COMPANY PROFILE

BERDAYA-TEC
TRAINING & CONSULTANCY

OUR COMPANY BACK GROUND

BERDAYA-TEC TRAINING AND CONSULTANCY (BTTAC) SDN BHD is a subsidiary company of **BERJAYATAC TRAINING AND CONSULTANCY (BTAC)** which was founded in 2014. **BTAC** is a training and a consultation company not only dedicated in providing interactive training solutions using the appropriate level of technology that best meets our clients' instructional needs but also provides consultation for commercial and industrial services.

Our reputation as a competent, safety training and industrial services providers can be attributed to our experienced instructors, technicians and skill fabricators. Instructors and skill fabricators add years of experience in and knowledge of the safety and competency to our training team and contribute to the establishment of our organization.

We form partnerships with our clients, working closely with them to identify training needs to the most effective and efficient way.

We will also function as a part of your team to reduce your costs, extend equipment life, reduce down time, control energy usage, and to optimize equipment performance. We also tailor preventative maintenance program to satisfy your specific needs. This systematic approach will assure that your system operates at its maximum efficiency throughout the year. In addition, in case of an emergency, you will receive priority service 24 hours a day, seven days a week.

MISSION STATEMENT

The mission of **BTTAC** is to be the recognized in industrial services and to train industry to provide innovative and cost effective solutions for our customers' training needs, energy management, service and maintenance needs.

Pursuit of this mission includes a commitment to:-

- be **actively involved** in engineering, manufacturing, services, maintenance and trading activities, mainly in Oil & Gas, Petrochemicals, Refineries, Marine, Power and Water Industries
- **develop skills** in Competency, Technical, Safety and Management that are customer – focused value for money ethical and profitable.

OUR COMMITMENT

Our training is committed in providing the very best training. To ensure this:

- Our trainings offer the latest syllabus established by the Governing body such as DOSH along with our more recent developments. Together, these training offer participants the most effective skills and applications.
- Fully certified DOSH trainers will conduct our certificate training.
- All trainings are designed and taught as a wholly integrated course/training rather than modular. Our trainings session are updated regularly to ensure they are offering the latest and most thorough developments. An extensive team of experienced assistants supports all our trainings.

BENEFITS OF TRAINING GIVEN.

- We pride ourselves in constantly updating and incorporating new material. We are committed to empowerment through experiential learning.
- We limit the numbers of participants in every training session to ensure that the trainers have the opportunity to get to know everyone personally and supervise your learning with care.
- You will learn through direct tuition, demonstration, exploration and practice in small groups. This is further enhanced through individual and small group supervision.

TRAINING RESOURCES AND MATERIALS

Large training manual, which includes course material and extensive background reading for, those interested in the underlying principles.

OUR THROUGH-CARE POLICY

We want to help our graduates to continually update their skills at minimal cost. Our trainings are constantly incorporating new developments at all levels. We don't want our graduates to miss out on these developments. We offer an extremely low cost 'Upgrade Option' on any certificate training previously attended.

PRINCIPLE ACTIVITIES

BTTAC has the following services to offer:-

a) Industrial and Power Plant Services (Turbo-machinery, Pump, Compressor and Engines)

Our licensed service technicians and installation specialists are fully experienced and qualified to work under clean-room conditions and in hazardous environments.

b) Conduct in-house courses to specific needs of the industries. Following are the courses conducted:-

- **Industrial and Heat Services**
- **Competency Courses**
- **Safety**
- **Industrial Management**
- **Quality Management Training**

c) Provide consultancy and training for

- **ISO 14000 Environmental Management System, Plans, Auditing and Emergency Response Plans**
- **ISO 9000 / QS 9000**

OUR PARTNERS IN TRAINING

1. **HRDCORP.**
2. **Intitute Kemahiran MARA – Bintulu & Johor Bahru**
3. **Association Of Steam Boiler Operator & Engineer M'sia**
4. **Dept. of Occupational Safety & Health (Pusat Latihan Bertauliah)**
5. **TVET (On going process of certification)**

OUR CLIENTS

Some of our valued clients are from private and government sectors such as Ministry of Rural And Regional Development, All PETRONAS Subsidiaries, OPTIMAL, FELDA, RISDA, FELCRA, KUTKM, Matsushita Air Conditioning, Hume Fiber Board, MSE, Jabatan Tenaga Rakyat, Samsung Electronics, Hitachi Electronics, NUR Power Plant, Teknik JanaKuasa Power Plants, Alstom Power Plants, IOI Subsidiaries, BORNEO SAMUDRA, SEBRANG P.O.M, TAMAKO P.O.M, Kapar Energy Ventures Sdn Bhd, Felda Sahabat Power Plant, Taiko Group of Companies such as Taiko Chemicals, Taiko Bleaching Earth, See Sen Chemicals, PETRONAS Subsidiaries such as ABF, INSTEP, MLNG, SKO, SBO, PSO and etc.

BOILER PLANT & BOILER COMPETENCY COURSES

1. STEAM BOILER ENGINEER 1st AND 2nd GRADE - PAPER B AND C

2. STEAM BOILER OPERATOR/DRIVER GRADE 1 AND 2

3. BOILER OPERATIONS AND MAINTENANCE – THEORY AND PRACTICAL

4. BOILER REPAIR TECHNIQUE AND PROCEDURE
   – THEORY AND PRACTICAL

5. BOILER OVERHAUL, SERVICE TECHNIQUE AND PROCEDURE
   – THEORY AND PRACTICAL

6. BOILER COMMISIONING ACTIVITIES, TECHNIQUE & PROCEDURE
   – THEORY AND PRACTICAL

BERDAYA-TEC
TRAINING & CONSULTANCY

OBJECTIVE

The purpose of this training is to assist participants sitting for the Steam Boiler Engineer examination. Section 29 of The Factories and Machinery Act 1967 requires certain machinery to be operated by certificated staff. They are steam boilers and internal combustion engines (ICE). The Act also requires certain machinery to be operated and supervised by a "Competent Person". For this purpose there are two types of certification namely Engineers and Drivers in which each certification is divided into two classes namely first and second grades. The class of engineer required to operate any steam boiler is determined based on the total heating surface of the boiler. All provisions related to the grade of engineers in relation to the size of machine they take charge are clearly stipulated in The Factories and Machinery (Persons-in-Charge) Regulations 1970. The objective of this training is to assist and to guide candidates who will be sitting for their relevant examination. The training has been developed in such a way that it covers most parts of the topics in the appropriate field. It is also intended to ensure safe operation of the machines.

The examinations are divided into three categories:

i. Part A - Practical Mathematics
ii. Part B - Engineering Knowledge
iii. Part C - Oral Examination

Candidates who hold a recognized degree in Mechanical Engineering are exempted from parts A and B, whereas candidates from other disciplines and with other qualifications have to sit for at least two categories. However there are special cases where exemptions may be given with the approval of the Panel of Examiners.

The training covers the following certification:

1st and 2nd Grade Steam Engineer

Part A - Practical Mathematics which includes;

- Applied Mechanics
- Strength of Materials
- Heat and heat engines
- Applied Thermodynamics.

Part B - Engineering Knowledge which include;

- Principle of Operation of Steam and Hot Water Boiler and Their Fittings
- Boiler Fuel and Theory of Combustion
- Principle of Operation of Steam Turbines
- Boiler Water Treatment and Analysis
- Boiler Maintenance, Inspection and Repair
- Boiler House Management
- Construction Materials
- Properties of Materials
- Properties of Steam
- Mechanical Working of Steel
- Failure of Materials
- Welding and Non-destructive testing (NDT).

Part C - Oral examination on the management and safe maintenance and operation of steam plant, and related requirements of Acts and Regulations.

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians and others who wish to sit for the Steam Boiler Engineer Grade 1 and 2 Examination conducted by the Department of Occupational Safety and Health (DOSH).

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

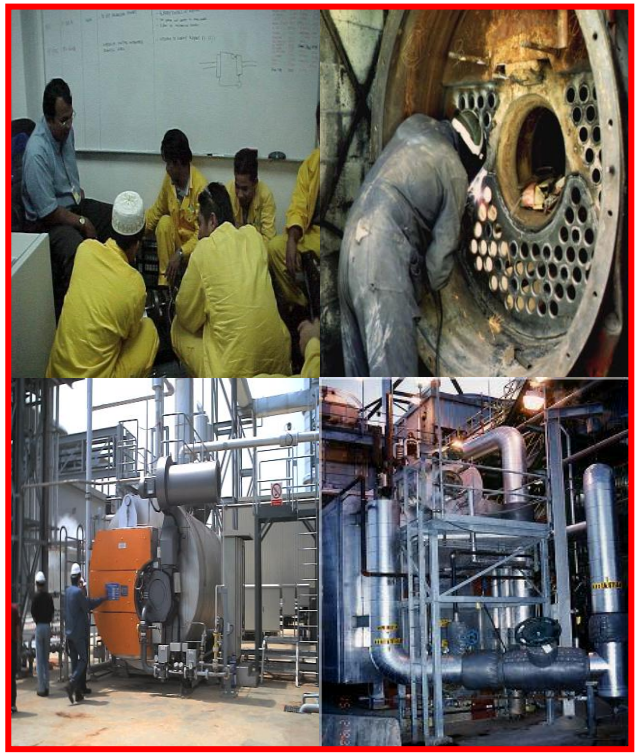
The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER.**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

STEAM ENGINEER 1st AND 2nd GRADE COURSE PAPER B & C



ORGANIZED BY

BERDAYAtech

TRAINING AND CONSULTANCY

OBJECTIVE

The purpose of this training is to assist participants sitting for the Steam Boiler Engineer examination. Section 29 of The Factories and Machinery Act 1967 requires certain machinery to be operated by certificated staff. They are steam boilers and internal combustion engines (ICE). The Act also requires certain machinery to be operated and supervised by a "Competent Person". For this purpose there are two types of certification namely Engineers and Drivers in which each certification is divided into two classes namely first and second grades. The class of engineer required to operate any steam boiler is determined based on the total heating surface of the boiler. All provisions related to the grade of engineers in relation to the size of machine they take charge are clearly stipulated in The Factories and Machinery (Persons-in-Charge) Regulations 1970. The objective of this training is to assist and to guide candidates who will be sitting for their relevant examination. The training has been developed in such a way that it covers most parts of the topics in the appropriate field. It is also intended to ensure safe operation of the machines.

The examinations are divided into three categories:

i. Part A - Practical Mathematics
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Candidates who hold a recognized degree in Mechanical Engineering are exempted from parts A and B, whereas candidates from other disciplines and with other qualifications have to sit for at least two categories. However there are special cases where exemptions may be given with the approval of the Panel of Examiners.

