)