

MAINTENANCE AND ENGINEERING | COURSE BROCHURE

Pumps, Compressors and Rotating Equipment Maintenance

5 days | Classroom training | English

SMART HORIZON

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Course content

Why attend

Pumps, compressors, fans and turbines are critical to the operation of industrial plants, utilities and buildings. This course provides practical knowledge of how rotating equipment works, common failure modes and the maintenance and troubleshooting techniques that keep it running reliably. Topics include centrifugal and positive displacement pumps, compressors, seals, bearings, alignment, balancing, vibration basics and performance monitoring. Participants work through troubleshooting cases based on real plant problems.

Failures of rotating equipment are a leading cause of unplanned downtime and costly repairs. This course gives you the knowledge to operate, maintain and troubleshoot rotating equipment more effectively, extending equipment life and improving plant reliability.

Professional Problems This Course Is Designed to Solve

• Difficulty translating subject knowledge into practical workplace decisions.
• Inconsistent approaches to the activities covered in the course outline.
• Lack of a structured plan for applying and reviewing new skills.

Course methodology

The course combines technical presentations, equipment cut-away diagrams and videos, performance curve exercises, troubleshooting case studies and maintenance planning workshops.

Course objectives

By the end of this course, participants will be able to:
• Explain the operating principles of pumps and compressors
• Interpret performance curves and system characteristics
• Identify common failure modes of rotating equipment
• Apply maintenance practices for seals, bearings and couplings
• Use alignment, balancing and vibration monitoring basics
• Troubleshoot rotating equipment problems systematically



Course content

Target audience

This course is suitable for:
- Mechanical maintenance engineers and technicians
- Reliability engineers
- Plant and process engineers
- Maintenance supervisors and planners
- Operations personnel responsible for rotating equipment

Target competencies

Participants will develop competencies in:
- Pump and compressor operation
- Performance analysis
- Seal and bearing maintenance
- Shaft alignment
- Vibration monitoring basics
- Systematic troubleshooting

Course outline

Day 1: Pump Fundamentals

09:00–09:54	Centrifugal and positive displacement pumps
09:54–10:48	Pump performance curves and system curves
10:48–11:00	Net positive suction head and cavitation
11:00–11:30	**Coffee break**
11:30–12:12	Net positive suction head and cavitation (continued)
12:12–13:06	Pump selection and operation
13:06–14:00	Exercise: Interpreting pump curves

Day 2: Compressors and Fans

09:00–09:54	Reciprocating, screw and centrifugal compressors
09:54–10:48	Compressor performance and control
10:48–11:00	Surge and other operating problems



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11:00–11:30	**Coffee break**
11:30–12:12	Surge and other operating problems (continued)
12:12–13:06	Fans and blowers
13:06–14:00	Exercise: Compressor operating scenarios

Day 3: Seals, Bearings and Couplings

09:00–09:54	Mechanical seal types and failures
09:54–10:48	Bearing types, lubrication and failure analysis
10:48–11:00	Couplings and their maintenance
11:00–11:30	**Coffee break**
11:30–12:12	Couplings and their maintenance (continued)
12:12–13:06	Installation best practice
13:06–14:00	Workshop: Bearing and seal failure analysis

Day 4: Alignment, Balancing and Monitoring

09:00–09:54	Shaft alignment methods
09:54–10:48	Rotor balancing principles
10:48–11:00	Vibration basics and common fault signatures
11:00–11:30	**Coffee break**
11:30–12:12	Vibration basics and common fault signatures (continued)
12:12–13:06	Temperature and performance monitoring
13:06–14:00	Demonstration: Alignment and vibration analysis

Day 5: Troubleshooting and Maintenance Strategy

09:00–09:54	Systematic troubleshooting approach
09:54–10:48	Root cause failure analysis
10:48–11:00	Preventive and predictive maintenance plans



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11:00–11:30	**Coffee break**
11:30–12:12	Preventive and predictive maintenance plans (continued)
12:12–13:06	Spare parts and overhaul planning
13:06–14:00	Capstone: Troubleshooting case studies

The timings provided are estimates and may vary depending on the number of participants and the discussions taking place during the sessions. They are indicative only and do not constitute a binding commitment.

