LIVE
ONLINE
TRAINING

Operation, Diagnostics and Maintenance of Equipment for Oil & Gas Production

24TH, 25TH & 26TH May 2022
Timings: 10:00 AM TO 2:30 PM
(GULF STANDARD TIME) – ALL 3 DAYS

Quantuz Global

MODULES COVERED
10 MODULES

TIMINGS:
4 HOURS 30 MINUTES
PER DAY, ON ALL 3 DAYS

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https://quantuzglobal.com

Course Overview

Pressure vessels, storage tanks, and piping systems together with rotating machinery for fluid transport represent major capital investment in any Oil / Gas Production operation. Good fabrication of these components, based on rigorous material selection is likely to provide long service life of equipment. Material degradation and aging requires application of adequate diagnostic techniques and continuous monitoring. Regular monitoring and inspection techniques can help in providing basis for estimating the health of the existing components of the equipment as well as the overall risk assessment.

The delegates will be introduced to the main points of inspection and testing of storage tanks and piping systems according to the relevant API standards in order to perform the fitness for service (FFS) analysis. The most up-to-date methods of equipment protection methodologies will be presented together with maintenance activities, including necessary repairs as prevention of failures. This Operation, Diagnostics and Maintenance of Equipment for Oil & Gas Production training will also cover methodology of the risk assessment and management regarding the overall equipment integrity

ORGANISATIONAL IMPACT

Proper design and construction of new plant with appropriate specification would result in significant measurable improvements in process plant systems including: improved plant integrity, reliability and availability with fewer failures that leading to:

Improved plant integrity
Improved equipment reliability
Improved equipment availability
Better safety record
Improved plant profitability
Improved plant integration and operation

WHO SHOULD ATTEND?

This training seminar is suitable to a whole range of professionals but will greatly benefit:

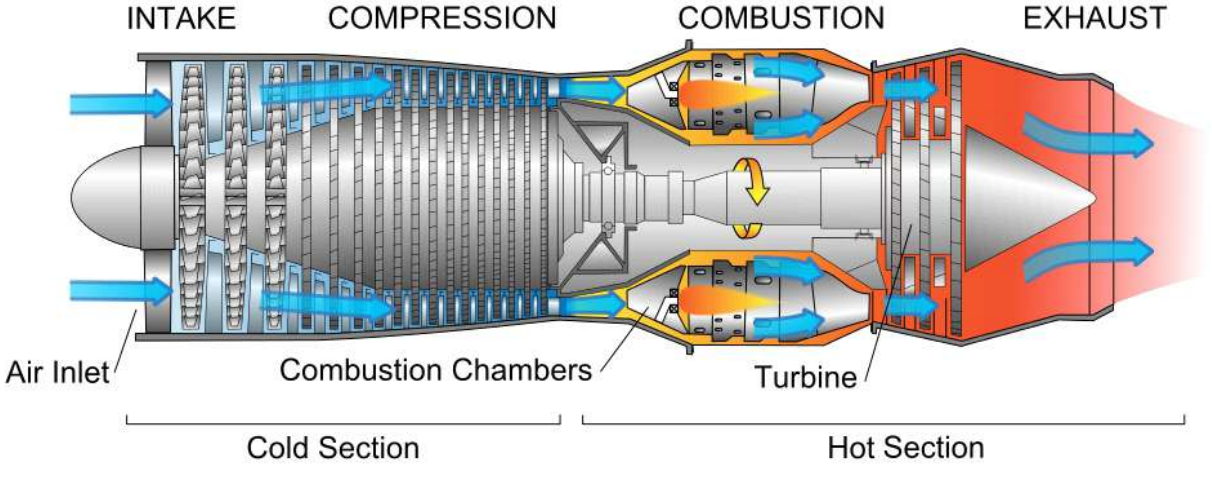
Operation, technical service and maintenance professionals

