

COURSE OVERVIEW RE0128
Maintenance of Finfans Coolers

Course Title

Maintenance of Finfans Coolers

Course Date/Venue

Session 1: April 13-17, 2025/Business Meeting, Crowne Plaza Al Khobar, Al Khobar, KSA

Session 2: August 24-28, 2025/ Business Meeting, Crowne Plaza Al Khobar, Al Khobar, KSA



Course Reference

RE0128



Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

Course Description



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

This course is designed to provide participants with a detailed and up-to-date overview of Finfans Coolers for Maintenance. It covers the purpose, function, application, types and components of finfan coolers; the working principles of finfan coolers and the types of finfan cooler designs; the regular maintenance to extend lifespan, minimizing operational costs and enhancing safety and reliability; the safety precautions, proper use of PPE in maintenance activities; the tools and equipment for maintenance and visual inspection techniques; the thermal imaging, temperature monitoring and vibration analysis and monitoring; and the airflow and fan performance testing.

Further, the course will also discuss the pressure drop and flow rate measurement, data logging, record-keeping and cleaning finfan cooler fins and tubes; the chemical cleaning procedures, lubrication methods and blade and motor maintenance; the tube maintenance and leak repair; inspecting and replacing gaskets and seals; the common issues in finfan coolers; troubleshooting high temperature and pressure issues; and the fan and motor troubleshooting techniques.

During this interactive course, participants will learn the preventive maintenance schedule; the condition monitoring and Integrating CBM with maintenance planning; creating maintenance report, energy efficiency and cooling optimization; the heat transfer enhancement techniques, retrofit and upgrade components; evaluating and selecting replacement parts; developing asset management strategy for coolers; and implementing continuous improvement and best practices for cooler maintenance.

Course Objectives

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

- Apply and gain an in-depth knowledge on maintenance of finfan coolers
- Discuss the purpose, function, application, types and components of finfan coolers
- Recognize the working principles of finfan coolers as well as the types of finfan cooler designs
- Carryout regular maintenance to extend lifespan, minimize operational costs and enhance safety and reliability
- Apply safety precautions, proper use of PPE in maintenance activities, tools and equipment for maintenance and visual inspection techniques
- Employ thermal imaging, temperature monitoring, vibration analysis and monitoring and airflow and fan performance testing
- Apply pressure drop and flow rate measurement, data logging, record-keeping and cleaning finfan cooler fins and tubes
- Carryout chemical cleaning procedures, lubrication methods and fan blade and motor maintenance
- Employ tube maintenance and leak repair as well as inspect and replace gaskets and seals
- Identify the common issues in finfan coolers, troubleshoot high temperature and pressure issues and apply fan and motor troubleshooting techniques
- Set-up preventive maintenance schedule, apply condition monitoring and integrate CBM with maintenance planning
- Create a maintenance report and apply energy efficiency and cooling optimization
- Carryout heat transfer enhancement techniques, retrofit and upgrade components and evaluate and select replacement parts
- Develop an asset management strategy for coolers and implement continuous improvement and best practices for cooler maintenance

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 an overview of all significant aspects and considerations of maintenance of finfans coolers for maintenance engineers and technicians, reliability engineers, mechanical and process engineers, HSE (health, safety & environment) professionals and operations personnel.

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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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.

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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.

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. Karl Thanasis, PEng, MSc, MBA, BSc, is **Senior Mechanical & Maintenance Engineer** with over **45 years** of extensive industrial experience within the **Power & Water Utilities** and other **Energy Sectors**. His wide expertise includes **District Cooling Plant, District Cooling Plant Operations, HVAC Basics, HVAC&R, KOTZA, Refrigeration, Modern HVAC & Refrigeration Systems Design, Utilization, Operation & Effective Maintenance, Control Valve & Actuators, Fire Safe Valves, Piping & Pipeline, Maintenance, Repair, Shutdown, Turnaround & Outages, Maintenance & Reliability Management, Mechanical Maintenance Planning, Scheduling & Work Control, Advanced Techniques in Maintenance Management, Predictive & Preventive Maintenance, Maintenance & Operation Cost Reduction Techniques, Reliability Centered Maintenance (RCM), Machinery Failure Analysis, Rotating Equipment Reliability Optimization & Continuous Improvement, Material Cataloguing, Mechanical & Rotating Equipment Troubleshooting & Maintenance, Root Cause Analysis & Reliability Improvement, Condition Monitoring, Root Cause Failure Analysis (RCFA), Steam Generation, Steam Turbines, Power Generator Plants, Gas Turbines, Combined Cycle Plants, Boilers, Process Fired Heaters, Air Preheaters, Induced Draft Fans, All Heaters Piping Work, Refractory Casting, Heater Fabrication, Thermal & Fired Heater Design, Heat Exchangers, Heat Transfer, Coolers, Power Plant Performance, Efficiency & Optimization, Storage Tank Design & Fabrication, Thermal Power Plant Management, Boiler & Steam System Management, Pump Operation & Maintenance, Chiller & Chiller Plant Design & Installation, Pressure Vessel, Safety Relief Valve Sizing & Selection, Valve Disassembling & Repair, Pressure Relief Devices (PSV), Hydraulic & Pneumatic Maintenance, Advanced Valve Technology, Pressure Vessel Design & Fabrication, Pumps, Turbo-Generator, Turbine Shaft Alignment, Lubrication, Mechanical Seals, Packing, Blowers, Bearing Installation, Couplings, Clutches and Gears. Further, he is also versed in **Wastewater Treatment Technology, Networking System, Water Network Design, Industrial Water Treatment** in Refineries & Petrochemical Plants, **Piping System, Water Movement, Water Filtering, Mud Pumping, Sludge Treatment and Drying, Aerobic Process of Water Treatment** that includes **Aeration, Sedimentation and Chlorination Tanks**. His strong background also includes **Design and Sizing** of all **Waste Water Treatment Plant Associated Equipment** such as **Sludge Pumps, Filters, Metering Pumps, Aerators and Sludge Decanters**.**

