

COURSE OVERVIEW RE0242
Machine Laser Alignment

Course Title

Machine Laser Alignment

Course Date/Venue

Session 1: May 25-29, 2025/Online Virtual Training or, Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Session 2: September 14-18, 2025/Online Virtual Training or, Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE



Course Reference

RE0242

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs



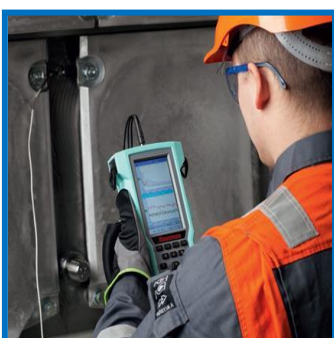
Course Description



This practical and 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.



This course is designed to provide participants with a detailed and up-to-date overview of laser alignment. It covers the laser alignment techniques and maximum utilization of existing FixturLaser functions; the importance of proper shaft alignment and the symptoms of misalignment; the foundations, baseplate, piping effects and various types of couplings, flexible and rigid couplings; the alignment and coupling tolerances and the preliminary alignment checks; the different lasers and detectors systems and the advantages of laser alignment; and laser alignment procedures, mathematical relationships and “on board” laser alignment calculations.



At the end of the course, participants will be able to carryout adjustments for thermal growth; identify “hot” alignment versus “cold” alignment and moving machinery in the field; evaluate alignment considerations for specific equipment including electric motors, pumps, gear boxes, compressors, cooling towers, blowers & fans & internal combustion engines; and prevent misalignment severity and vibrations caused by misalignment.

Course Objectives

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

- Apply proper techniques and good working knowledge on shaft alignment using laser method
- Improve the skills of laser alignment techniques and maximum utilization of existing FixturLaser functions
- Identify the importance of proper shaft alignment and the symptoms of misalignment
- Discuss the foundations, baseplate, piping effects and enumerate various types of couplings, flexible and rigid couplings
- Identify alignment and coupling tolerances and perform the preliminary alignment checks
- Enumerate the different lasers and detectors systems and state the advantages of laser alignment
- Apply laser alignment procedures, analyze mathematical relationships and perform “on board” laser alignment calculations
- Carryout adjustments for thermal growth, “hot” alignment versus “cold” alignment and moving machinery in the field
- Evaluate alignment considerations for specific equipment including electric motors, pumps, gear boxes, compressors, cooling towers, blowers & fans & internal combustion engines
- Prevent misalignment severity and vibrations caused by misalignment

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 covers systematic techniques and methodologies on laser alignment for those who are involved in the design, maintenance, or repair of rotating equipment.

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 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 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.

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. Charles Roger, MEng, CEng, Eurlng, CMRP, CRL, is a **Senior Maintenance & Reliability Engineer** with extensive experience within the **Oil & Gas, Refinery and Petrochemical** industries. His wide expertise includes Reliability-Centered Maintenance (**RCM**), Reliability Engineering Analysis (**RE**), Root Cause Analysis (**RCA**), Asset Integrity Management (**AIM**), **Maintenance Auditing, Maintenance Optimization & Best Practices, Reliability Engineering Data Analysis & Modeling**, Excellence in **Maintenance & Reliability Management, Maintenance & Reliability Best Practices, Physical Asset Management for Maintenance Excellence (ISO 55000/55001), Preventive Maintenance, Maintenance & Resource Planning, Maintenance Strategy, Pressure Vessel Inspection and CMMS software**. Further, he is also well-versed in **Corrosion Awareness & Monitoring, Corrosion Monitoring Prevention & Control, Corrosion & Control System, Corrosion Technology & Inspection, Corrosion Inhibitors, Corrosion & Concrete Protection and Corrosion Management**. He is currently the **Principal Consultant** wherein he is responsible for the ISO 55000 audits and reviews of maintenance systems, asset data, inspection plans, reliability assessments and RCA for new and mature assets to ensure compliance and safe operation.

