Best Maintenance Technician Practices Workshop - 3 Days

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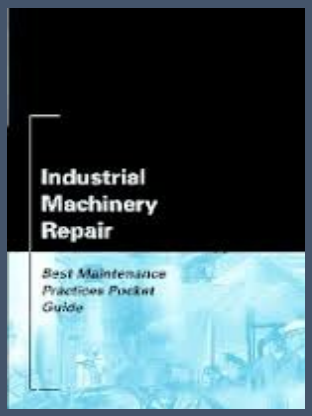
THE OBJECTIVE

The objective of the course is to align Maintenance Technicians with Maintenance Leadership in "Known Best Maintenance and Repair Practices" ensuring everyone is focused on "Optimal Asset Reliability at Optimal Cost". This alignment will bring down barriers most organizations face when trying to optimize asset reliability.

- To enhance communication between maintenance, reliability, production, and plant leadership and maintenance technicians.
- To provide the vision of proactive and maintenance to all maintenance technicians.
- To increase knowledge and skills for maintenance technicians through education and knowledge sharing.
- To define roles and responsibilities between technicians and managers.
- To reduce turnover of maintenance technicians because of lack of understanding between management and hourly technicians.
- To Provide Education and Knowledge required to optimize wrench time and minimize maintenance rework.

Proactive Maintenance

- Maintenance and Production Responsibilities
- Defect Elimination from Human Induced Failures
- Maintenance Planning
- Maintenance Scheduling
- Work Execution
- Work Order Close Out
- Failure Reporting Analysis and Corrective Action System (FRACAS)
- MTBF/MTTR/MTBR Expectations
- Repeatable Procedures



Reactive Maintenance

- Maintenance and Production Responsibilities
- Defect Elimination from Human Induced Failures
- Maintenance Planning
- Maintenance Scheduling
- Work Execution
- Work Order Close Out
- MTBF? MTTR? MTBR?

Safety

- Blood borne pathogens
- Confined space entry
- Electrical safety
- Emergency response (ER) and evacuation
- Environmental compliance
- Ergonomics
- Eye protection
- Fall protection
- Fire safety
- HAZCOM/MSDS
- Hearing conservation
- Ladder safety
- Lockout/tagout procedures
- Personal protective equipment (PPE)
- Process safety management (PSM)
- Respiratory protection
- Rigging
- Safety system and devices
- Scaffolding

Production/Maintenance Interaction

- Proactive Maintenance Process Overview
- Reactive Maintenance Process Overview
- Proactive Production Process Overview
- Reactive Production Process Overview
- Defining Roles and Responsibilities (RACI)
- Maintenance / Production Responsibilities
- Exercise: Define Roles and Responsibilities using RACI during:
    - Preventive Maintenance
    - Predictive Maintenance
    - Breakdowns

Pre-use inspection on maintenance tools and equipment

- Safely before, during, after use of:
    - Cranes and hoists
    - Field machinery and tools
    - Ladder safety
    - Rolling stock/mobile equipment (e.g., mobile cranes, man-lift/scissor lift, forklift)

    - Shop machinery and tools
    - Rigging equipment (e.g., slings, shackles, eyebolts, chains, hooks)
    - Use maintenance tools and equipment in accordance with manufacturers' specifications, established safety policies
- Knowledge of the following:
    - Equipment and tool specifications
    - Established equipment and tool-safety policies and procedures

Use measurement tools/equipment for maintenance tasks

- Measurement tools (e.g., rulers, gauges, tapes, micrometer, calipers, lasers)
- Proper Application of tools (e.g., rulers, gauges, tapes, micrometer, calipers, lasers)
- Basic math (e.g., fractions, addition, subtraction, multiplication, division)
- Calibration requirements for measurement tools (e.g., torque wrench, calipers, alignment tools)
- Conversion of appropriate measurement and engineering units
- Measurement principles (e.g., mass, force, motion, distance, acceleration, power, fluid, bulk)

Handle all maintenance materials and parts in accordance with established standards