Mr. Thanasis has acquired his thorough and practical experience as the **Project Manager, Plant Manager, Area Manager - Equipment Construction, Construction Superintendent, Project Engineer and Design Engineer**. His duties covered **Plant Preliminary Design, Plant Operation, Write-up of Capital Proposal, Investment Approval, Bid Evaluation, Technical Contract Write-up, Construction and Sub-contractor Follow up, Lab Analysis, Sludge Drying and Management of Sludge Odor and Removal**. He has worked in various companies worldwide in the **USA, Germany, England and Greece**.

Mr. Thanasis is a **Registered Professional Engineer** in the **USA and Greece** and has a **Master's and Bachelor's degree in Mechanical Engineering with Honours** from the **Purdue University and SIU in USA** respectively as well as an **MBA** from the **University of Phoenix in USA**. Further, he is a **Certified Internal Verifier/Trainer/Assessor** by the **Institute of Leadership & Management (ILM)** a **Certified Instructor/Trainer** and has delivered numerous trainings, courses, seminars, workshops and conferences worldwide.

Accommodation

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

Course Fee

US\$ 7,000 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

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 workshop for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1

0730 – 0800	<i>Registration & Coffee</i>
0800 – 0815	<i>Welcome & Introduction</i>
0815 – 0830	PRE-TEST
0830 – 0930	Overview of Finfan Coolers <i>Purpose & Function of Finfan Coolers • Applications in Industrial Processes • Types of Finfan Coolers • Components of a Finfan Cooling System</i>
0930 – 0945	<i>Break</i>
0945 – 1030	Working Principles of Finfan Coolers <i>Heat Exchange Process & Airflow Mechanics • Role of Fins & Tubes in Heat Dissipation • Effects of Temperature & Flow Rate on Performance • Impact of Ambient Conditions on Cooling Efficiency</i>
1030 – 1130	Types of Finfan Cooler Designs <i>Forced Draft & Induced Draft Systems • Horizontal Versus Vertical Configurations • Variations in Fin & Tube Materials • Selection Criteria for Different Applications</i>
1130 – 1215	Maintenance Importance & Objectives <i>Reasons for Regular Maintenance • Extending Lifespan & Optimizing Efficiency • Minimizing Operational Costs • Enhancing Safety & Reliability</i>
1215 – 1230	<i>Break</i>
1230 – 1330	Safety Precautions & PPE <i>Hazards Specific to Finfan Cooler Maintenance • Proper Use of PPE in Maintenance Activities • Lockout/Tagout (LOTO) Procedures • Emergency Procedures & Risk Mitigation</i>



1330 – 1420	Tools & Equipment for Maintenance <i>Specialized Tools for Finfan Coolers • Cleaning & Inspection Equipment • Diagnostic & Measurement Instruments • Tool Care & Calibration Practices</i>
1420 – 1430	Recap <i>Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow</i>
1430	<i>Lunch & End of Day One</i>

Day 2

0730 – 0830	Visual Inspection Techniques <i>Identifying Signs of Corrosion & Damage • Examining Fins for Bending or Clogging • Inspecting Tubes for Leaks & Cracks • Assessing Fan Blades for Wear & Alignment</i>
0830 – 0930	Thermal Imaging & Temperature Monitoring <i>Principles of Thermal Imaging in Heat Exchangers • Identifying Hot & Cold Spots • Monitoring Temperature Variations Over Time • Interpreting Thermal Images for Maintenance Needs</i>
0930 – 0945	<i>Break</i>
0945 – 1100	Vibration Analysis & Monitoring <i>Common Sources of Vibration in Finfan Coolers • Vibration Analysis Techniques • Interpreting Vibration Data to Diagnose Issues • Setting Vibration Limits & Alarms</i>
1100 – 1215	Airflow & Fan Performance Testing <i>Measuring Airflow Rates & Distribution • Testing Fan Speed & Blade Condition • Evaluating Motor Performance • Identifying Factors Affecting Airflow Efficiency</i>
1215 – 1230	<i>Break</i>
1230 – 1330	Pressure Drop & Flow Rate Measurement <i>Importance of Pressure Drop in Cooler Efficiency • Measuring Pressure Differentials • Calculating Optimal Flow Rates • Analyzing Flow Data for Performance Issues</i>
1330 – 1420	Data Logging & Record-Keeping <i>Importance of Data in Predictive Maintenance • Setting Up Regular Data Logging Practices • Documenting Inspection Findings • Using Data for Performance Trend Analysis</i>
1420 – 1430	Recap <i>Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow</i>
1430	<i>Lunch & End of Day Two</i>