During his career life, Mr. Roger gained his practical and field experience through his various significant positions and dedication as the **General Manager, Integrity Manager, Inspection & Maintenance Manager, Principal Consultant, Senior Integrity Consultant, Inspection Engineer and Corrosion Engineer** for numerous international companies such as the AR Consulting Ltd., **Petrofac, DONG Energy, Tracero, MCS International, Shell Global Solutions International and Shell E&P Europe**.

Mr. Roger has a **Master of Engineering (MEng) with Honours in Material Science, Corrosion and Engineering** from the **University of Manchester Institute of Science and Technology**. Further, he is a **Certified Instructor/Trainer, a Certified Maintenance and Reliability Professional (CMRP)** from the Society of Maintenance & Reliability Professionals (**SMRP**), a **Registered European Engineer** from the European Federation of National Engineering Associations (**FEANI**), a **Chartered Manager** from Chartered Management Institute (**CMI**), a **Chartered Engineer** from **The Energy Institute**, a Certified Reliability Leader (**CRL**) and a **Certified ISO 9001 Lead Auditor**. Moreover, he is an active member of the Society of Maintenance and Reliability Professionals (**SMRP**), Chartered Management Institute (**CMI**), Energy Institute, Institute of Asset Management, Asset Management Council (Australia). He has further delivered numerous trainings, courses, seminars, workshops and conference internationally.

Virtual Training

If this course is delivered online as a Virtual Training, the following limitations will be applicable:-

Certificates	Only soft copy certificates will be issued to participants through Haward's Portal. This includes Wallet Card Certificates if applicable
Training Materials	Only soft copy Training Materials (PDF format) will be issued to participant through the Virtual Training Platform
Training Methodology	80% of the program will be theory and 20% will be practical sessions, exercises, case studies, simulators or videos
Training Program	The training will be for 4 hours per day starting at 0930 and ending at 1330
H-STK Smart Training Kit	Not Applicable
Hands-on Practical Workshops	Not Applicable
Site Visit	Not Applicable
Simulators	Only software simulators will be used in the virtual courses. Hardware simulators are not applicable and will not be used in Virtual Training

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 & Coffee</i>
0800 – 0815	<i>Welcome & Introduction</i>
0815 – 0830	<i>PRE-TEST</i>
0830 – 0930	<i>The Importance of Proper Shaft Alignment</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Defining Misalignment</i>
1100 – 1215	<i>Symptoms of Misalignment</i>
1215 – 1230	<i>Break</i>
1230 – 1420	<i>Foundations, Baseplate and Piping Effects</i>
1420 – 1430	<i>Recap</i>
1430	<i>Lunch & End of Day One</i>



Day 2

0730 – 0930	<i>Various Types of Couplings, Flexible and Rigid Couplings</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Alignment & Coupling Tolerances</i>
1100 – 1230	<i>Preliminary Alignment Checks</i>
1230 – 1245	<i>Break</i>
1245 – 1420	<i>Lasers & Detectors</i>
1420 – 1430	<i>Recap</i>
1430	<i>Lunch & End of Day Two</i>

Day 3

0730 – 0930	<i>Advantages of Laser Alignment</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Techniques, Procedures & Applications of Laser Alignment (FixturLaser)</i>
1100 – 1230	<i>Identification & Correction of Softfoot, Horizontal & Vertical Machines & Machine Train Alignment</i>
1230 – 1245	<i>Break</i>
1245 – 1420	<i>Laser Alignment Procedures (Including Video Presentation)</i>
1420 – 1430	<i>Recap</i>
1430	<i>Lunch & End of Day Three</i>