The training covers the following certification:

1st and 2nd Grade Steam Engineer

Part A - Practical Mathematics which includes;

- Applied Mechanics
- Strength of Materials
- Heat and heat engines
- Applied Thermodynamics.

Part B - Engineering Knowledge which include;

- Typical Gas Turbine Plant
- Gas Turbine Safety System
- Measuring gauges and Instruments
- Maintenance
- Gas Turbine Fuel
- Combustion of Fuels
- Theory of Lubrication / Friction (Tribology)
- Diesel Engine Theory
- Diesel Engine Operation and Maintenance
- Auxiliary and Safety System
- Materials
- Mechanical Working of Steel
- Corrosion and Control
- Welding
- Non-Destructive Testing
- Internal Combustion Engine (Petrol, Diesel and Gas Engine)

Part C - Oral examination on the management and safe maintenance and operation of steam plant, and related requirements of Acts and Regulations.

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians and others who wish to sit for the ICE Engineer Grade 1 and 2 Examination conducted by the Department of Occupational Safety and Health (DOSH).

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

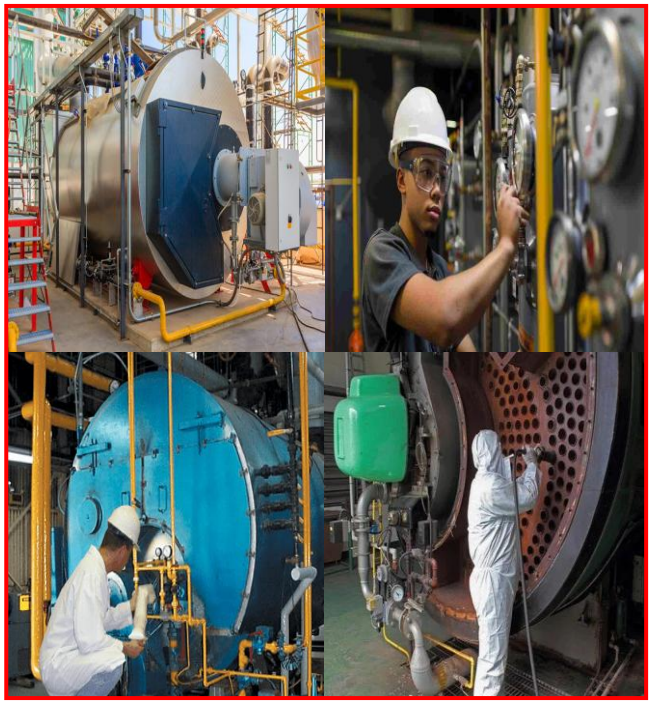
The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER.**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

STEAM BOILER DRIVER 1st AND 2nd GRADE COURSE



ORGANIZED BY

BERDAYAtech

TRAINING AND CONSULTANCY

OBJECTIVE

This course is designed to provide the participants with an understanding of the fundamentals of boiler design, its operation and maintenance. Topics will include basic boiler styles, operating characteristics and to recognize maintenance requirements and procedures for boilers and auxiliary equipment; recognize boiler operation steps and checks and safety requirements.

On completion of this module, participants should:

- Understand the principles and practice of boiler operations.
- Understand fault detection and diagnostic techniques and their practical implementation.
- Understand the procedures of the boiler system specification and set-up, the selection of parameters to the monitored, the location of monitoring points and the frequency of monitoring.
- Be able to identify a range of common faults in terms of the symptoms exhibited, the cause of those symptoms and the techniques used to detect, distinguish between and diagnose the associated faults.

COURSE OUTLINE

1.0 Maintenance Of Auxiliary Equipment
- Maintenance Requirements For Control Of Water Level
- Gauge Glass Replacement
- Feed-Water Regulator Maintenance
- Valve Maintenance
- Steam Injector Maintenance

2.0 Steam Trap Maintenance

3.0 Fan Maintenance

4.0 Handhole And Manhole Gasket Maintenance

5.0 Hydrostatic Tests

6.0 Boiler Tubes
- 6.7 Composition Of Boiler Tubes
- 6.8 Renewing Tubes
- 6.9 Removing Tubes
- 6.10 Cleaning Tubes

6.0 Boiler Tubes (Cont.)
- 6.1 Preparing Tube Ends
- 6.2 Fitting Tubes
- 6.3 Expanding Tubes
- 6.4 Belling Tubes
- 6.5 Renewing Welded Tubes
- 6.6 Plugging Boiler Tubes

7.0 Repairing Boiler Refractories

8.0 Boiler Operations

9.0 Pre-watch Assumption Checks

10.0 Reoperating Checks

11.0 Lining Up Systems

12.0 Operating Procedures
- 12.1 Normal Operation
- 12.2 Blowdown
- 12.3 Boiler Makeup
- 12.4 Soot Removal
- 12.5 Instrument Readings

13.0 Operating Checks

14.0 Securing Procedures

15.0 Boiler Emergencies

16.0 Boiler Operating Logs

17.0 Safety, Safe, Unsafe, LOTO

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

- **TO BE CONFIRMED LATER.**

BOILER OPERATIONS AND MAINTENANCE – THEORY AND PRACTICAL

ORGANIZED BY

HRD CORP CLAIMABLE

ilcm BINTULU

BERDAYA-TEC TRAINING & CONSULTANCY

ASSOCIATION OF STEAM BOILER OPERATION & ENGINEER MALAYSIA

BACKGROUND

This course is designed to equip professionals with the skills and knowledge needed to diagnose, repair, and troubleshoot common issues in boiler systems. This course provides practical training on identifying problems, implementing effective repair strategies, and ensuring reliable boiler operation.

1. **Introduction to Boiler Systems:**
- Overview of boiler components and their functions
- Understanding different types of boilers and their configurations
- Common operational issues and their impact on performance

2. **Diagnostic Techniques:**
- Methods for identifying boiler problems (e.g., visual inspections, operational symptoms)
- Utilizing diagnostic tools and instruments
- Analyzing boiler performance data and error codes

3. **Common Boiler Issues:**
- Detailed examination of frequent boiler problems (e.g., pressure drops, leaks, overheating)
- Causes and effects of each issue
- Best practices for diagnosing and addressing these problems

4. **Troubleshooting Procedures:**
- Step-by-step troubleshooting procedures for various boiler issues
- Techniques for isolating and resolving faults
- Utilizing technical documentation and schematics for troubleshooting

5. **Repair Techniques:**
- Repairing and replacing boiler components (e.g., pumps, valves, burners)
- Procedures for fixing common issues (e.g., leaks, electrical faults)
- Techniques for ensuring repairs are performed to industry standards

6. **Preventive Maintenance:**
- Importance of preventive maintenance in reducing breakdowns
- Implementing a preventive maintenance schedule
- Identifying and addressing potential issues before they become major problems

7. **Safety Considerations:**
- Safety protocols for performing repairs and troubleshooting
- Using personal protective equipment (PPE) and handling hazardous materials
- Emergency procedures and risk management

8. **System Optimization:**
- Optimizing boiler performance post-repair
- Techniques for improving efficiency and reliability
- Monitoring and adjusting settings for optimal operation

9. **Case Studies and Real-World Scenarios:**
- Analysis of real-world boiler repair and troubleshooting cases
- Lessons learned from industry experiences and failures
- Best practices derived from case studies

10. **Interactive Workshops and Hands-On Training:**
- Practical exercises with boiler repair and troubleshooting tools
- Simulations of common boiler problems and repair scenarios
- Hands-on experience with diagnosing and fixing issues

WHO SHOULD ATTEND

Supervisors, and Technicians and others who wish to sit for the Steam Boiler Driver Grade 1 and 2 Examination conducted by the Department of Occupational Safety and Health (DOSH).

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER**

PROGRAM FEES

- **TO BE CONFIRMED LATER**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

BOILER REPAIR TECHNIQUE AND PROCEDURE – THEORY AND PRACTICAL

ORGANIZED BY

BINTULU

BACKGROUND

The boiler is one of the items of equipment in a plant which continuously keeps on running during sailing and in port. As it is running continuously, it has to be inspected and cleaned to check the condition of all internal working parts at regular intervals.
The scope of inspections is to clean the boiler's internal surfaces and to check for corrosion and scale formation in the boiler. All the important checks are carried out and it will be made sure that the boiler will safely work without any problems until the next inspection. At the end of the training, participants must be able to;

- Complete cleaning and survey preparation
- Economizer repairs and manufacturing.
- Pressure gauge calibration.
- Maintenance of water level indicators and protective devices.
- Safety valves adjustment under steam to blow off at the required pressures.
- The oil fuel burning system examination.
- Testing of remote control gear for fuel shut off valves.
- Repairing/renewing worn or damaged boiler tubes.
- Overhauling of boiler valves.
- Insulations and fire brick renewals.
- New fitting equipment and accessories supply.

COURSE CONTENT

TOPIC 1:

Introduction

TOPIC 2:

Reasons For Inspection

TOPIC 3:

Causes Of Deterioration

TOPIC 4:

Safety Precautions, Preparatory Work And Cleaning

COURSE CONTENT

TOPIC 5:

Method Of Inspection

TOPIC 6:

Limitations Of Thickness

TOPIC 7:

Method of Inspection for foundations, settings and other appurtenances

TOPIC 8:

Stacks

TOPIC 9:

Method of Repairs

TOPIC 10:

Records And Reports

WHO SHOULD ATTEND

Supervisors, and Technicians

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER**

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER.**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

BOILER OVERHAUL, SERVICE TECHNIQUE AND PROCEDURE – THEORY AND PRACTICAL

ORGANIZED BY

BINTULU

POWER PLANT, HYDRO ELECTRIC COURSES

7. FUNDAMENTAL OF STEAM TURBINE OPERATION AND MAINTENANCE
8. INTERMEDIATE STEAM TURBINE OPERATION AND MAINTENANCE – SIMULATOR - 1
9. FUNDAMENTAL OF GAS TURBINE OPERATION AND MAINTENANCE
10. INTERMEDIATE GAS TURBINE OPERATION AND MAINTENANCE – SIMULATOR – 1
11. POWER GENERATION: COMBINED CYCLE POWER PLANT – BOILER TRAINING
12. POWER GENERATION: COMBINED CYCLE POWER PLANT – GAS TURBINE TRAINING
13. POWER GENERATION: COMBINED CYCLE POWER PLANT – STEAM TURBINE TRAINING