Day 3

0730 – 0830	Cleaning Finfan Cooler Fins & Tubes <i>Methods for Cleaning Fins (Manual, Chemical, High-Pressure) • Importance of Regular Cleaning for Efficiency • Removing Scale, Dirt, & Debris Buildup • Ensuring Minimal Impact on Fin Integrity</i>
0830 – 0930	Chemical Cleaning Procedures <i>Selecting the Right Chemical for Fin & Tube Materials • Safety Protocols for Chemical Handling • Flushing & Neutralizing Procedures • Environmental Considerations in Chemical Disposal</i>





0930 – 0945	Break
0945 – 1100	Lubrication of Moving Parts Importance of Lubrication for Fan & Motor Bearings • Types of Lubricants Suitable for Finfan Coolers • Lubrication Frequency & Methods • Signs of Under- or Over-Lubrication
1100 – 1215	Fan Blade & Motor Maintenance Checking Fan Blade Alignment & Balance • Inspecting Motor Bearings for Wear • Testing & Replacing Fan Belts • Motor Electrical Testing & Diagnostics
1215 – 1230	Break
1230 – 1330	Tube Maintenance & Leak Repair Common Causes of Tube Leaks • Detecting & Locating Leaks • Methods for Sealing or Replacing Tubes • Pressure Testing After Repairs
1330 – 1420	Inspecting & Replacing Gaskets & Seals Identifying Signs of Gasket Wear or Failure • Proper Techniques for Gasket Replacement • Types of Seals Used in Finfan Coolers • Ensuring Leak-Free Operation
1420 – 1430	Recap Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1430	Lunch & End of Day Three

Day 4

0730 – 0830	Common Issues in Finfan Coolers Identifying Symptoms of Poor Performance • Troubleshooting Low Cooling Efficiency • Common Fan & Motor Malfunctions • Diagnosing Vibration & Noise Issues
0830 – 0930	Troubleshooting High Temperature & Pressure Issues Causes of High Temperature in Cooling Systems • Diagnosing Pressure-Related Problems • Steps for Mitigating High Temperature & Pressure • Adjusting System Parameters for Efficiency
0930 – 0945	Break
0945 – 1100	Fan & Motor Troubleshooting Techniques Diagnosing Fan Alignment & Speed Issues • Checking for Motor Overheating • Identifying Power Supply & Electrical Issues • Testing Fan & Motor Connections
1100 – 1215	Preventive Maintenance Planning Setting Up a Preventive Maintenance Schedule • Recommended Intervals for Inspections & Cleaning • Checklist for Preventive Maintenance Tasks • Benefits of Proactive Versus Reactive Maintenance
1215 – 1230	Break
1230 – 1330	Predictive Maintenance & Condition Monitoring Overview of Condition-Based Monitoring (CBM) • Using Sensors to Monitor Temperature & Vibration • Setting Up Predictive Maintenance Triggers • Integrating CBM With Maintenance Planning





1330 – 1420	Creating a Maintenance Report Documenting Troubleshooting Steps & Findings • Reporting Maintenance Activities & Repairs • Recording Component Replacements • Summarizing Performance Improvements
1420 – 1430	Recap Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1430	Lunch & End of Day Four

Day 5

0730 – 0830	Energy Efficiency & Cooling Optimization Factors Affecting Finfan Cooler Efficiency • Strategies to Reduce Energy Consumption • Optimizing Fan Speed & Motor Performance • Calculating Energy Savings from Maintenance
0830 – 0930	Heat Transfer Enhancement Techniques Techniques to Enhance Heat Transfer • Modifying Fin & Tube Configurations • Using Coatings to Improve Heat Dissipation • Evaluating Performance Improvements
0930 – 0945	Break
0945 – 1100	Retrofitting & Upgrading Components Identifying When Retrofits Are Necessary • Upgrading Fans & Motors for Better Performance • Selecting Modern Materials for Durability • Cost-Benefit Analysis of Retrofitting
1100 – 1215	Evaluating & Selecting Replacement Parts Criteria for Choosing Replacement Parts • Ensuring Compatibility with Existing Systems • Quality Standards for Fin & Tube Materials • Sourcing Reliable Suppliers
1215 – 1230	Break
1230 – 1245	Developing an Asset Management Strategy for Coolers Overview of Asset Management in Cooling Systems • Lifecycle Management for Finfan Coolers • Budgeting & Planning for Replacements • Implementing Long-Term Maintenance Strategies
1245 - 1300	Continuous Improvement & Best Practices Reviewing Maintenance Practices for Effectiveness • Identifying Areas for Operational Improvement • Implementing Best Practices for Cooler Maintenance • Building a Knowledge Base for Future Training
1300 – 1315	Course Conclusion Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course
1315 – 1415	POST-TEST
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course



Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-



Course Coordinator

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