Best Technology Soultions **(BTS)**

Training Program

Certified Maintenance & Reliability Technician

Introduction:

This Maintenance and Reliability Technicians Best Practices course is designed to give new and veteran maintenance technicians an overview of the knowledge required to become a Certified Maintenance and Reliability Technician (CMRT). The course covers the four domains of practice and knowledge proficiency required of a CMRT.

Who Should Attend?

Individuals who either supervise or are interested in becoming Certified Maintenance and Reliability

Technicians will benefit from attending this course.

Level of the Course

(Foundation/Intermediate/Advanced) and Prerequisites for Attending the Course (if the level is Intermediate/Advanced):

- This is a foundation level course

Training Methodology:

This course will be presented using a combination of lecture, individual exercises, group exercises, and interactive computer based exercises.

Learning Outcomes:

Course attendees will gain knowledge and proficiency in four specific areas of maintenance and reliability practice to help them prepare for certification.

- **Maintenance Practices** – General maintenance activities related to safe and effective performance of maintenance activities
- **Preventive and Predictive Maintenance** – Best practices in PM, condition monitoring, and lubrication
- **Troubleshooting and Analysis** – Best practices for performing troubleshooting activities related to breakdowns and continuing equipment issues
- **Corrective Maintenance** – Best practices for performing corrective maintenance activities designed to restore equipment to full function

Course Outline:

Day 1

Domain I: Maintenance Practices

Safety, health, and environmental standards and practices

- Work scheduling and interfacing with production
- Lockout/tag out (LOTO) procedures
- Inspection and use of special equipment and tools
- Use of measuring tools such as micrometers, torque wrenches, etc.
- Best practices for handling maintenance materials
- Housekeeping best practices
- Documentation of maintenance activities

Day 2

Doman II: Preventive and Predictive Maintenance (Part 1)

- Performing preventive and predictive maintenance activities
    - ❖ Preventive maintenance inspections
    - ❖ Writing inspection specifications
    - ❖ TPM Concepts of PM/PdM
- Autonomous Maintenance
- Essential Care and Condition Monitoring for Operations
- Essential Care and Condition Monitoring for First Line Maintenance

Best practices for maintenance of protective systems

- Recognizing hidden failures
- Rebuild versus replace decisions

Doman II: Preventive and Predictive Maintenance (Part 2)

- Application of predictive maintenance technologies

- ❖ Vibration analysis
- ❖ Thermography
- ❖ Ultrasound

Lubricant analysis

- Lubrication best practices
  - ❖ Proper application
  - ❖ Maintaining required cleanliness

Day 3

Domain III: Troubleshooting and Analysis

- Working with production personnel to gather knowledge about problems
- Verifying the problem
- Using technical documentation
- Reviewing maintenance history
- Identifying the cause of the problem
  - ❖ Root Cause Analysis
  - ❖ Physical versus human and systemic causes

Day 4

Domain IV: Corrective Maintenance

- Precision Maintenance Methods
  - ❖ Quality assurance for maintenance work
  - ❖ Quality control for maintenance
  - ❖ Writing maintenance task instructions

- ❖ Maintenance personnel qualifications
- ❖ Training for precision and workmanship

- Tools and Methods for Precision Maintenance

Precision Alignment

- Rotating Equipment
- Flanged Piping o Precision in Lubrication o Precision in Assembly
- Mechanical Equipment
- Electrical Equipment

Verifying the "fix"

- System testing
- Verifying work quality

Day 5

- Test