Dates, venues and fees

Current published course plans. Fees are per participant in EUR, excluding unconfirmed taxes.

Venue	Start date	End date	Fee (EUR)
Barcelona Confirmed dates	9 Nov 2026	13 Nov 2026	**€5,680.-**
Online Confirmed dates	9 Nov 2026	13 Nov 2026	**€1,250.-**
Dubai Confirmed dates	16 Nov 2026	20 Nov 2026	**€6,300.-**
Online Confirmed dates	16 Nov 2026	20 Nov 2026	**€1,250.-**
Frankfurt Confirmed dates	7 Dec 2026	11 Dec 2026	**€5,300.-**
Online Confirmed dates	7 Dec 2026	11 Dec 2026	**€1,250.-**



Course content

Dates, venues and fees (continued)

Venue	Start date	End date	Fee (EUR)
Kuala Lumpur Confirmed dates	14 Dec 2026	18 Dec 2026	**€2,900.–**
Online Confirmed dates	14 Dec 2026	18 Dec 2026	**€1,250.–**
Paris Confirmed dates	4 Jan 2027	8 Jan 2027	**€5,720.–**
Online Confirmed dates	4 Jan 2027	8 Jan 2027	**€1,250.–**
Istanbul Confirmed dates	18 Jan 2027	22 Jan 2027	**€5,300.–**
Online Confirmed dates	18 Jan 2027	22 Jan 2027	**€1,250.–**
Cape Town Confirmed dates	25 Jan 2027	29 Jan 2027	**€3,780.–**
Online Confirmed dates	25 Jan 2027	29 Jan 2027	**€1,250.–**
Amsterdam Confirmed dates	1 Feb 2027	5 Feb 2027	**€5,080.–**



Course content

Dates, venues and fees (continued)

Venue	Start date	End date	Fee (EUR)
Online Confirmed dates	1 Feb 2027	5 Feb 2027	**€1,250.–**
Singapore Confirmed dates	15 Feb 2027	19 Feb 2027	**€5,640.–**
Online Confirmed dates	15 Feb 2027	19 Feb 2027	**€1,250.–**
London Confirmed dates	1 Mar 2027	5 Mar 2027	**€4,900.–**
Online Confirmed dates	1 Mar 2027	5 Mar 2027	**€1,250.–**
Dubai Confirmed dates	15 Mar 2027	19 Mar 2027	**€6,300.–**
Online Confirmed dates	15 Mar 2027	19 Mar 2027	**€1,250.–**
Vienna Confirmed dates	29 Mar 2027	2 Apr 2027	**€5,880.–**
Online Confirmed dates	29 Mar 2027	2 Apr 2027	**€1,250.–**



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Dates, venues and fees (continued)

Venue	Start date	End date	Fee (EUR)
Frankfurt Confirmed dates	5 Apr 2027	9 Apr 2027	**€5,300.–**
Online Confirmed dates	5 Apr 2027	9 Apr 2027	**€1,250.–**
Kuala Lumpur Confirmed dates	19 Apr 2027	23 Apr 2027	**€2,900.–**
Online Confirmed dates	19 Apr 2027	23 Apr 2027	**€1,250.–**
Paris Confirmed dates	3 May 2027	7 May 2027	**€5,720.–**
Online Confirmed dates	3 May 2027	7 May 2027	**€1,250.–**
Istanbul Confirmed dates	17 May 2027	21 May 2027	**€5,300.–**
Online Confirmed dates	17 May 2027	21 May 2027	**€1,250.–**
Cape Town Confirmed dates	31 May 2027	4 Jun 2027	**€3,780.–**



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Dates, venues and fees (continued)