BERDAYA-TEC
TRAINING & CONSULTANCY

POWER PLANT, HYDRO ELECTRIC COURSES

14. EFFECTIVENESS OF STEAM TURBINE, GAS TURBINE & BOILER MAINTENANCE ACTIVITIES IN COMBINED CYCLE POWER PLANT
15. HEAT RECOVERY STEAM GENERATOR (HRSG) OPERATIONS AND MAINTENANCE – BOILER
16. HEAT RECOVERY STEAM GENERATOR (HRSG) OPERATIONS AND MAINTENANCE – GAS TURBINE
17. HEAT RECOVERY STEAM GENERATOR (HRSG) OPERATIONS AND MAINTENANCE – STEAM TURBINE
18. SPECIALIZED STEAM TURBINES TRAINING – STF -A650, STF-D600 & STF-D650 OPERATION AND MAINTENANCE - FUNDAMENTAL
19. SPECIALIZED GAS TURBINE TRAINING - SOLAR TURBO MACHINERY PACKAGES (AND ITS AUXILIARIES) OPERATION & MAINTENANCE
20. SPECIALIZED GAS TURBINE TRAINING - (GE) FRAME 7EA GAS TURBINE GENERATOR MAINTENANCE

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TRAINING & CONSULTANCY

POWER PLANT, HYDRO ELECTRIC COURSES

21. SPECIALIZED GAS TURBINE TRAINING - (GE) FRAME 6 GAS TURBINE GENERATOR MAINTENANCE
22. BALANCED OF PLANT (BOP)
23. HAZARD OPERABILITY (HAZOP)
24. HYDRO-ELECTRIC POWER PLANT FUNDAMENTAL
25. HYDRO-ELECTRIC POWER PLANT OPERATION, MAINTENANCE AND SAFETY

BERDAYA-TEC
TRAINING & CONSULTANCY

OBJECTIVES:

The hands-on course encompasses the design, general operation and maintenance characteristics of a steam turbine. The course teaches the overall design and operation concepts incorporating basic operation and maintenance problems for steam turbines.

An emphasis is placed on providing practical information with minimal theory and is aimed at engineers and operational personnel who need a broad-based introduction to practical operation and design considerations of steam turbines. Discussion throughout the course of plant problems with the instructor and amongst the course attendees is encouraged so as to maximize the course experience.

Upon successful completion of this course the participant should be able to understand the:

- Basic steam turbine operating cycle
- Overview of steam turbine major components and equipment arrangements and how these relate to overall operation and performance
- Fundamentals of steam turbine control and protection: start-up, speed, load, shutdown and temperature
- Operating parameters and control / protection features of the various turbine support systems such as the lubricating oil, hydraulic
- Define the items that must be considered when performing steam turbine operation.
- Describe the types of defects that are found in steam turbine generator components during inspections.
- Identify causes for the defect.
- List the possible corrective actions concerning the defect.
- Describe the criteria used to determine the best corrective action.
- Describe the items that must be addressed during maintenance planning.
- Describe the various methods used to properly align steam turbine generator components.

COURSE OUTLINE:

- Oil & Gas Steam Turbines General
- Field Applications
- Fundamentals of Steam Turbine Cycle
- Major Components and Equipment
- Condenser
- Steam Consumption Diagrams
- Auxiliary and Protection Systems
- Description of Condensate and Drain
- Control System
- Preliminary Procedures for Steam Turbine Startup
- Startup and Shut-down Sequences
- Loading
- Key Parameters for Steam Turbine
- Maintenance Philosophy Overview
- Troubleshooting
- How to use the Unit Service Manuals
- Workshop Training

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **3 Days.**

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER.**

FUNDAMENTAL OF STEAM TURBINE OPERATION & MAINTENANCE COURSE

ORGANIZED BY

BINTULU

OBJECTIVES:

The hands-on course encompasses the design, general operation and maintenance characteristics of a steam turbine. The course teaches the overall design and operation concepts incorporating basic operation and maintenance problems for steam turbines.

An emphasis is placed on providing practical information with minimal theory and is aimed at engineers and operational personnel who need a broad-based introduction to practical operation and design considerations of steam turbines. Discussion throughout the course of plant problems with the instructor and amongst the course attendees is encouraged so as to maximize the course experience.

Upon successful completion of this course the participant should be able to understand the:

- Steam Turbine and Accessory Systems.
- Identify and define the Turbine Components
- Identify the Steam Distribution System
- Identify the relationship between Drainage and Water Discharge System
- Describe the Steam Extraction and Heat Regeneration System
- Describe the Unit Bypass System
- Describe the Emergency Governing System
- Describe the Lubrication System
- Describe the Condensate System
- Describe the details of Feed Water System

COURSE OUTLINE:

TOPIC 1: General Intro.to Steam Turbine & Accessory Systems
1.1 Design and Operating Conditions of Steam
1.2 Allowable Load Range
1.3 Startup and Shutdown Procedures for Steam Turbines

TOPIC 2: Steam Turbine Components
2.1 Cylinder, Rotor, Blades, and Couplings, Steam Seal Gland
2.2 Slide Key System, Steam Turbine Bearings, Turning Gear

TOPIC 3: Steam Distribution System
3.1 High-Pressure Main Steam & Control Valves
3.2 Inter. Combined Valves & Steam Conduits & Nozzle Chambers

COURSE OUTLINE:

TOPIC 4: Drainage and Water Discharge System
4.1 System Configuration
4.2 Operation Modes of the Drainage & Water Discharge System

TOPIC 5: Steam Extraction and Heat Regeneration System
5.1Components of the Steam Extraction System
5.2 System Operation and Maintenance

TOPIC 6: Unit Bypass System
6.1 Low-Pressure Bypass (LPB) & High-Pressure Bypass (HPB)
6.2 Unit Bypass System in Operation

TOPIC 7: Emergency Governing System
7.1 Hydraulic Servo System &Trip Emergency Governing System
7.2 Interlocking and Protection Mechanisms
7.3 High-Pressure Fire-Resistant Oil System

TOPIC 8: Lubrication System
8.1 Lubrication System Overview
8.2 Steam Turbine Jacking System
8.3 Lubrication Purification System
8.4 Oil Quality Standards for Steam Turbine Lubrication

TOPIC 9: Condensate System
9.1 Overview
9.2 System Composition and Flow Diagram
9.3 Key System Components

TOPIC 10: Feed Water System
10.1 Overview
10.2 System Configuration and Features
10.3 Turbo-Feed Pump

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

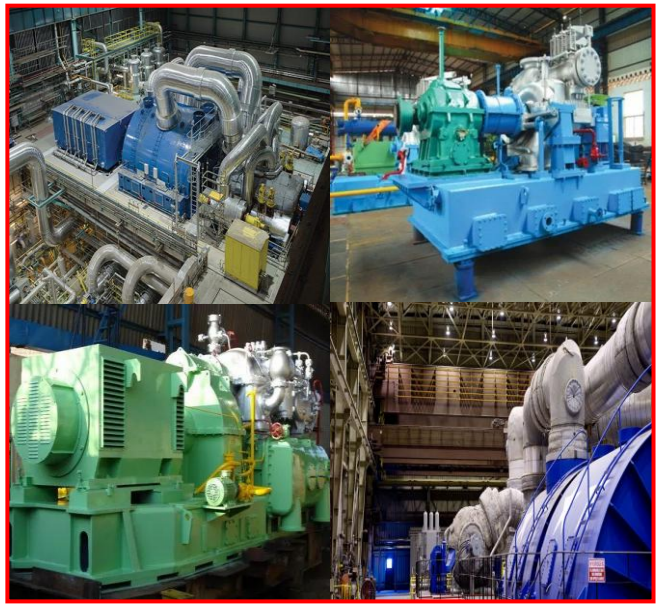
- **3 Days.**

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER.**

INTERMEDIATE STEAM TURBINE OPERATION & MAINTENANCE – SIMULATOR - 1 COURSE



ORGANIZED BY

HRD CORP CLAIMABLE

ilcm BINTULU

BERDAYA-TEC TRAINING & CONSULTANCY

ASSOCIATION OF STEAM BOILER OPERATOR & ENGINEER MALAYSIA

OBJECTIVES:

The hands-on course encompasses the design, general operation and maintenance characteristics of a gas turbine. The course teaches the overall design and operation concepts incorporating basic operation and maintenance problems for gas turbines.

An emphasis is placed on providing practical information with minimal theory and is aimed at engineers and operational personnel who need a broad-based introduction to practical operation and design considerations of gas turbines. Discussion throughout the course of plant problems with the instructor and amongst the course attendees is encouraged so as to maximize the course experience.

Upon successful completion of this course the participant should be able to understand the:

- Basic gas turbine operating cycle
- Overview of gas turbine major components and equipment arrangements and how these relate to overall operation and performance
- Fundamentals of gas turbine control and protection: start-up, speed, load, shutdown and temperature
- Operating parameters and control / protection features of the various turbine support systems such as the lubricating oil, hydraulic
- Define the items that must be considered when performing gas turbine operation.
- Describe the types of defects that are found in gas turbine generator components during inspections.
- Identify causes for the defect.
- List the possible corrective actions concerning the defect.
- Describe the criteria used to determine the best corrective action.
- Describe the items that must be addressed during maintenance planning.
- Describe the various methods used to properly

COURSE OUTLINE:

- Gas Turbines General
- Field Applications
- Fundamentals of Gas Turbine Cycle
- Major Components and Equipment
- Gas Consumption Diagrams
- Auxiliary and Protection Systems
- Description of Hot Gas and Fuel Drain
- Control System
- Preliminary Procedures for Gas Turbine Startup
- Startup and Shut-down Sequences
- Loading
- Key Parameters for Gas Turbine
- Maintenance Philosophy Overview
- Troubleshooting
- How to use the Unit Service Manuals
- Workshop Training

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER.**

FUNDAMENTAL OF GAS TURBINE OPERATION & MAINTENANCE COURSE

ORGANIZED BY

BINTULU

OBJECTIVES

A comprehensive four days course on effective operational management of Gas Turbine in Gas Plants, LNGs and Power Plants, examining the performance, operational issues and life assessments for gas turbines aimed at improving gas turbine operational and maintenance practices, minimizing the likelihood of failures, ensuring higher reliability thus prolonging asset life and reducing maintenance costs per hour of operation. This course gives you an insight in to the general operational and maintenance characteristics of gas turbines. Complete design and operating concepts are considered, together with basic operating and maintenance problems. The course combines theory and practical training.

