



PSR

PERFORMANCE | SAFETY | RELIABILITY

PSR INTERACTIVE



EQUIPMENT 03 - MECHANICAL EQUIPMENT

This program is designed to give your production personnel the knowledge, skills and focus to maximize the performance, safety and reliability of your pumps, compressors and turbines, covering in detail topics such as:

- fundamentals of reliability
- principles of operation
- types, classifications and components
- operating problems

CONTENT	DESCRIPTION
Introduction	A brief introduction designed to prepare trainees for the modules that follow
Module 01 - Reliability	Definition, maintenance costs, operating costs, breakdowns, troubleshooting, reliability program structure, record keeping, design review, quality assurance, monitoring/analysis/diagnosis, machinery monitoring and protection, bad actors
Module 02 - Centrifugal Pumps	<p>Components - casings, impellers, wear rings, shafts and sleeves, packing, lantern rings, throat bushings, mechanical seals, bearings, balancing drums, baseplates, pedestals, foundations, couplings and coupling guards</p> <p>Problems - cavitation, aeration, suction filtering, series and parallel operation, backflows, windmilling, overloading, automatic and remote starting, minimum flow spillbacks, cooling systems, movement of suction and discharge piping</p>
Module 03 - Reciprocating Pumps	<p>Components - cylinder, piston, plunger, stuffing box, packing, valves, power frame, crankshaft, main bearings, connecting rod and crosshead</p> <p>Problems - discharge pressure, speed and flow</p>
Module 04 - Rotary Pumps	<p>Components - pumping chamber, casing, rotors and bearings</p> <p>Problems - slip, incomplete filling and pressure pulsations</p>

PROGRAM INFO

CATEGORY:
Equipment

MODULES:
10

PROGRAM DURATION:
375-525 mins (approx)

As with all our programs, the content is self-paced. Users are able to validate their understanding of the material through embedded interactive quizzes

Our programs are based on internationally recognized best practices and are designed to enable your production personnel to make a personal contribution to maximizing your profits and minimizing your losses

For further details of the style and methodology of our training programs, please refer to our website, where you can watch a demo video and apply for a free trial:

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CONTENT	DESCRIPTION
Module 05 - Packing & Mechanical Seals	<p>Packing components - stuffing box, packing rings, lantern rings, throat bushings, packing adjustment and repacking</p> <p>Seal components - pusher, bellows, cartridge, rotating and stationary types, seal flush and seal quench systems</p> <p>Seal problems - causes, consequences, containment and prevention of seal failures</p>
Module 06 - Principles of Pumping	Suction, discharge and differential head, power, efficiency and reading pump curves
Module 07 - Reciprocating Compressors	<p>Components - driver and flywheel, crankshaft and crankcase, crankcase lubrication, connecting rod, crosshead, piston rod, stuffing box, piston and piston rings, cooling jackets, single and double acting piston stroke, valves, loaders, pulsation dampers and cylinder lubrication, single and multi-stage compression</p> <p>Problems - troubleshooting, liquid in cylinder, corrosives in cylinder, high temperature in cylinder, vibration</p>
Module 08 - Centrifugal Compressors	<p>Components - shafts, rotors, impellers, stages, diaphragms, balance pistons, interstage seals, shaft end seals, casings, nozzles, couplings, radial bearings, thrust bearings</p> <p>Problems - axial and radial vibration and displacement, surge</p>
Module 09 - Steam Turbines	<p>Components - casing, steam chest, rotor, bearings, diaphragms, seals, speed governor, auxiliary nozzles</p> <p>Problems - steam handling, staging, overspeed trip, rotor critical speed, shaft bowing, steam quality, steam temperature and pressure</p>
Module 10 - Lubrication	<p>Types - drip lubrication, bath lubrication, flood lubrication, ring lubrication, mechanical lubrication, constant oilers, oil mist lubrication and grease lubrication</p> <p>Problems - overheating, dilution, leakage, contamination, incorrect grades, oil cans, drum handling, lube oil replacement, oil sediment collection bottles, causes of poor lubrication and benefits of good lubrication</p>
Test	Trainees answer a random selection of questions to demonstrate understanding of the content covered throughout the modules