

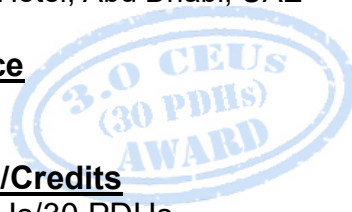
**COURSE OVERVIEW ME0550**  
**Heat Treatment**

**Course Title**  
 Heat Treatment

**Course Date/Venue**  
 Session 1: May 25-29, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE  
 Session 2: November 03-07, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE



**Course Reference**  
 ME0550



**Course Duration/Credits**  
 Five days/3.0 CEUs/30 PDHs

**Course Description**



***This hands-on, highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.***



Heat Treating is defined as heating and cooling a solid metal or alloy in such a way as to obtain desired conditions or properties. This course provides valuable insights into the effects of thermal treatments for softening steel (annealing) as well as hardening treatments such as quenching and tempering, austempering, and various surface (cases) hardening methods.



Heat treatments for plain carbon, low alloy, stainless, cast irons, and tool steels are described and related to the fundamental changes in microstructure and properties that occur during such processing. There is also emphasis on heat treating process control with regard to furnace atmospheres, temperature, quenching techniques, and selection of proper furnace equipment for different types of heat treating operations.

During this interactive course, participants will learn the heat treatment processes and related technology; the guidelines for the heat treatment of steel; the carbon and alloy steels, tool steels, ultrahigh-strength steels and stainless steels; heat treating iron castings and P/M steels; heat treating of gray iron and ductile iron; heat treating malleable irons; and the P/M tool steels, P/M stainless steel and P/M steel parts.

### **Course Objectives**

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

- Apply and gain an in-depth knowledge on heat treatment
- Discuss heat treatment processes and related technology
- Review the guidelines for the heat treatment of steel covering the normalizing process, annealing of steel, surface hardening treatments, steel quenching technology, other quenchants processes and tempering processes/technology
- Determine carbon and alloy steels, tool steels, ultrahigh-strength steels and stainless steels
- Carryout heat treating iron castings and P/M steels as well as heat treating of gray iron and ductile iron
- Illustrate heat treating malleable irons, P/M tool steels, P/M stainless steel and P/M steel parts

### **Who Should Attend**

This course provides an overview of all significant aspects and considerations of heat treatment for design and manufacturing engineers, plant managers, supervisors, metallurgists and technicians, quality control inspectors, sales and marketing personnel.

### **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 Fee**

**US\$ 5,500** per Delegate + **VAT**. This rate includes H-STK® (Haward 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)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

### Certificate Accreditations

Certificates are accredited by the following international accreditation organizations:-