Emphasis is placed on the following areas:

- Basic gas turbine operating cycle
- Overview of gas turbine major components and equipment arrangements and how these relate to overall operation and performance
- Fundamentals of gas turbine control and protection: start-up, speed, load, shutdown and temperature
- Operating parameters and control / protection features of the various turbine support systems such as the lubricating oil, hydraulic, variable inlet guide vanes, starting means and fuels

Operating factors and considerations that affect basic care intervals

COURSE OUTLINE

- Gas Turbines Basics and Applications.
- Material systems employed in gas turbines.
- Understand degradation mechanisms and how to predict them.
- Trend / Condition Monitoring of Gas Turbines.

COURSE OUTLINE

- Failure Analysis for Gas turbine Operational and Maintenance issues of Gas Turbine Development in improving Gas Turbine Performances.
- Management of gas turbine components
- Maintenance Planning & Reliability Programs for GTs. Work - scoping in Gas Turbine with emphasis on cost reduction.
- Frame Machine Case Studies. Frame 7 & 9, V93.4
- Warranty and Insurances related to Gas Turbine Operation

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians and others who wish to sit for the Steam Boiler Engineer Grade 1 and 2 Examination conducted by the Department of Occupational Safety and Health (DOSH).

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

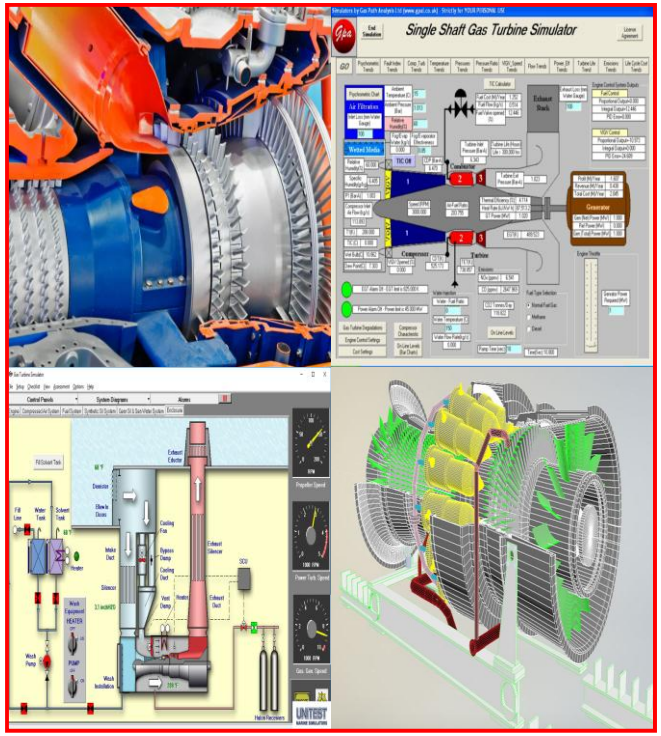
The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

INTERMEDIATE GAS TURBINE OPERATION AND MAINTENANCE – SIMULATOR - 1 COURSE



ORGANIZED BY

BINTULU

BERDAYA-TEC TRAINING & CONSULTANCY

OBJECTIVES:

This course aims to equip participants with the knowledge and skills necessary for the operation and maintenance of a typical Heat Recovery Steam Generator (HRSG). The program is designed to give operating staff a comprehensive overview of the plant, familiarize them with key plant locations, and provide an understanding of unit operations and maintenance requirements.

By the end of this training, participants will be able to:

- Locate and interpret OEM operating procedures.
- Describe the key steps involved in performing both a cold start and a hot start.
- Explain the recommended procedure for adjusting load.
- Outline the major steps for safely shutting down the unit.
- Follow recommended procedures for HRSG storage.
- Understand the importance and methods of chemical control.
- Locate and interpret OEM procedures for responding to critical incidents.

COURSE OUTLINE:

TOPIC 1 Introduction And Co-Generation Concepts

- System Overview & HRSG Design Considerations
- Heat Energy Transfer & Properties of Steam
- Water/Steam Characteristics (Chemistry)
- Feedwater and Boiler Water Treatment
- Comparison of Different Boilers & Cycles
- Materials Used in Boiler Construction

TOPIC 2: Impacts on Pressure Parts Remnant Life (Damage & Degradation Mechanisms)

- Creep, Thermal Effect, Fatigue & Creep-Fatigue
- Surface Corrosion & Pitting, Cold-End Deposition
- Gas side Corrosion & Waterside Attack

TOPIC 3: HRSG Basic Design And Construction

- Thermodynamics & Heat Transfer Review
- Natural and Forced Circulation
- Supplemental Firing & Basic Construction Details
- Types of HRSG & Internal Insulation and Liner
- Support and Structural Details & Tube Sections Construction

TOPIC 4: Major or Key Components of the HRSG

- HRSG Economisers – Low, High Pressure
- HRSG Drums, Evaporators and Drums
- HRSG Superheaters, Reheaters, Attemperators
- Feedwater: Preheaters, Recirculation, Deaerators, Economizers: Low, High Pressure, Relief and Safety Valves

COURSE OUTLINE:

TOPIC 5: Control of Main HRSG Equipment

- HP Steam Pressure and Temperature Control
- ST Bypass System, Drum level & Spray System

TOPIC 6: Component Alarm

TOPIC 7: Unit Bypass System

- Start-Up of the HRSG
- Initial Boiler Filling
- Cold Start of GT, HRSG, and STG
- Warm HRSG Start & Hot HRSG Start
- Operational Overview & System Start-Up

TOPIC 8: System Start-Up Instructions

TOPIC 9: System Normal Operation

TOPIC 10: System Shutdown Instructions

TOPIC 11: Emergency Shutdown Procedure

TOPIC 12: Alarm Responses

TOPIC 13: Steam Line Blowing

TOPIC 14: Pre-Operational Chemical Cleaning Procedures

TOPIC 15: Valves

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians and others.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

POWER GENERATION: COMBINED CYCLE POWER PLANT – BOILER TRAINING

ORGANIZED BY

BINTULU

BERDAYA-TEC TRAINING & CONSULTANCY

OBJECTIVES

The role of gas turbine engineering within any organization spans multiple disciplines, including various aspects of gas turbine plant operations and facility management.
With the introduction of advanced gas turbine designs and applications, this field has evolved into a highly specialized and sophisticated domain. As a result, there is a growing demand for skilled, knowledgeable, and practically oriented gas turbine engineers.
This course is specifically designed to equip engineers and technicians with the essential skills and knowledge needed to excel in this field. It provides a thorough understanding of gas turbine engineering, complemented by practical tips and effective problem-solving techniques.
Key topics include critical factors for successful gas turbine installations, such as ease of installation, serviceability, and design and operational flexibility. Additionally, the course will guide you in understanding selection and design parameters, enabling you to choose and design systems tailored to specific applications.

COURSE OUTLINE

Module 1: Introduction to Gas Turbines
- Frame-Type Heavy-Duty Gas Turbines, Industrial Gas Turbines and Aircraft-Derivative Gas Turbines
- Comparison of Aircraft-Derivative and Heavy-Duty Industrial Turbines
- Small and Micro Gas Turbines & Aircraft Gas Turbines
- Gas Turbine Components, Siemens Gas Turbine Technology

Module 2: Gas Turbine Thermodynamics
- Reversible Cycles with Ideal Gases, Brayton Cycle
- Ideal Inter-Cooled and Reheat Cycles Actual Gas Turbine Cycles & Terms and Symbols

Module 3: Gas Turbine Components
- Compressors: Centrifugal & Axial-Flow Theory & Aerodynamics
- Common Issues Impacting Axial Compressor Performance
- Air Compressor Performance Characteristics
- Combustors: Performance and Efficiency
- Turbines, Fuel Nozzles and Igniters &Emission Control

Module 4: Materials of Construction
- Metallurgical Behavior in Gas Turbines
- Gas Turbine Blade Materials
- Blade Manufacturing Techniques
- Future Materials

COURSE OUTLINE

Module 5: Gas Turbine Lubrication System
- Oil Reservoirs, Pumps, and Jets
- Lubrication Oil Filters and Coolers & Relief Valves
- Lubricant Selection & System Cleaning and Conditioning
- Filter Selection & Oil Sampling and Testing

Module 6: Bearings and Seals
- Bearing Materials: Through-Hardened and Case-Hardened
- Cage Materials and Babbitts & Principles of Bearing Design
- Tilting-Pad Journal Bearings, Thrust Bearing Design
- Seal Design

Module 7: Fuels and Fuel Supply Systems
- Fuel Specifications, Properties & Treatment, Selection Econs
- Gas and Heavy Fuels & Comparative Fuel Costs
- Turbine Component Cleaning Fuel Supply& Control Systems
- Dual-Fuel Operations and Flexibility
- Integrated Gasification Combined Cycle Systems

Module 8: Sound Suppression, Air Requirements, and Environmental Considerations
- Noise Control in Gas Turbines & Aircraft Sound Suppression
- Air Requirements and Environmental Considerations

Module 9: Auxiliary Systems

Module 10: Performance and Mechanical Equipment Standards

Module 11: Control Systems and Instrumentation

Module 12: Installation, Operation, and Maintenance

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians and others.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER**

LECTURER

- Qualified and vastly experienced Instructor.

POWER GENERATION: COMBINED CYCLE POWER PLANT – GAS TURBINE TRAINING

ORGANIZED BY

BINTULU

OBJECTIVES:

The hands-on course encompasses the design, general operation and maintenance characteristics of a steam turbine. The course teaches the overall design and operation concepts incorporating basic operation and maintenance problems for steam turbines.

An emphasis is placed on providing practical information with minimal theory and is aimed at engineers and operational personnel who need a broad-based introduction to practical operation and design considerations of steam turbines. Discussion throughout the course of plant problems with the instructor and amongst the course attendees is encouraged so as to maximize the course experience.

