

COURSE OVERVIEW ME0382-4D
Couplings & Shaft Alignment

Course Title

Couplings & Shaft Alignment

Course Reference

ME0382-4D

Course Duration

Four days/2.4 CEUs/24 PDHs



Course Date/Venue

Session(s)	Date	Venue
1	January 29 - February 01, 2024	Cheops Meeting Room, Radisson Blu Hotel, Istanbul Sisli, Turkey
2	March 04-07, 2024	Jubail Hall, Signature Al Khobar Hotel, Al Khobar, KSA
3	June 03-06, 2024	Ajman Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
4	September 23-26, 2024	Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Description



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



This course is designed to provide participants with a detailed and up-to-date overview of couplings and shaft alignment. It covers the types, application and operation of couplings including its classification and rigid characteristics; the parameters of couplings for pumps, compressors and turbines; the advantages and disadvantages of different types of couplings; the installation, maintenance and troubleshooting of couplings; the installation best practices, safety issues the coupling inspection in operation; and vibration monitoring and analysis, preventive maintenance, condition monitoring, failure prevention and troubleshooting.



During this interactive course, participants will learn the shaft alignment basics including the need for shaft alignment, shaft misalignment effects and misalignment types; the measuring techniques and rim and face alignment method; the alignment measurement methods; the effect of misalignment on bearings and seals; the vibration monitoring results as indication of misalignment; the effect of misalignment on seals of pumps and compressors; and the leakage control and prevention.



Course Objectives

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

- Apply and gain an in-depth knowledge on couplings and shaft alignment
- Discuss the types, application and operation of couplings including its classification and rigid characteristics
- Select the parameters of couplings for pumps, compressors and turbines
- Discuss the advantages and disadvantages of different types of couplings
- Install, maintain and troubleshoot couplings covering the installation best practices and safety issues as well as the coupling inspection in operation
- Carryout vibration monitoring and analysis, preventive maintenance, condition monitoring, failure prevention and troubleshooting
- Explain the shaft alignment basics including the need for shaft alignment, shaft misalignment effects and misalignment types
- Use the measuring techniques and rim and face alignment method
- Employ the alignment measurement methods consisting of reverse dial methodology, misalignment correction, thermal growth determination, laser optic technique and misalignment detected by vibration monitoring
- Discuss the effect of misalignment on bearings and seals including vibration monitoring results as indication of misalignment
- Explain the effect of misalignment on seals of pumps and compressors as well as carryout leakage control and prevention

Who Should Attend

This course provides an overview of all significant aspects and considerations of couplings and shaft alignment for engineers and maintenance planners involved in machine's condition monitoring, professionals dealing with the operation and maintenance of rotating equipment, maintenance technicians who are in charge of correcting the machinery problems, new technicians who wish to improve knowledge and skills as well as all those involved in condition monitoring and vibration analysis.

Training Methodology

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures
- 20% Workshops & Work Presentations
- 30% Case Studies & Practical Exercises
- 20% Software, Simulators & 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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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 **2.4 CEUs** (Continuing Education Units) or **24 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.

Accommodation

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



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. Pete Du Plessis is a **Senior Mechanical & Safety Engineer** within **Oil, Gas** and **Petrochemical** industries. His expertise includes **Pressure Safety Valve (PSV), Pressure Relief Valve (PRV), Security Valves, PRV & POPRV Operation, PRV Repair & Disassembly, Valve Components, Valve Troubleshooting, Valve Actuators, Valve Seals & Packing, Pumps, Compressors, Bearings, Lubrication, Root Cause Analysis, Maintenance Management, Maintenance Planning, Shutdown & Turnaround, Mechanical Troubleshooting, Preventive & Predictive Maintenance, Condition Monitoring, Start-up & Commissioning, Process Plant Commissioning, Cost Estimation, Dynamic Hydraulic Testing, COSHH, P&ID Reading, Engineering Drawings, Piping & Instrumentation Diagrams, Isometrics Drafting, Control & Safety Systems, PFD, Environmental Management (ISO 14001), Safety Management (OHSAS 18001), Quality Management (ISO 9001)** with over **30 years** of practical experience in the **Oil, Gas, Power** and **Petrochemical** industry. His wide experience also includes **Process Safety, Process Troubleshooting & Problem Solving, Process Hazard Analysis (PHA), Process Safety Management, Risk Assessment** within Production Operation, **Hazard Identification, Safety Auditing, Site Inspection, Quantified Risk Assessment, HAZOP Studies & Leadership, FMEA, Waste Management, Industrial Effluents, Hazardous Material, Chemical Handling, Emergency Response Services, HAZCOM, HAZWOPER** and **HAZMAT**.