Technical professionals responsible for maintenance and repair of equipment

Professionals involved in inspection and maintenance and repair

Technical professionals dealing with risk assessment and integrity analysis

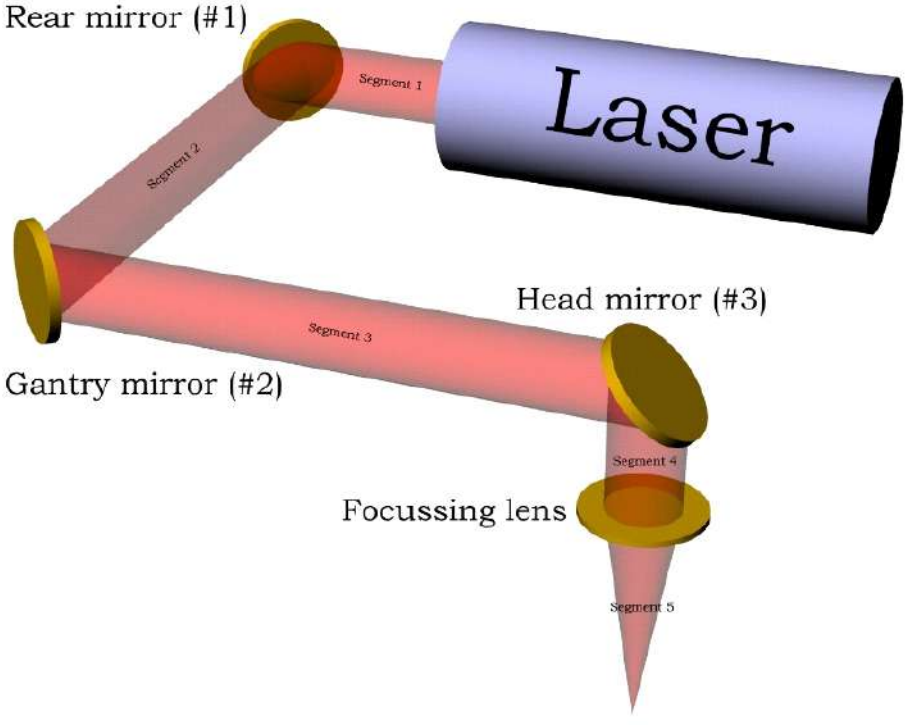
Technicians dealing with regulating and metering and other measurements



Day 1

Module 1:- Rotating Equipment-Turbines

- Theory of the Gas Turbine.
- Comparison with the four stroke cycle internal combustion operation, Efficiency comparison of both.
- Cycle of operation. Effects of ambient temperature and altitude on performance.
- General description of engine and systems.
- Gas generator - compressor blades and staging, combustion chambers, CT discs & blades.
- Starting systems – types of starter – air turbine, hydraulic, electric and diesel engine starter motors
- Fuel system types – gas, liquid & dual fuel. Igniters, burners, filters and demisters.
- Lubricating oil systems. Pumps , filters and thermostatic valves and coolers etc.
- Air Systems – cooling and sealing air. Types of air intake filtration systems.
- Anti-surge systems - bleed valves, blow off valves and variable inlet guide vanes.
- Servicing – borescope inspections, compressor cleaning etc.
- Maintenance Types- PM -PDM-RCM



Module 2 :- Alignment.- An Aid to Equipment Reliability & Optimization

- Rim and face.
- Reverse.
- Universal.
- Laser – opt align / Perm align.
- Shim correction calculations.
- The cold offset.
- Effects of temperature on alignment – process conditions, dynamic conditions, sun swing etc.
- Case Studies
- Group Studies
- Self-Assessment Questions

Module 3:- Couplings.

- Mechanical couplings – types and applications.
- Flexible coupling design, types, application and installation.

Module 4:- Bearings.

- Types – radial - sleeve, rolling element. Thrust – Tilt pad & back to back rolling element.
- Advantages and disadvantages of sleeve and rolling element bearings.
- Effects of oil whirl.
- Oil whirl – reduction of – tilt pad, pocketed and lemon bore bearings.

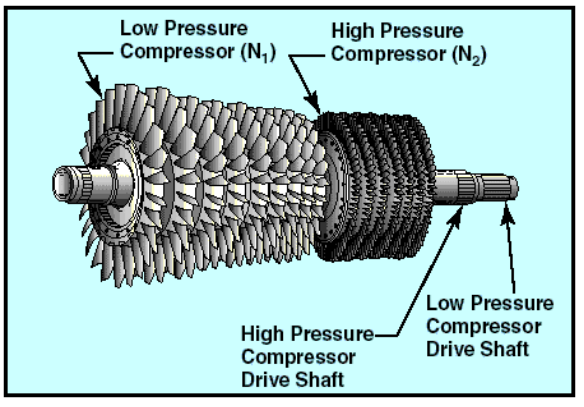
Day 2

Module 5:- Pumps.