Upon successful completion of this course the participant should be able to understand the:

- Steam Turbine and Accessory Systems.
- Identify and define the Turbine Components
- Identify the Steam Distribution System
- Identify the relationship between Drainage and Water Discharge System
- Describe the Steam Extraction and Heat Regeneration System
- Describe the Unit Bypass System
- Describe the Emergency Governing System
- Describe the Lubrication System
- Describe the Condensate System
- Describe the details of Feed Water System

COURSE OUTLINE:

TOPIC 1: General Intro.to Steam Turbine & Accessory Systems
1.1 Design and Operating Conditions of Steam
1.2 Allowable Load Range
1.3 Startup and Shutdown Procedures for Steam Turbines

TOPIC 2: Steam Turbine Components
2.1 Cylinder, Rotor, Blades, and Couplings, Steam Seal Gland
2.2 Slide Key System, Steam Turbine Bearings, Turning Gear

TOPIC 3: Steam Distribution System
3.1 High-Pressure Main Steam & Control Valves
3.2 Inter. Combined Valves & Steam Conduits & Nozzle Chambers

COURSE OUTLINE:

TOPIC 4: Drainage and Water Discharge System
4.1 System Configuration
4.2 Operation Modes of the Drainage & Water Discharge System

TOPIC 5: Steam Extraction and Heat Regeneration System
5.1Components of the Steam Extraction System
5.2 System Operation and Maintenance

TOPIC 6: Unit Bypass System
6.1 Low-Pressure Bypass (LPB) & High-Pressure Bypass (HPB)
6.2 Unit Bypass System in Operation

TOPIC 7: Emergency Governing System
7.1 Hydraulic Servo System &Trip Emergency Governing System
7.2 Interlocking and Protection Mechanisms
7.3 High-Pressure Fire-Resistant Oil System

TOPIC 8: Lubrication System
8.1 Lubrication System Overview
8.2 Steam Turbine Jacking System
8.3 Lubrication Purification System
8.4 Oil Quality Standards for Steam Turbine Lubrication

TOPIC 9: Condensate System
9.1 Overview
9.2 System Composition and Flow Diagram
9.3 Key System Components

TOPIC 10: Feed Water System
10.1 Overview
10.2 System Configuration and Features
10.3 Turbo-Feed Pump

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians and others.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER**

LECTURER

- Qualified and vastly experienced Instructor.

POWER GENERATION: COMBINED CYCLE POWER PLANT – STEAM TURBINE TRAINING

ORGANIZED BY

HRD CORP CLAIMABLE

ilcm BINTULU

BERDAYA-TEC TRAINING & CONSULTANCY

ASSOCIATION OF STEAM BOILER OPERATION & ENGINEER MALAYSIA

OBJECTIVES

This 4 day course was developed to improve the effectiveness of Steam and Gas Turbine maintenance activities in Combined Cycle Power Plants
The course is designed to provide combined cycle power plant personnel with sufficient knowledge to be able to develop and implement effective Gas Turbine maintenance programs. It covers steam and Gas Turbine maintenance from the view of a small independent power producer or municipality where most major inspections are usually performed by outside contractors.
Upon successful completion of this course the participant should be able to:

- Describe the sequence involved in disassembly of the steam turbines.
- Describe the procedures for cleaning and inspection of steam turbine components.
- Describe the defects normally found in a steam turbine inspection.
- Describe various repair techniques, costs, durations, and risks involved.
- Describe the various types of combustion turbine inspection as to their:
  1. Interval and Frequency
  2. Components Inspected
  3. Durations
- Demonstrate the ability to properly plan the maintenance outage prior to shutdown.
- Describe methods used to properly align turbine-generator components.
- Demonstrate the knowledge necessary develop an Outage Workscope and Bid Specification.
- Demonstrate the knowledge necessary to Qualify and Select Vendors.
- Demonstrate the knowledge necessary to Audit and Track Vendor Performance.
- Demonstrate the knowledge necessary to Identify Out-Of-Scope Work and Negotiate Extra Work Items.

COURSE OUTLINE

Module 1: Introduction

Module 2: Turbine Disassembly and Reassembly

Module 3: Turbine Inspection and Repair

Module 4: Valve and Bearing Maintenance

Module 5: Generator Maintenance

Module 6: Alignment

Module 7: Gas Turbine Fundamentals

Module 8: Gas Turbine Equipment Familiarization

Module 9: Maintenance Preparation & Planning

Module 10: Course Conclusion

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians and others

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

EFFECTIVENESS OF STEAM TURBINE, GAS TURBINE & BOILER MAINTENANCE ACTIVITIES IN COMBINED CYCLE POWER PLANT

ORGANIZED BY

HRD CORP CLAIMABLE

ilcm BINTULU

BERDAYA-TEC TRAINING & CONSULTANCY

OBJECTIVES

The use of gas turbines in the petrochemical, pipeline, offshore and power generation industries has increased considerably during the past few years. The course will cover the design, installation, operation and basic care of these machines by highlighting characteristic features of various gas turbine types, their efficiencies, vulnerabilities, reliability and basic maintenance peculiarities.

Emphasis is placed on the following areas:

- Basic gas turbine operating cycle
- Overview of gas turbine major components and equipment arrangements and how these relate to overall operation and performance
- Fundamentals of gas turbine control and protection: start-up, speed, load, shutdown and temperature
- Operating parameters and control / protection features of the various turbine support systems such as the lubricating oil, hydraulic, variable inlet guide vanes, starting means and fuels
- Operating factors and considerations that affect basic care intervals

COURSE OUTLINE

- Overview of Gas Turbines
- Fundamental Thermodynamics
- Mechanical Equipment Standards
- Gas Turbine Components
- Materials of Construction
- Bearings and Seals
- Lubrication System
- Fuels and Fuel Supply Systems
- Combustion Air Filters
- Exhaust Systems
- Auxiliary Components and Systems
- Control Systems and Instrumentation
- Basic Gas Turbine Care

6. WHO SHOULD ATTEND

The aim of this three days event is to impart a thorough understanding of the design, operation and basic care of gas turbines. It is primarily intended for technicians and junior engineering graduates exposed primarily to gas turbine driven machinery trains. Experienced specialists involved in the maintenance and operation of gas turbines will definitely profit from attending this course. This course should be valuable to managerial and supervisory individuals responsible for operations and basic maintenance functions. Throughout the session participants will have ample opportunity to have gas turbine related questions discussed and answered.

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians and others who wish to sit for the Steam Boiler Engineer Grade 1 and 2 Examination conducted by the Department of Occupational Safety and Health (DOSH).

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

HEAT RECOVERY STEAM GENERATOR (HRSG) OPERATIONS AND MAINTENANCE – BOILER

ORGANIZED BY

BINTULU

BERDAYA-TEC TRAINING & CONSULTANCY

OBJECTIVES

This course thoroughly describes the technology of gas turbines and their operation and maintenance. Attendees will gain a full understanding of the technology, which performs a major role in power generation, compression and plant processes, and will learn sound operating practices. They will be taught to manage the maintenance of gas turbines, and understand all of the resources required to support their operation and maintenance. A wide range of gas turbine types in use today is covered from industrial units to aero-derivative engines. New technologies such as low NOx, performance monitoring and condition monitoring techniques are explained.

COURSE OUTLINE

Module 1:

Gas Turbine Technology in HRSG

- Basic gas turbine technology
- Engine components
- Auxiliary systems

Module 2:

Gas Turbine Operation in HRSG

- Gas turbine operation and performance
- Condition monitoring
- Routine site operating and maintenance tasks

Module 3:

Gas Turbine Maintenance in HRSG

- Overview of maintenance processes
- The optimum maintenance program
- Application of reliability centered maintenance to gas turbines
- Major maintenance and overhauls

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians and others

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

HEAT RECOVERY STEAM GENERATOR (HRSG) OPERATIONS AND MAINTENANCE – GAS TURBINE

ORGANIZED BY

BINTULU

OBJECTIVES

OBJECTIVES

Upon successful completion of this course the participant should be able to:

- Describe the major activities associated with turbine maintenance.
- Identify and define the items of concern related to turbine maintenance activity.
- Identify the types of defects encountered during turbine maintenance inspections.
- Identify the relationship between operational effects and maintenance activity.
- Describe the various inspections performed during disassembly of the turbine.
- Describe the procedures for cleaning and inspecting the turbine components.
- Describe the impact of the various types of defects on turbine efficiency and reliability.
- Describe the criteria used to evaluate turbine component defects.
- Describe the various repair methods for defective component condition.
- Describe the details required for an effective steam path audit.
- Describe the methods used to properly align turbine components.
- Describe the criteria used to establish unit specific maintenance clearances.

COURSE OUTLINE

- **Module 1:** Introduction to boiler in HRSG

COURSE OUTLINE

- **Module 2:** Steam Turbine Fundamentals
- **Module 3:** Steam Turbine Component Construction
- **Module 4:** Steam Turbine Maintenance
- **Module 5:** Bearing/Coupling Maintenance
- **Module 6:** Steam Turbine Valve Maintenance
- **Module 7:** Steam Turbine Alignment

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians and others

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

HEAT RECOVERY STEAM GENERATOR (HRSG) OPERATIONS AND MAINTENANCE – STEAM TURBINE

ORGANIZED BY

BINTULU

BERDAYA-TEC TRAINING & CONSULTANCY

OBJECTIVES

This course provides a comprehensive overview of steam turbines – STF-A650, focusing on both operation and maintenance. It begins by explaining the working principles of steam turbines, covering components such as the casing, high-pressure (HP) turbine, seals, and coupling. The course also explores auxiliary oil systems, sealing mechanisms, supervisory control systems, and steam regulation valves.
Participants will learn about control options for the steam turbines – STF-A650, including the function of the governor, the architecture of the trip system, and the automatic protections integrated into the turbine. Common maintenance procedures, such as casing removal, rotor extraction, and journal bearing adjustment or removal, are also covered.
The course concludes with a focus on performance monitoring and troubleshooting, demonstrating how vibration analysis can diagnose issues like rotor rub or imbalance, and outlining key measurement points for monitoring turbine– STF-A650 performance.

By the end of this course, you will be able to:

- Gain comprehensive knowledge of the main components of a steam turbine – STF-A650, including systems like lubricating oil, steam and water seals, and hydraulic power units.
- Identify the locations of turbine supervisory instrumentation and describe their functions.
- Understand various control concepts for steam turbines – STF-A650.
- Analyze the causes and effects of thermal stress on turbine operations.
- Safely disassemble and reassemble major turbine components, contributing to improved inspection and repair techniques.
- Identify irregular operating conditions using vibration measurements across different components.
- Detect abnormal conditions and propose potential solutions and preventive measures.