While Mr. Du Plessis has been very active in the process industry he has likewise headed Consultancy projects for major **petrochemical companies**. In all his projects, he utilizes a systems approach which includes **risk management, process safety**, health & environmental management, human behaviour and quality management. Furthermore, he has come to share his expertise through the **numerous international trainings** he has held on **PHA, HAZOP, Risk Assessment, Handling Hazardous Materials & Chemicals, Petroleum Products Handling & Transportation**. Moreover, he completed various assignments as a consultant, trainer, facilitator, auditor & designer and conducted numerous licensed international Safety, Technology and Auditing Awareness & Implementing training courses including **IMS, ISO 9001, ISO 14001, ISO 27001, ISO 17799, OHSAS 18001** audits & assessments. With his accomplishments and achievements, he had been a **Safety Superintendent, Senior Safety Official** and **Senior Process Controller** for several international petrochemical companies.

Mr. Plessis has a **Bachelor** degree with **Honours** in **Industrial Engineering & Management**. Further, he has gained **Diploma in Quality & Production Management**. He is also a **Certified Assessor & Moderator** with the Manufacturing, Engineering & Related Services Education and Training Authority (MERSETA), a **Certified Trainer/Assessor** by the **Institute of Leadership & Management (ILM)** and a **Certified Instructor/Trainer**.



Course Fee

Istanbul	US\$ 5,000 per Delegate + VAT . This rate includes Participants Pack (Folder, Manual, Hand-outs, etc.), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Al Khobar	US\$ 4,500 per Delegate + VAT . This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Abu Dhabi	US\$ 4,500 per Delegate + VAT . This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Dubai	US\$ 4,500 per Delegate + VAT . This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course 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	PRE-TEST
0830 – 0930	<i>Couplings - Types, Application & Operation</i> <i>Classification & Application of Couplings • Characteristics of Rigid Couplings</i>
0930 – 0945	<i>Break</i>
0945 - 1100	<i>Couplings - Types, Application & Operation (cont'd)</i> <i>Characteristics of Flexible Couplings</i>
1100 – 1230	<i>Couplings - Types, Application & Operation (cont'd)</i> <i>Selection of Parameters of Couplings for Pumps & Compressors and Turbines</i>
1230 – 1245	<i>Break</i>
1245 – 1420	<i>Couplings - Types, Application & Operation (cont'd)</i> <i>Advantages & Disadvantages of Different Types</i>
1420 – 1430	Recap
1430	<i>Lunch & End of Day One</i>

Day 2

0730 – 0930	<i>Couplings - Installation, Maintenance & Troubleshooting</i> <i>Installation Best Practices & Safety Issues • Coupling Inspection in Operation</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Couplings - Installation, Maintenance & Troubleshooting (cont'd)</i> <i>Vibration Monitoring and Analysis</i>
1100 – 1230	<i>Couplings - Installation, Maintenance & Troubleshooting (cont'd)</i> <i>Preventive Maintenance & Condition Monitoring</i>
1230 – 1245	<i>Break</i>
1245 – 1420	<i>Couplings - Installation, Maintenance & Troubleshooting (cont'd)</i> <i>Failure Prevention & Troubleshooting</i>
1420 – 1430	Recap
1430	<i>Lunch & End of Day Two</i>





Day 3

0730 – 0930	Shaft Alignment Basics Need for Shaft Alignment • Effects of Shaft Misalignment
0930 – 0945	Break
0945 – 1100	Shaft Alignment Basics (cont'd) Types of Misalignment: Offset and Angularity
1100 – 1230	Shaft Alignment Basics (cont'd) Measuring Techniques • Rim and Face Alignment Method: TIR Determination
1230 – 1245	Break
1245 – 1420	Alignment Measurement Methods Reverse Dial Methodology • Correcting Misalignment: Foundation and Soft Foot • Thermal Growth Determination • Laser Optic Technique • Misalignment Detected by Vibration Monitoring
1420 – 1430	Recap
1430	Lunch & End of Day Three

Day 4

0730 – 0930	Effect of Misalignment on Bearings & Seals Effect of Misalignment of Bearings
0930 – 0945	Break
0945 – 1100	Effect of Misalignment on Bearings & Seals (cont'd) Vibration Monitoring Results as Indication of Misalignment
1100 – 1230	Effect of Misalignment on Bearings & Seals (cont'd) Effect of Misalignment on Seals of Pumps and Compressors
1230 – 1245	Break
1245 – 1345	Effect of Misalignment on Bearings & Seals (cont'd) Leakage Control & Prevention
1345 – 1400	Course Conclusion
1400 – 1415	POST-TEST
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course



Simulator (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 state-of-the-art simulator “iLearnVibration”.



Course Coordinator

Kamel Ghanem, Tel: +971 2 30 91 714, Email: kamel@haward.org