- Types and application – positive displacement/ centrifugal types – performance data – pump curves.
- Hydraulic disturbance in centrifugal pumps – cavitation – lack of N.P.S.H.
- Hydraulic balance of rotating assemblies – minimizing of axial forces – impeller arrangements – balancing drums/discs and balancing lines..
- Mechanical design – vertical/horizontal, single , multi-stage, volute/diffuser, impeller arrangements.
- Pump maintenance and trouble shooting.

Module 6:- Mechanical Seals.

- Balancing of seals – meaning of and effect.
- Function, materials of construction - suitability.
- Common causes of failure.
- Sealing systems – flushing and quenching of seal faces.
- Seal face refurbishment.



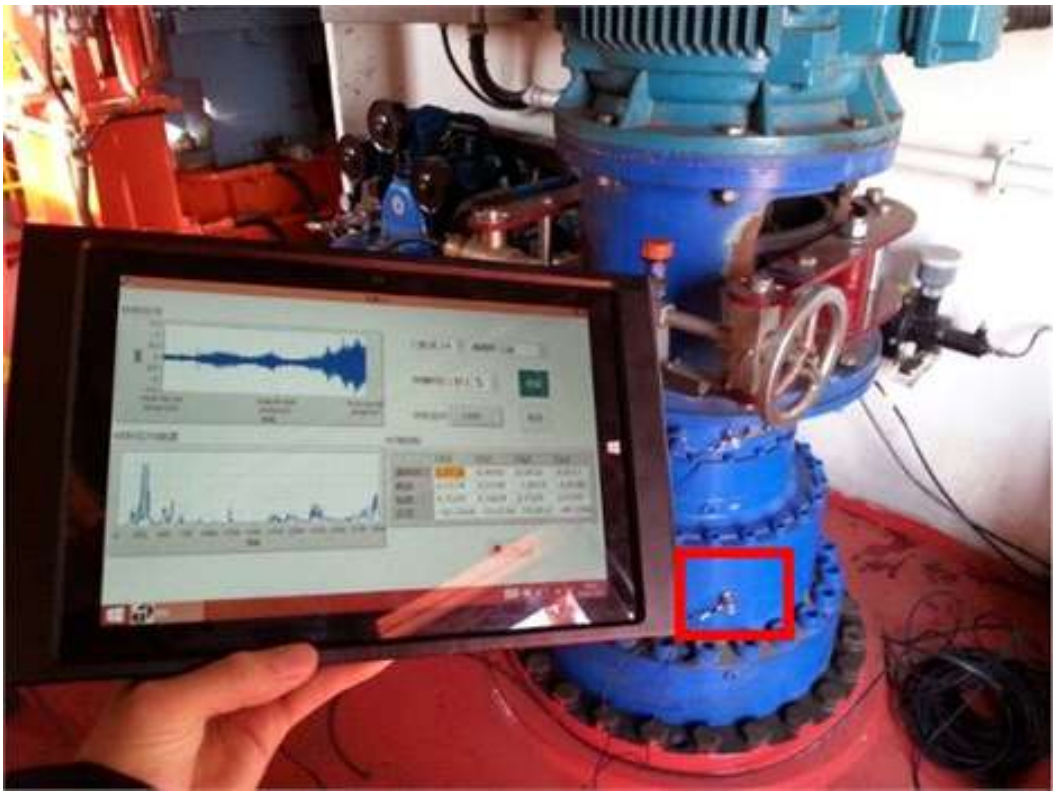
Module 7:- Compressors.

- Types – Centrifugal, Axial and Positive Displacement.
- Centrifugal types - horizontal split case, barrel, back to back side stream.
- Concept of fluid head.
- Performance relationships.
- Effects of gas density change.
- Surge and stonewall. Anti-surge methods.
- Compressor design overview – ceramic coating of wheels/ impellers and diaphragms/diffusers.
- Rotor axial thrust forces – minimizing – balancing pistons.
- Compressor sealing systems overview and types.
- Labyrinth seals – function. Wet seals, dry gas seals.
- Buffer gas and seal oil systems – heater and vacuum degassing systems.
- Process gas cooling and scrubbing systems.
- Positive displacement compressors.
- Types – reciprocating piston- single or double acting, rotary compressors, sliding vane, liquid ring, screw, and lobe.
- Principle of operation.
- Reciprocating compressors – major components – pistons and rods, x- heads, crankshafts, packing
- Boxes and Packing.
- Cylinder liners- wet and dry types.
- Head end / crank end clearance ratio.
- Packing - pressure breaker, radial and tangentially cut.
- Piston rod run-out, monitoring of, effect on packing
- Piston rings & rider rings, dry and lubricated liners. Monitoring rider ring wear rate.
- Valves – types. Plate, spring and channel. Suction valve unloading mechanisms..
- Lubrication systems.