COURSE OUTLINE

Module 1: Introduction to Steam Turbines – STF-A650, STF – D600 And STF-D650

Module 2: Supervision Systems

Module 3: Thermal Monitoring

Module 4: Steam Turbine – STF-A650, STF – D600 And STF-D650 Control

Module 5: Maintenance of Steam Turbine – STF-A650, STF – D600 And STF-D650

Module 6: Steam Valves System For STF-A650, STF – D600 And STF-D650

Module 7: General Clearance and Alignment For STF-A650, STF – D600 And STF-D650

Module 8: Vibration Analysis and Troubleshooting

Module 9: Performance & Monitoring Of Steam Turbine – STF-A650, STF – D600 And STF-D650

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians and others

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

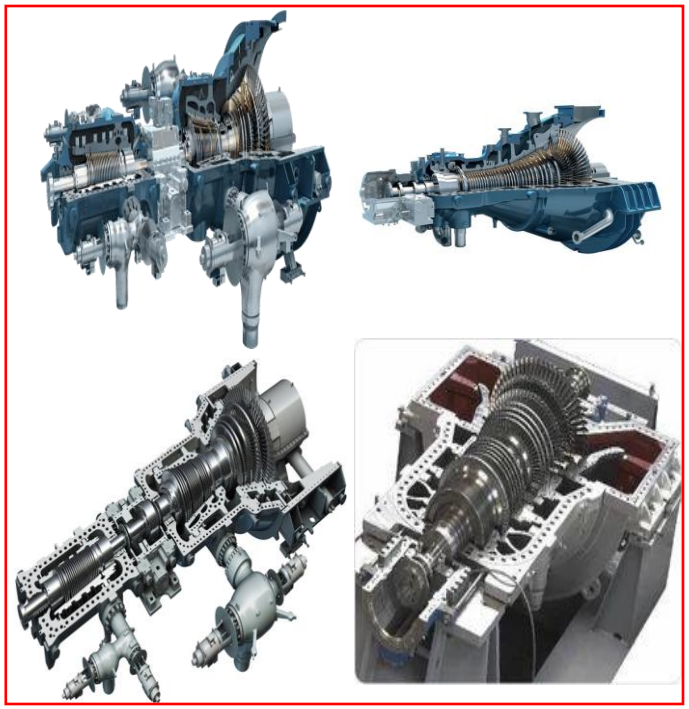
The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

STEAM TURBINES – STF -A650, STF-D600 AND STF-D650 OPERATION AND MAINTENANCE – FUNDAMENTAL



ORGANIZED BY

BINTULU

BERDAYA-TEC TRAINING & CONSULTANCY

OBJECTIVES

This course will provide a turbo-machinery package operator and maintenance technician with the knowledge and skills necessary to operate and maintain the package safely and efficiently.
The course will be primarily conducted by means of instructor-led presentations and discussions backed up by visits to the equipment, as available.

The specific maintenance requirements will be covered using worksheets to allow the student to gain familiarity with the project data supplied with the package. These worksheet exercises will help identify maintenance requirements for each package system, including the frequency, consumable parts, and sources of procedural information.
A Pre-Test and Post-Test will be administered to measure student progress as a result of the course.
On completion of this course the student will be able to:

1. Describe Pre-Start Checks; Start Procedures; Stop Procedures; and Normal Operation, including operational configuration and parameter changes
2. Differentiate between common operational-based and maintenance-based abnormal conditions
3. Make operational parameter changes in response to abnormal operational-based conditions or alarms/shutdowns
4. Take appropriate first response action and accurately communicate relevant data to investigative personnel in relation to abnormal maintenance-based conditions
5. Plan and execute predictive, preventative, and corrective maintenance in accordance with Solar recommendations
6. Perform basic performance verification in support of predictive maintenance activities

COURSE OUTLINE

- **Module 1:** General Package Description
- **Module 2:** Gas Turbine Engine
- **Module 3:** Start System

COURSE OUTLINE

- **Module 4:** Lube Oil System
- **Module 5:** Fuel System
- **Module 6:** Driven Equipment (Compressor or Generator)
- **Module 7:** Seal System (Compressor Packages Only)
- **Module 8:** Control System
- **Module 9:** Display System
- **Module 10:** Operating Procedures
- **Module 11:** Routine Maintenance Theory and Practices
- **Module 12:** Package System Maintenance Requirements
- **Module 13:** Engine Performance Verification
- **Module 14:** Compressor Performance Verification (Compressor Packages Only)

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians and others

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **5 Days.**

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

SPECIALIZED GAS TURBINE TRAINING - SOLAR TURBO MACHINERY PACKAGES (AND ITS AUXILIARIES) OPERATION & MAINTENANCE

ORGANIZED BY

BINTULU

BERDAYA-TEC TRAINING & CONSULTANCY

OBJECTIVES

This 5-day course is designed to enhance plant personnel's knowledge of maintenance requirements for the (GE) Frame 7EA gas turbine-generator. It is aimed at mechanics, operations staff, plant management, and engineers who need a better understanding of gas turbine-generator maintenance activities. The course covers in-depth planning and procedures for combustion inspections, hot-gas-path inspections, major inspections, and generator inspections, with a focus on safety, maintenance techniques, and making informed repair/replace/reuse decisions. Participants will learn about common causes of gas path damage and their effects on efficiency, reliability, and availability. Additional topics include clearance data taking, non-destructive examinations (NDE), bearing inspections, and alignment issues. While all GE industrial gas turbines share similarities, the course dives into the specifics of the 7E design, with particular focus on the Frame 7EA. The primary goal of the course is to help participants ask better questions, understand expert advice, and make well-informed decisions regarding maintenance, repair, and outage management. This course is developed and delivered by former GE field engineers with extensive experience.

COURSE OUTLINE

- **Module 1:** Major Components
- **Module 2:** Operational And Safety
- **Module 3:** Major Inspections.
- **Module 4:** Developing An Outage Plan Or Schedule.
- **Module 5:** Repair/Replace/Reuse Decisions During Maintenance.
- **Module 6:** Frame 7EA Support Systems.
- **Module 7:** Procedures For Disassembling And
  Module 8: Reassembling Turbine Components.
- **Module 9:** Common Causes Of Gas Path Damage.
- **Module 10:** Clearance & Alignment Measurements
- **Module 11:** Non-Destructive Examination Methods
- **Module 12:** Cleaning And Inspection Procedures
- **Module 13:** Common Repair Techniques
- **Module 14:** Alignment Of Gas Turbine-Generator
- **Module 15:** Major Components Driven By 7ea Gas Turbines.
- **Module 16:** Disassembly And Reassembly Generator Components.
- **Module 17:** Mechanical Maintenance Tasks
- **Module 18:** Electrical Testing Procedures

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians and others.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **5 Days.**

PROGRAM FEES

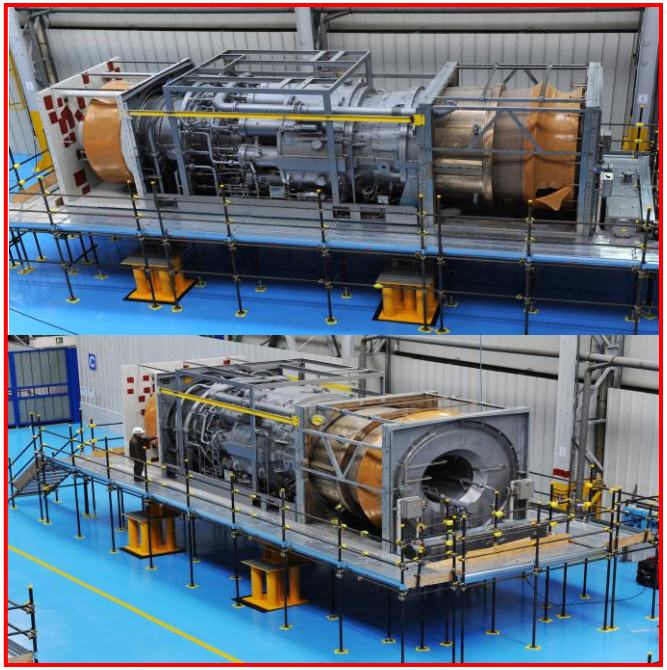
The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

SPECIALIZED GAS TURBINE TRAINING - (GE) FRAME 7EA GAS TURBINE GENERATOR MAINTENANCE



ORGANIZED BY

BINTULU

BERDAYA-TEC TRAINING & CONSULTANCY

OBJECTIVES

This 5-day course is designed to enhance the effectiveness of maintenance activities for GE Frame 6 gas turbine generators. The course begins with an overview of the major components and systems, ensuring participants can accurately identify this equipment before delving into more detailed lectures. Next, the focus shifts to planning and executing maintenance outages for gas turbines, covering critical topics such as planning, safety, procedures, and considerations related to repair, reuse, and replacement decision-making. We will explore common causes of gas path damage and their effects on efficiency, reliability, and availability.

Related subjects include taking clearance data, non-destructive examination (NDE), bearing inspections, and addressing alignment issues. Additionally, gas turbine operation is analyzed concerning how operating factors can influence maintenance intervals. The course includes discussions on combustion, hot gas path, and major inspections, as well as a review of generator construction, disassembly, and inspection. The course outline encompasses topics such as CT fundamentals, Frame 6 construction, auxiliary systems, controls overview, maintenance preparation and planning, combustion section inspection, turbine inspection, major inspection, generator disassembly, generator inspection, and alignment. This course is specifically designed for plant personnel involved in the safe and effective maintenance of GE Frame 6 gas turbine generators.

COURSE OUTLINE

- Identify major components associated with MS6000.
- Recognize operational, safety maintenance outage.
- Differentiate between HGPI, I and MI.
- Developing an outage plan or schedule.
- Outline key factors for making maintenance decision.
- Understand the procedures disassembly and reassembly.
- Explain the disassembly and reassembly processes for major fuel valves.
- Identify common causes of gas path damage.
- Explain standard procedures for cleaning & inspection.
- Discuss common repair methods for GT components.
- Alignment considerations for gas turbine components

COURSE OUTLINE

- **Module 1:** Gas Turbine Fundamental Review
- **Module 2:** MS6000 Gas Turbine Construction
- **Module 3:** Turbine Function
- **Module 4:** Component Description
- **Module 5:** Turbine Auxiliary Systems
- **Module 6:** Maintenance Preparation & Planning
- **Module 7:** Combustion Section Inspection
- **Module 8:** Turbine Inspection
- **Module 9:** Major Inspection
- **Module 10:** Generator Disassembly and Inspection

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians and others who wish to sit for the Steam Boiler Engineer Grade 1 and 2 Examination conducted by the Department of Occupational Safety and Health (DOSH).