- Procedures in order to prevent damage to the parts and equipment. 1. Company safety policies
- Material handling techniques and procedures
- Material storage procedures
- Original equipment manufacturers' (OEM) instructions

Adhering to established site standards

- Removing all maintenance-related parts and waste in order to ensure a safe and orderly job site.
- Facility and regulatory policies on housekeeping
- Hazards of improper housekeeping
- Proper organization and cleaning of job site

Document maintenance activities using the facility's maintenance management system

- Closing a Work Order
- Record history
- Assist with planning and scheduling
- Support root-cause failure analysis
- Planned and scheduled work

Preventive and Predictive Maintenance

- Function of equipment
- Operation parameters for equipment, including baseline conditions
- How to use preventive and/or predictive maintenance according to the work plan to maximize mean time between failures.
    - Company safety, health, and environmental policies
    - Equipment function and use
    - Predictive maintenance procedures
    - Preventive maintenance procedures

    - Work plan requirements
    - Leading and Lagging PM and PdM Metrics
- Predictive maintenance techniques (Maximize MTBF)
    - Oil analysis
    - Thermography (mechanical and Electrical)
    - Ultrasound
    - Vibration Analysis
    - Observing equipment performance and collecting performance data to maximize mean time between failures (MTBF).
    - Requirements of Predictive Maintenance

Lubrication

- Equipment specification
- Filtering systems
- Lubricant specifications
- Lubricating systems
- Lubrication principles
- Lubrication route
- Lubrication Processes (Hydraulic system, bearings, etc.)
- Lubrication schedule adherence
- Lubricate equipment to specifications to ensure reliable performance and prevent damage
- Company safety, health, and environmental policies

Alignment inspection/execution on rotating equipment to ensure reliable performance

(e.g., pumps, fans, blowers, turbines, gearboxes, compressors)

- Equipment functions and Operation principles for rotating equipment
- Performing alignment inspections and execution accordance with equipment specifications
- The candidate must demonstrate knowledge in the following:
- Company safety, health, and environmental policies
- Equipment alignment techniques (e.g., laser, reverse, straight edge, rim and face)
- Thermal growth

Checks on safety systems and devices in accordance with equipment design

- Specifications in order to ensure reliable operation and protect employees
- Consequences of bypassing safety systems
- Equipment design specifications
- Equipment functions (e.g., limit switches, photoelectric eyes)
- Operation of safety systems

Troubleshooting and Analysis

- Gather information relating to a maintenance request
- Reviewing the work order
- Interviewing operations personnel in order to determine the general nature of the problem.
- Maintenance Techs must demonstrate knowledge in the following:
    - Effective interpersonal relations

    - Equipment and/or processes
    - Maintenance work order systems
- Verify that the problem is valid by systematically testing and/or observing the equipment's performance, as conditions permit, in order to determine if a problem actually exists.
- Technicians must demonstrate knowledge in the following:
- Function and use of the equipment
- Process indicators (e.g., gauges, annunciators, Human Machine Interface [HMI] displays)
- Obtain appropriate technical documentation using facility resources in order to gain full
    - understanding of designed operating parameters and/or sequences.
- Facility resources (e.g., CMMS, technical library, engineering files)
- Operating parameters and sequences
- Technical documentation (e.g., schematics, P&ID, blueprints, O&M manuals, SOP, MSDS)
- Investigate previous maintenance activities, as conditions require, by reviewing equipment history in order to identify information that will facilitate troubleshooting.

Facility maintenance record systems

- Facility preventative maintenance scheduling programs or systems
- Preventative maintenance techniques and theories (e.g., lubrication, seals and bearings, alignments)
- Identification of cause of a problem using a systematic process of elimination in order to determine what is causing the malfunction
- Equipment and/or process design parameters
- Hazards involved with operating and/or maintaining specific process equipment
- Systematic troubleshooting and analysis

Corrective Maintenance

- Verify troubleshooting analysis by disassembling and inspecting components
    - Application of established procedures in accordance with applicable standards and guidelines

Interested in "Best Maintenance Repair Practices" send your request to rsmith@worldclassmaintenance.org