Day 3

Module 8 :- Lubrication-Essential for Equipment Reliability

- Lubricate moving parts to minimize wear
- Lubricate to minimize power loss from friction
- Lubricate to remove heat from engine parts
- Lubricate to absorb shocks between bearing and other engine parts thus reducing engine noise and extending engine life.



Module 9:- Diagnostics Vibration & Other Troubleshooting Techniques-

- Vibration Analysis
- Thermography
- Tribology
- Process Parameters
- Visual Inspection
- NTD – Techniques
- Sorting out Imbalance and finding the Resultant Vector to insure proper Balance of Equipment

Module 10:- Key Elements of Reliability Centered Maintenance

- Background To RCM
- RCM Tools for troubleshooting
- RCM and how it Aids Equipment Reliability & Optimization

Training Methodology

- Comprehensive Manual
- Supporting Power Point Presentations
- Videos of Rotating Equipment
- Case Studies
- Group Studies

Training fee : **$2500** per delegate

DR JAMES.M.WATTERSON
PHD MECHANICAL ENGINEERING-QUANTUM MECHANICS

Dr James has in excess of 30 years experience as Lead Trainer and currently visiting lecturer with the Newcastle-Upon –Tyne University. This has taken him from Ireland into over twenty-nine countries. He has mostly been involved in Oil& Gas Refineries, Petrochemical, Power Plant, Fertilizer manufacture and Mining (Gold) Dr James is also the author of 4 Technical books, “The Theory of Tribology” “Understanding Compressors” “ Rotating Equipment” “Diagnostic Skills.” He has also produced 40 courses- Technical- Soft Skills- Project Mgmt

EXPERTISE

Maintenance Planning & Scheduling.
Shutdowns- Start-Up
Failure Analysis & Machinery Diagnostics
Preventive& Predictive- Maintenance-TPM
Vibration Analysis
Valve & Actuator Technology
Crisis Management
Hazard Analysis-HAZOP
Advanced Safety Analysis
Problem- Solving Techniques

EDUCATION

FTC(HNC) Mechanical Eng
Bsc/Msc Mechanical Eng
PhD Mechanical Engineering

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Sales Contract

Event Code: **ODM004**

Please complete this form and mail to : info@quantuzglobal.com office:- +919739479900

Registration Details

☐ Ms: ☐ Mrs: ☐ Mr Surname:..... ☐ Ms: ☐ Mrs: ☐ Mr Surname:.....

Name: ..... Name: .....

Job Title:..... Job Title:.....

Email: ..... Email :.....

Organization Details

Country:

Organization:..... Phone:.....

Contact Person:..... Fax:.....

Email: ..... Address:.....

City:..... Nature of Business:.....

Country:..... Website:.....

Authorization

Booking is invalid without a signature:

Signatory must be authorized on behalf of contracting organization.:

Name:.....

Date: .....

Signature:.....

Fees

☐ USD **2500** per delegate

20 USD Administration Charges will be applied. Payment is required within 10 working days Payment Method- Bank Transfer

Terms and Conditions

- Course fee must be paid in full at time of enrolment. Your enrolments are not guaranteed unless full payment is received by us.
- If we are notified of your enrolment cancellation more than 30 days from the training date, your payment can be 100% refunded to you or applied to another QUANTUZ GLOBAL
- training and/or instructor of your choice. This credit will expire after 1 year and the funds will be considered forfeited.
- If we are notified of your cancellation 15 days or less from the start of training course, your payment will be non-refundable.
- If you voluntarily withdraw from training after the commencement of the class for any reason, your class fee will not be refunded or credited.
- If, for any reason, you are removed from a class you are participating in by the instructor, you are entitled to a 25% refund. The remaining fee is not refundable.
- In the event QUANTUZ GLOBAL or the instructor cancels a class for any reason prior to the class, you have the option to apply your registration payment to another QUANTUZ GLOBAL course or a full refund.
- If the instructor has to suspend a class due to circumstances (i.e. weather, acts of God, etc) outside of the instructor's control, QUANTUZ GLOBAL will make every attempt to reschedule
- the class expeditiously. Refunds will not be issued under such circumstances.
- QUANTUZ GLOBAL, reserves the right to change, update, or alter our policies at any time.
- ASSISTANCE : If you need assistance, please feel free to email info@quantuzglobal.com

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