Day 4

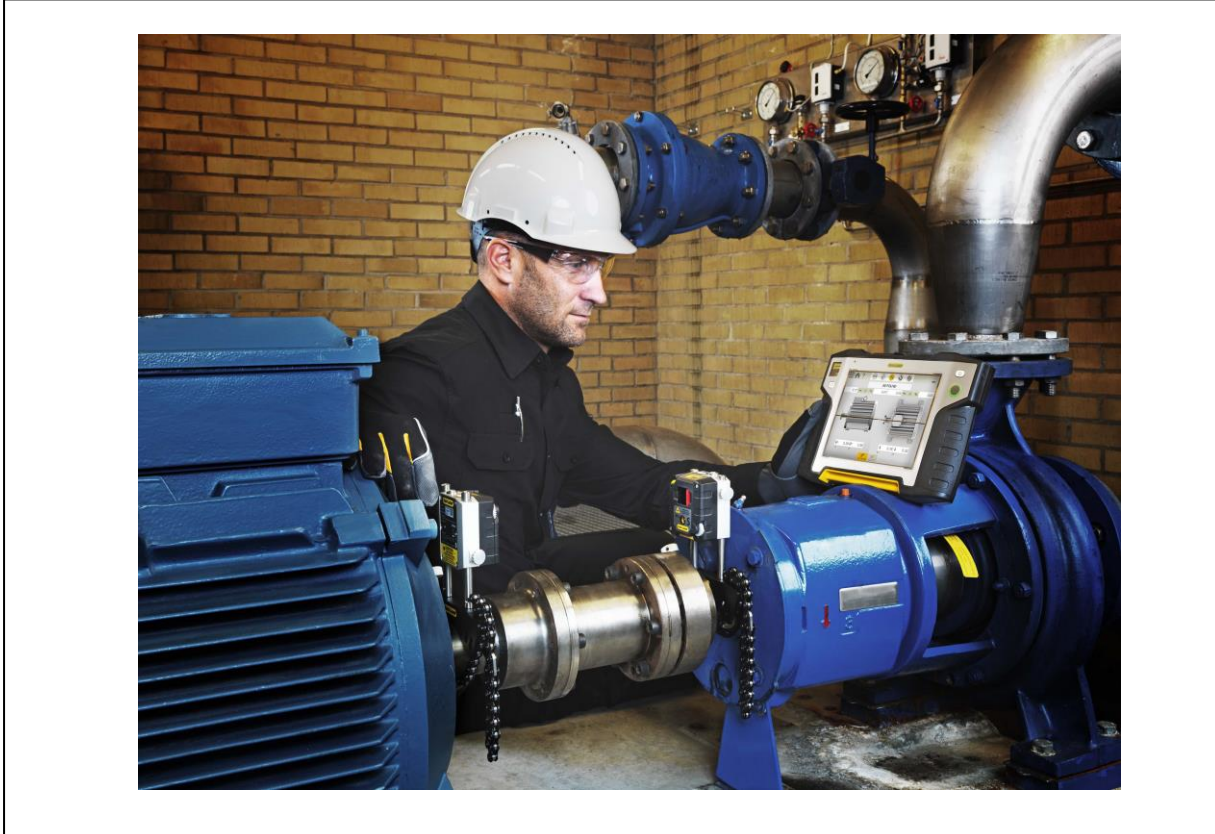
0730 – 0930	<i>“On Board” Laser Alignment Calculations</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>“On Board” Laser Alignment Calculations (cont’d)</i>
1100 – 1230	<i>Adjustments for Thermal Growth</i>
1230 – 1245	<i>Break</i>
1245 – 1420	<i>“Hot” Alignment versus “Cold” Alignment</i>
1420 – 1430	<i>Recap</i>
1430	<i>Lunch & End of Day Four</i>

Day 5

0730 – 0830	<i>Misalignment Severity</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Misalignment Severity (cont’d)</i>
1100 – 1215	<i>Vibrations Caused by Misalignment</i>
1215 – 1230	<i>Break</i>
1230 – 1300	<i>Vibrations Caused by Misalignment (cont’d)</i>
1345 – 1400	<i>Course Conclusion</i>
1400 – 1415	<i>POST TEST</i>
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch & End of Course</i>

Practical Sessions

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



Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org