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

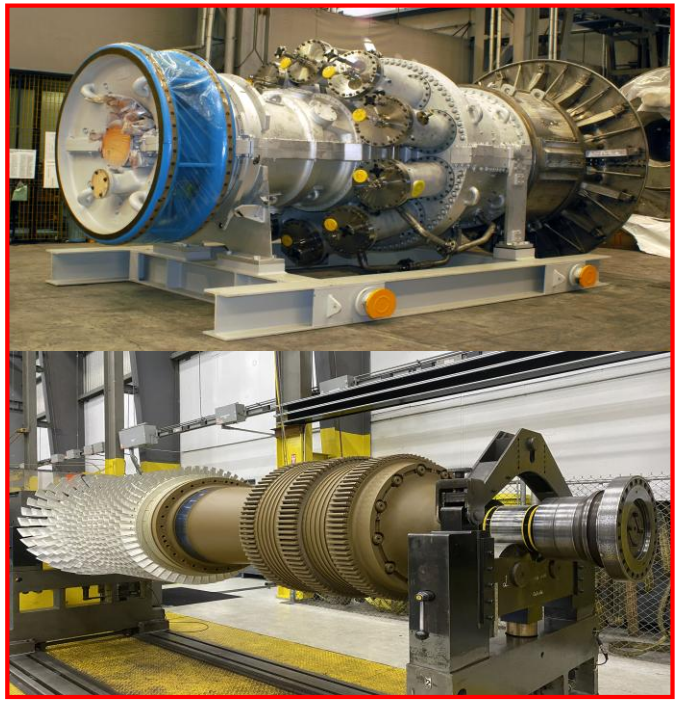
The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

SPECIALIZED GAS TURBINE TRAINING - (GE) FRAME 6 GAS TURBINE GENERATOR MAINTENANCE



ORGANIZED BY

BINTULU

OBJECTIVES

Balance of Plant (BOP) refers to all the auxiliary systems and supporting components of a power plant that are essential for energy delivery, apart from the main generating unit. These systems may include transformers, inverters, and supporting structures, depending on the plant type.

Efficient plant operation goes beyond managing the boiler and turbine, it also requires careful attention to BOP operations. With enhanced control and monitoring of these systems, it's possible to reduce forced outages, minimize derates, and improve the overall plant heat rate. This course will cover the key aspects of BOP, auxiliary systems, and how to evaluate Balance of Plant systems effectively.

This training program equips engineers with the expertise needed to design BOP systems for thermal power plants. This specialized course covers crucial topics such as BOP components, design principles, equipment selection, layout planning, and integration with main power generation systems. Participants will gain practical skills, preparing them to contribute effectively to the design and implementation of BOP systems in thermal power projects.

COURSE OUTLINE

The syllabus is carefully structured to cover both foundational and advanced aspects of BOP design for thermal power plants, including:

Module 4: Introduction to Balance of Plant (BOP)
- Overview of BOP Systems in Thermal Power Plants
- Importance of BOP Design for Plant Efficiency and Performance

Module 2: BOP Components and Functions
- Identification and Description of BOP Components: Cooling Systems, Ash Handling, Fuel Handling, Water Treatment, etc.
- Role of Each BOP Component in Power Plant Operations

Module 3: Design Considerations for BOP Systems
- Environmental Factors and Site Conditions
- Regulatory Requirements and Standards Compliance Integration with Main Power Generation Systems

Module 4: Equipment Selection and Sizing
- Criteria for Selecting BOP Equipment: Pumps, Valves, Heat Exchangers, Fans, etc.
- Sizing Calculations and Performance Specifications

COURSE OUTLINE

Module 5: Layout Planning and Optimization
- Spatial Planning of BOP Components within the Plant Layout
- Optimization for Space, Accessibility, and Maintenance

Module 6: Integration with Main Power Generation Systems
- Coordination with Boiler, Turbine, and Generator Systems
- Interface Design for Seamless Operation and Maintenance

Module 7: Safety and Environmental Considerations
- Safety Measures for BOP Operation and Maintenance
- Environmental Protection: Emissions Control, Waste Management

Module 8: Case Studies and Real-world Applications
- Analysis of BOP Design Challenges, Solutions, and Best Practices
- Application of BOP Design in Real-world Thermal Power Projects
- *Capstone Project*: Design and Analysis of a BOP System for a Thermal Power Plant

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians and others

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

BALANCED OF PLANT (BOP)

ORGANIZED BY

BINTULU

OBJECTIVES:

Hazard and Operability Analysis (HAZOP) is a structured technique used for risk management, focused on analyzing and examining potential hazards within work processes. Specifically, HAZOP provides a systematic approach to identify possible hazards and pinpoint operability issues that could lead to adverse events. The method assumes that hazardous events arise from deviations in design or operational intentions. To identify these deviations, the HAZOP team uses a set of guide words that help stimulate the team's imagination and detect potential hazardous deviations.

By the end of the course, participants will be able to:

- Review processes or designs to identify potential hazards.
- Enhance the safety of existing facilities.
- Conduct risk assessments for various systems.

COURSE OUTLINE:

TOPIC 1:

- Introduction
- Overview of HAZOP
- Overview of HAZOP
- Incident Case Study
- Planning a HAZOP Study
- HAZOP Methodology

TOPIC 2:

- Process HAZOP
- Writing HAZOP Recommendations
- HAZOP Reporting
- HAZOP Study for Procedures
- HAZOP Team Requirements

TOPIC 3:

- HAZOP Study for Batch Units
- Group Work: Batch HAZOP
- Failure Mode and Effect Analysis (FMEA)
- Structured What-If Technique (SWIFT)
- Selecting Hazard Identification Techniques
- Group Work: Choosing Hazard Identification Techniques

COURSE OUTLINE:

TOPIC 4:

- Group Work: Selecting the Right Hazard Identification Techniques
- Risk Ranking
- Group Work: Risk Ranking
- Responsibilities of HAZOP Leaders in Applying Guidewords

TOPIC 5:

- Applying HAZOP Guidewords
- Preparing Nodes for HAZOP Study
- Practice: Creating and Closing Out HAZOP Reports

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians and others

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

HAZARD OPERABILITY (HAZOP)

ORGANIZED BY

BINTULU

OBJECTIVES

This program is designed to provide the participant with an understanding of the fundamentals of Hydro-electric Power Plants. Participants will learn;

- Hydropower as a renewable and environmentally friendly energy source
- Classification of hydropower plants based on type and capacity
- Key components, operation, and maintenance of hydropower systems
- Types of hydraulic turbines, their applications, and operational characteristics

COURSE CONTENTS

- Fundamental equations governing energy transfer in turbines
- Turbine losses and efficiencies, including hydraulic, volumetric, and mechanical efficiency
- Principles of similarity, specific speed (both dimensional and dimensionless), and scaling relationships
- Cavitation: Cavitation Index, Thoma's Sigma, cavitation inception, turbine cavitation, and factors influencing turbine installation height (setting above tailwater) to avoid cavitation
- Key hydraulic components of a hydropower system: intake, penstock, guide vanes or distributor, turbine, and draft tube
- Typical designs and dimensions for casing, intake, and draft tube, relative to the runner diameter
- Turbine classification: impulse and reaction types
- Definition and significance of the degree of reaction, and its relationship to velocity components at the runner inlet and outlet
- Various impulse turbines (Pelton, Turgo, and Banki) and reaction turbines (Francis, axial-flow propellers such as Kaplan, Tube, and Bulb)
- Operational characteristics of impulse versus reaction turbines, along with a comparison
- Selecting the optimal turbine type (Impulse, Francis, or propeller) for a specific application, and calculating key design parameters for the chosen turbine

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

- **TO BE CONFIRMED LATER**

HYDRO ELECTRIC POWER PLANT FUNDAMENTAL COURSE

ORGANIZED BY

BINTULU

OBJECTIVES

This hands-on program is designed to provide the participant with an understanding of the fundamentals of pump design and operation and equipment maintenance. Topics will include basic pump styles and operating characteristics. Pump maintenance requirements will be discussed that includes removing, disassembling, inspecting, repairing and reassembling various pump.

The course will be primarily conducted by means of instructor-led presentations and discussions backed up by visits to the equipment, as available.
The specific maintenance requirements will be covered using worksheets to allow the student to gain familiarity with the project data supplied with the package. These worksheet exercises will help identify operations and maintenance requirements for each package system, including the frequency, consumable parts, and sources of procedural information.
A Pre-Test and Post-Test will be administered to measure student progress as a result of the course.

COURSE CONTENTS

- Safety and First Aid
- General Introduction to Hydro Power Plants
- Familiarization with Hydro Power Plant Engineering
- Operation and Maintenance of Hydro Power Plant Components, including Turbines, Governing Systems, Valves, Generators, Excitation Systems, etc.
- Switchgears and Protection in Hydroelectric Stations

COURSE CONTENTS

- Power Plant Operation and the Role of Load Dispatch Centers
- Maintenance of Hydro Power Plant Equipment
- Hydro Power Plant Simulator Training
- On-the-Job Operational Training at Hydro Power Plants
- On-the-Job Maintenance Training at Hydro Power Plants
- Final Assessment and Evaluation

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

- **TO BE CONFIRMED LATER**

HYDRO ELECTRIC POWER PLANT OPERATION & MAINTENANCE COURSE

ORGANIZED BY

HRD CORP CLAIMABLE

ilcm BINTULU

BERDAYA-TEC TRAINING & CONSULTANCY

INDUSTRIAL ENGINEERING COURSES

26. AIR COMPRESSOR OPERATION & MAINTENANCE

27. BEARING MAINTENANCE

28. PUMP OPERATION & MAINTENANCE

29. PUMP ALIGNMENT

30. COOLING TOWER OPERATION & MAINTENANCE

31. VALVE OPERATION & MAINTENANCE

BERDAYA-TEC
TRAINING & CONSULTANCY

INTRODUCTION

This hands-on program is designed to provide the participant with an understanding of the fundamentals of compressor design and operation and equipment maintenance. Topics will include basic compressor types and operating characteristics. Compressor maintenance requirements will be discussed that includes removing, disassembling, inspecting, repairing and reassembling various types of compressor.

OBJECTIVES

Upon successful completion of this course the Maintenance Technician/Engineer should be able to:

- Properly disassemble, and inspect a variety of different types of compressors.
- Effectively examine and describe the type(s) of repair(s) required.
- Describe the proper repair procedures to ensure safe and economic post repair operation of the equipment.
- Effectively troubleshoot future problems as they might occur in similar equipment.
- Understand the importance of proper bearing installation and lubrication in rotating equipment.
- Have a better understanding and appreciation for the importance of proper alignment, and various alignment techniques and procedures.
- Conduct post repair performance and acceptance tests.