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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 **3.0 CEUs** (Continuing Education Units) or **30 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. Attalla Ersan, PEng, MSc, BSc**, is a **Senior Mechanical Engineer** with over **35 years** of extensive experience within the **Oil & Gas, Hydrocarbon** and **Petrochemical** industries. His expertise widely covers the areas of **Boiler & Steam System Management, Waste Heat Recovery, Boiler Plant Safety, Boiler Controls, Steam Distribution Systems, Steam Traps, Pollution Control, Cracked Gas Compressor, Reboilers, Selection & Operation, Boiler Inspection & Maintenance, Boiler instrumentation & Controls, Boiler Start-up & Shutdown, Boiler Operation & Steam System Management, Boiler Water Chemistry & Treatment, Boiler Efficiency & Waste Heat Recovery, Boiler Inspection & Testing, Boiler Troubleshooting & Safety, Boiler Emissions & Pollution Control, Pumps Maintenance & Troubleshooting, Valve Maintenance, Plunger Valve, Maintenance & Reliability Best Practices, Maintenance & Reliability Management, Process Plant Operations, Process Plant Startup & Operating Procedure, Ethylene & Vinyl Chloride, Ethane Cracking Furnaces Operations, Ethylene & Polyethylene Operation, Acid Gas Treatment, Sulphur Recovery, EDC & VCM, Caustic Soda Storage, Debottle-necking, Process Operation, Safety Audits, Process Engineering, Root Cause Investigations, Pyrolysis Cracking, Gas Plant Commissioning, Loss Prevention Techniques, Occupational Hazards, Hot Tapping & Tie-Ins, Pre-Start-Up Safety Review (PSSR), Standard Operating Procedure (SOP), Emergency Operating Procedure (EOP), Permit to Work Systems (PTW), Steam Cracking, Steam Generation, Binary Fractionators Operations, Tanks Farm & Metering Station Techniques, Gas Treatment, Sulphur Recovery Process Unit Operation, Permit to Work System, Emergency Response Planning, Sulphur Unit Air Blower, Steam Turbine, Distillation Columns, Gas Treatment, Waste & Water Treatment Units, Water Meter Reading System (MMR), Utility Regulation, Best Water Equipment, Water Fittings, Water Tanks Filling Stations, Pumping Station, Water Chemistry, Water Network Design, Pumps, Compressors, Turbines, Motors, Turbo-expanders, Gears, Heat Exchanger, Hazard and Operability (HAZOP) Study, Process Hazards Analysis (PHA), HAZOP Facilitation, Loss Prevention, Consequence Analysis Application, Gas Detectors Operation, Accident/Incident Investigation (Why Tree Method), Occupational Exposure Assessment, Fire Fighting & First Aid, Environmental Management and Basic Safety Awareness. Further, he is also well-versed in Project Management, Human Resources Consultancy, Manpower Planning, Job Design & Evaluation, Recruitment, Training & Development and Leadership, Creative Problem Solving Skills, Work Ethic, Job Analysis Evaluation, Training & Development Needs, Bidding & Tendering, Technical Report Writing, Supervisory Leadership, Effective Communication Skills and Total Quality Management (TQM). He is currently the **CEO of Ersan Petrokimya Teknoloji Company Limited** wherein he is responsible for the design and operation of Biogas Process Plants.**

During his career life, Mr. Ersan has gained his practical and field experience through his various significant positions and dedication as the **Policy, Organization & Manpower Development Head, Training & Development, Head, Ethylene Plant – Pyrolysis Furnace Engineer, Production Engineer, Mechanical Engineer, Boiler Mechanic, Process Training Coordinator, Ethylene Plant Shift Supervisor, Ethylene Plant Panel & Fit Operator, Process Training & Development Coordinator, Technical Consultant, and Instructor/Trainer** for Qatar Vinyl Company Limited and Qatar Petroleum Company (QAPCO).

Mr. Ersan is a **Registered Professional Engineer** and has a **Master's degree of Education in Educational Training & Leadership** and a **Bachelor's degree of Petrochemical Engineering**. Further, he is a **Certified Instructor/Trainer** and has delivered numerous trainings, courses, workshops, conferences and seminars internationally.



**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	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	<b>PRE-TEST</b>
0830 – 0930	<b>Heat Treating Processes &amp; Related Technology</b> Introduction • Heat Treating Processes • Causes of Distortion & Cracking During Quenching
0930 – 0945	Break
0945 – 1100	<b>Heat Treating Processes &amp; Related Technology (cont'd)</b> Stress Relief Heat Treating of Steel • Furnace of Atmospheres • Cold & Cryogenic Treatment of Steel
1100 – 1200	<b>Heat Treating Processes &amp; Related Technology (cont'd)</b> Representative Applications of Heat Treating Operations • How a Commercial Heat Treater Uses SPC & the Computer • Practical Applications of the Computer in Heat Treating
1200 – 1215	Break
1215 – 1420	<b>Guideline for the Heat Treatment of Steel</b> Introduction • The Normalizing Process • Annealing of Steel
1420 – 1430	<b>Recap</b>
1430	Lunch & End of Day One