Venue	Start date	End date	Fee (EUR)
Online Confirmed dates	31 May 2027	4 Jun 2027	**€1,250.–**
Amsterdam Confirmed dates	7 Jun 2027	11 Jun 2027	**€5,080.–**
Online Confirmed dates	7 Jun 2027	11 Jun 2027	**€1,250.–**
Singapore Confirmed dates	21 Jun 2027	25 Jun 2027	**€5,640.–**
Online Confirmed dates	21 Jun 2027	25 Jun 2027	**€1,250.–**
London Confirmed dates	5 Jul 2027	9 Jul 2027	**€4,900.–**
Online Confirmed dates	5 Jul 2027	9 Jul 2027	**€1,250.–**
Dubai Confirmed dates	19 Jul 2027	23 Jul 2027	**€6,300.–**
Online Confirmed dates	19 Jul 2027	23 Jul 2027	**€1,250.–**



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Dates, venues and fees (continued)

Venue	Start date	End date	Fee (EUR)
Frankfurt Confirmed dates	2 Aug 2027	6 Aug 2027	**€5,300.-**
Online Confirmed dates	2 Aug 2027	6 Aug 2027	**€1,250.-**
Rome Confirmed dates	9 Aug 2027	13 Aug 2027	**€4,900.-**
Online Confirmed dates	9 Aug 2027	13 Aug 2027	**€1,250.-**
Kuala Lumpur Confirmed dates	16 Aug 2027	20 Aug 2027	**€2,900.-**
Online Confirmed dates	16 Aug 2027	20 Aug 2027	**€1,250.-**
Paris Confirmed dates	6 Sept 2027	10 Sept 2027	**€5,720.-**
Online Confirmed dates	6 Sept 2027	10 Sept 2027	**€1,250.-**
Istanbul Confirmed dates	20 Sept 2027	24 Sept 2027	**€5,300.-**



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Dates, venues and fees (continued)

Venue	Start date	End date	Fee (EUR)
Online Confirmed dates	20 Sept 2027	24 Sept 2027	**€1,250.–**
Amsterdam Confirmed dates	4 Oct 2027	8 Oct 2027	**€5,080.–**
Online Confirmed dates	4 Oct 2027	8 Oct 2027	**€1,250.–**
Rome Confirmed dates	11 Oct 2027	15 Oct 2027	**€4,900.–**
Online Confirmed dates	11 Oct 2027	15 Oct 2027	**€1,250.–**
Singapore Confirmed dates	18 Oct 2027	22 Oct 2027	**€5,640.–**
Online Confirmed dates	18 Oct 2027	22 Oct 2027	**€1,250.–**
London Confirmed dates	1 Nov 2027	5 Nov 2027	**€4,900.–**
Online Confirmed dates	1 Nov 2027	5 Nov 2027	**€1,250.–**



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Dates, venues and fees (continued)

Venue	Start date	End date	Fee (EUR)
Dubai Confirmed dates	15 Nov 2027	19 Nov 2027	**€6,300.–**
Online Confirmed dates	15 Nov 2027	19 Nov 2027	**€1,250.–**
Frankfurt Confirmed dates	6 Dec 2027	10 Dec 2027	**€5,300.–**
Online Confirmed dates	6 Dec 2027	10 Dec 2027	**€1,250.–**
Kuala Lumpur Confirmed dates	13 Dec 2027	17 Dec 2027	**€2,900.–**
Online Confirmed dates	13 Dec 2027	17 Dec 2027	**€1,250.–**



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Plan your next step

Dates, availability, exact venue, taxes, inclusions and payment terms require written confirmation. This brochure is not a quotation, registration, booking confirmation or visa invitation. Participants receive a Smart Horizon certificate of attendance; programmes are not externally accredited and do not award a professional qualification or designation. Confirm arrangements before booking travel.

For group or in-house training, contact our learning team to discuss your objectives and delivery arrangements.

Contact Smart Horizon

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