**Day 2**

0730 – 0930	<b>Guideline for the Heat Treatment of Steel (cont'd)</b> Surface Hardening Treatments (Induction Hardening, Flame Hardening, Gas Carburizing, Pack Carburizing, Liquid Carburizing & Cyaniding, Vacuum Carburizing, Plasma (Ion) Carburizing, Carbonitriding, Gas Nitriding, Liquid Nitriding, Plasma (Ion) Nitriding, Gaseous & Plasma Nitrocarburizing, Fluidized Bed Hardening, Electron Beam Hardening)
0930 – 0945	Break
0945 – 1100	<b>Guideline for the Heat Treatment of Steel (cont'd)</b> Steel Quenching Technology (Introduction, Air Quenching Process, Water Quenching Process, Oil Quenching Process, Polymer Quenchants, Molten Salt Quenching Process, Brine Quenching Process, Caustic Quenching Process)
1100 – 1200	<b>Guideline for the Heat Treatment of Steel (cont'd)</b> Other Quenchants/Processes (Introduction, Vacuum Quenching, Self-Quenching Processes, Fluidized Bed Quenching, Ultrasonic Quenching, HIP Quenching, Spray Quenching Process, Fog Quenching Process, Cold Die Quenching, Quenching in an Electric or Magnetic Field, Quenching Flame & Induction Hardened Parts)
1200 – 1215	Break
1215 – 1420	<b>Guideline for the Heat Treatment of Steel (cont'd)</b> Tempering Processes/Technology (Conventional Processes, Martempering of Steel, Austempering of Steel)
1420 – 1430	<b>Recap</b>
1430	Lunch & End of Day Two

**Day 3**

0730 – 0930	<b>Carbon &amp; Alloy Steels Introduction</b> <i>Carbon Steels (Introduction, Nonresulfurized, Resulfurized Carbon Steels, Rephosphorized &amp; Resulfurized Carbon Steels, High Manganese Carbon Steels)</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<b>Alloy Steels</b>
1100 – 1200	<b>Tool Steels</b> <i>Introduction • Water-Hardening Tool Steels • Shock-Resisting Tool Steel • Oil-Hardening Cold Work Tool Steels • Medium-Alloy, Air-Hardening Cold Work Tool Steels (A Series) • High-Carbon, High-Chromium Cold Work Tool Steels (D Series) • Low-Alloy Special-Purpose Tool Steels (L Series) • Mold Steels (P Series) • Hot Work Tool Steels (H Series) • Tungsten High-Speed Tool Steels (T Series) • Molybdenum High-Speed Tool Steels (M Series)</i>
1200 – 1215	<i>Break</i>
1215 – 1420	<b>Ultrahigh-Strength Steels</b>
1420 – 1430	<b>Recap</b>
1430	<i>Lunch &amp; End of Day Three</i>

**Day 4**

0730 – 0930	<b>Stainless Steels</b> <i>Introduction • Austenitic Stainless Steels • Ferritic Stainless Steels • Martensitic Stainless Steels • Cast Stainless Steels • Cast PH Stainless Steels</i>
0930 – 0945	<i>Break</i>
0945 – 1030	<b>Heat Treating Iron Castings &amp; P/M Steels</b>
1030 – 1200	<b>Heat Treating Cast Irons</b>
1200 – 1215	<i>Break</i>
1215 – 1330	<b>Heat Treating of Gray Iron</b>
1330 – 1420	<b>Heat Treating Ductile Iron</b>
1420 – 1430	<b>Recap</b>
1430	<i>Lunch &amp; End of Day Four</i>

**Day 5**

0730 – 0930	<b>Heat Treating Malleable Irons</b>
0930 – 0945	<i>Break</i>
0945 – 1100	<b>Heat Treating P/M Tool Steels</b>
1100 – 1200	<b>Heat Treating P/M Stainless Steel</b>
1200 – 1215	<i>Break</i>
1215 – 1345	<b>Heat Treating of P/M Steel Parts</b>
1345 – 1400	<b>Course Conclusion</b>
1400 – 1415	<b>POST-TEST</b>
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch &amp; End of Course</i>

**Practical Sessions**

This hands-on, highly-interactive course includes real-life case studies and exercises:-



**Course Coordinator**

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