COURSE OUTLINE

1. Overview
    a. Compressor function in the system
    b. Types of compressors
    c. Prime movers
2. Reciprocating Compressors
    a. Construction
    b. Size, speed, cycle, and efficiency
    c. Lubrication systems and oils
3. Compressor and System-Related Problems
    a. Lubrication
    b. Liquid flood back
    c. High head pressure
    d. Low suction pressure
    e. Refrigerant charge
    f. Superheat
    g. Low head pressure
    h. High suction pressure
    i. Inefficient compressor
4. Compressor Components
5. Methods of Capacity Modulation
    a. Multi-speed
    b. Multiple compressors
    c. Cylinder unloading
    d. Hot gas bypass
6. Compressor Alignment
    a. Purpose of alignment
    b. Belt drive alignment
    c. Direct-drive coupling alignment
7. Related Safety Practices
    a. Refrigerant pressure
    b. Valve spring pressures
    c. Testing pressures
    d. Prime mover isolation
    e. Tool safety
8. Compressor Control and Protection Devices
    a. High and low pressure controls
    b. Oil failure control
    c. Internal relief valve
    d. Motor starters and overloads
    e. Internal motor temperature sensors
    f. Crankcase heaters
9. Use of Manufacturer's Manual
    a. Procedures and specifications
    b. Wear tolerances
    c. Parts lists
10. Compressor Inspection
    a. Preparing Compressor and Area for Teardown
    b. Disassembly and inspection
    c. Inspection of internal parts
    d. Main bearing replacement
11. Compressor Reassembly
12. Compressor Start-Up
13. Compressor Preventative Maintenance
    a. Importance of Preventative Maintenance
    b. Procedures common to most compressors
14. Semi-Hermetic Compressors
    a. Stator and rotor test
    b. Stator and rotor removal
    c. Stator rewinding
    d. Reassembly
    e. Terminal seal repairs

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **3 Days.**

PROGRAM FEES

- **TO BE CONFIRMED LATER**

AIR COMPRESSOR OPERATION & MAINTENANCE COURSE

ORGANIZED BY

BINTULU

BERDAYA-TEC TRAINING & CONSULTANCY

OBJECTIVES

This course is designed to covers the principles and applications of various types of bearings, including plain journal, ball, and roller bearings. Explains installation, inspection and repair of bearings. Deals with specialized bearings, including powdered-metal, nonmetallic, and hydrostatic bearings. It also covers the bearing seals, lubrication, and maintenance practices.

COURSE OUTLINE

1. Bearings and Shafts
Bearing classification and selection; Shaft materials and stresses; Vibration; Critical speed; Fits and clearances

2. Plain Journal Bearings I
Features, types, and advantages; Lubrication; Lubricating grooves; Seals; Split bearings; Bearing design; selection

3. Plain Journal Bearings II
Materials; Score resistance; Load capacity; Fatigue strength; Conformability; Embeddability; Corrosion and temperature resistance; Relining

4. Antifriction Bearings I
Operating principles; Bearing and cage materials; Lubrication; Seals and shields; Tolerances; Fits; Standard and precision bearings; Running accuracy

5. Antifriction Bearings II
Environment; Mounting; Radial and axial clearance; Fixed and floating bearings; Fits; Alignment; Mounting methods; Selection

6. Ball and Roller Bearings
Ball and roller bearing design; Single-row radial, single- and double-row angular contact bearings; Two-piece, inner-ring bearings; Roller bearings

7. Specialized Bearings
Thrust, self-aligning, linear-motion, mounted, instrument, ungrounded ball, powdered-metal, nonmetallic, and hydrostatic bearings

8. Bearing Seals
Seal functions; Terminology and classifications; Labyrinth seals; Special seals; Selection and application; Seal materials; Mechanical seals

9. Lubrication
Lubrication practices and equipment; Oil and grease lubrication; Packing; Manual, natural, and automatic lubrication devices and systems

10. Bearing Maintenance
Maintenance, cleaning, and installation; Mounting and removing bearings; Loading patterns; Failure terminology

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **3 Days.**

PROGRAM FEES

- **TO BE CONFIRMED LATER**

BEARING MAINTENANCE COURSE

ORGANIZED BY

BINTULU

OBJECTIVES

This hands-on program is designed to provide the participant with an understanding of the fundamentals of pump design and operation and equipment maintenance. This course is divided to two level of competencies: basic and advance level which emphasizes on basic pump types, styles and operating characteristics. Pump maintenance requirements will be discussed that includes removing, disassembling, inspecting, repairing and reassembling various pumps.
Upon successful completion of this course the Maintenance Technician/Engineer should be able to:

Properly disassemble, and inspect a variety of different types of pumps.

- Effectively examine and describe the type(s) of repair(s) required.
- Describe the proper repair procedures to ensure safe and economic post repair operation of the equipment.
- Effectively troubleshoot future problems as they might occur in similar equipment.
- Understand the importance of proper bearing installation and lubrication in rotating equipment.
- Have a better understanding and appreciation for the importance of proper pump alignment, and various alignment techniques and procedures.
- Conduct post repair pump performance and acceptance tests.

COURSE CONTENTS

LEVEL 1 : BASIC

1. Introduction
2. Centrifugal Pump Design
3. Pump Disassembly (Classroom)

COURSE CONTENTS

LEVEL 1 : BASIC

1. Pump Disassembly (LAB)
2. Pump Repairs (LAB)
3. Pump Assembly (LAB)
4. Post Repair Testing
5. Course Conclusion

LEVEL 2 : ADVANCE

1. Introduction
2. Rotary Pump Design
3. Pump Disassembly (Classroom)
4. Pump Assembly
5. Pump Repairs (LAB)
6. Post Repair Testing
7. Course Conclusion

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **3 Days.**

PROGRAM FEES

- **TO BE CONFIRMED LATER**

PUMP OPERATION & MAINTENANCE COURSE

ORGANIZED BY

BINTULU

OBJECTIVES

The unexpected breakdown of rotating machinery is the single largest cause of emergency downtime in industries. Vibration surveillance is to detect problems and analysis of the vibration signal to identify root causes are proven tools to eliminate this downtime. This course explains the physical basis for vibration monitoring, vibration analysis through identification of discreet frequencies, and provides extensive problem solving examples of real life machinery problems.

BENEFITS

1. Builds the participants confidence in proper alignment methods
2. Speeds up the alignment process
3. Replaces costly "trial and error" approaches to alignment
4. Dispels many misconceptions about alignment

ACTIVITIES

- Practice of alignment methods on classroom demos
- Exercise in field data collection

COURSE OUTLINE

1. Shaft Alignment Basics and Alignment Theory

- Types of Misalignment
  - Offset and Angularity
- Alignment Methods
  - Straightedge, Taper Gages, Dial Indicator, and Laser Methods
  - The Dial Indicator
  - The Geometry of Alignment - the Basics of Similar Triangles
  - Standard Dial Indicator Reading Conventions and Accuracy Checks

2. Pre-alignment Checks

- Checking for Shaft and Coupling Run-out
- Identifying and Correcting Soft Foot Conditions
- Rim and Face Alignment Method
- Making Measurements to Discover Angularity and Quick Calculation for corrective Moves
- Making Offset Measurements and Correcting the Problem
- Common Sources of Measurement Error

3.0 Reverse Dial Alignment Method

- The Geometric Relationship between Two Straight Lines
- Graphical Solution to Determine Vertical Shim and Horizontal Move corrections
- Computational Solution - Sign Conventions, Calculated Shim Corrections, and Determining Horizontal Moves

4.0 Field Alignment Tips

- Preparing a Data Collection Sheet
- Alignment Tools and Brackets
- Correcting for Bar Sag
- Determining Cold Alignment Offsets by Graphical Solution
- Tricks to Simplify Difficult Lateral Moves
- Other Alignment Tips

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **2 Days.**

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER.**

PUMP ALIGNMENT COURSE

ORGANIZED BY

HRD CORP CLAIMABLE

ilcm BINTULU

BERDAYA-TEC TRAINING & CONSULTANCY

OBJECTIVES

This course is designed to provide the participants with an understanding of the fundamentals of cooling tower, its operation and maintenance. Topics will include basic cooling tower types, operating characteristics and to recognize maintenance requirements and procedures for cooling towers and its auxiliary equipment; recognize cooling tower operation steps and checks and safety requirements.

COURSE CONTENTS

1. Purpose of cooling towers
   - 1.1 Importance of cooling towers in the industries
   - 1.2 Common use of cooling towers in the industries

2. Identify the common types of cooling towers:
   - 2.1 Types of cooling tower
   - 2.2 Air flow classifications
   - 2.3 Industrial Propose
   - 2.4 Common Terms
   - 2.5 Major components of cooling towers.
   - 2.6 Identify cooling tower symbols.

3. Cooling tower operation:
   - 3.1 Inlet/outlet flows
   - 3.2 Associated utilities /auxiliary equipment
   - 3.3 Activities within the equipment
   - 3.4 Cooling towers affects process or final product
   - 3.5 Consequences of deviation from normal operation

4. Safety, health and environmental hazards associated with cooling towers:
   - 4.1 Chemical hazards
   - 4.2 Environmental hazards
   - 4.3 Lightening
   - 4.4 Fire
   - 4.5 Explosions
   - 4.6 Misting
   - 4.7 Equipment hazards
   - 4.8 PPE/safety precautions
   - 4.9 Process Technician's role for safe operation

5. Identify environmental concerns associated with cooling towers:
   - 5.1 Technician role for operating within environmental guidelines

6. Typical procedures associated with cooling towers:
   - 6.1 Monitoring, testing & troubleshooting
   - 6.2 Proper low water level response
   - 6.3 Lock/tag
   - 6.4 Routine and preventive maintenance
   - 6.5 Mechanical versus chemical cleaning
   - 6.6 Sampling
   - 6.7 Lab testing
   - 6.8 Startup
   - 6.9 Shutdown
   - 6.10 Emergency

7. Technician's role in cooling tower operation and maintenance.
   - 7.1 Basic Maintenance
   - 7.2 Preventive Maintenance
   - 7.3 Breakdown Maintenance
   - 74 Maintenance Record and Logs

8. Common operating problems associated with cooling towers:
   - 8.1 Tube rupture
   - 8.2 Water carryover
   - 8.3 Low pump pressures
   - 8.4 High water temperature
   - 8.5 Plugged packing
   - 8.6 Water temperature too cool

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **3 Days.**

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER.**

COOLING TOWER OPERATION & MAINTENANCE COURSE

ORGANIZED BY

BINTULU

OBJECTIVES

This course covers how to identify components and correct procedures, describe functions and purpose, and troubleshoot as it relates to the identification, function, construction, operation and maintenance of the various types of valves in general use in piping systems. It includes detailed coverage of the general appearance, construction, and function of gate, globe and check valves; general coverage of plug, diaphragm, pinch, butterfly, three-way-flow, safety, pressure-regulating, control, multi-port, and other less common valves; and general coverage of valve operation, installation; and maintenance.

At the completion of this course, the student will be able to:

- Identify the function, construction, operation, and maintenance of various valves in piping systems
- Detail the appearance, construction, and function of gate, globe, and check valves
- Describe the use of plug, diaphragm, pinch, butterfly, three-way-flow, safety, and other valves
- List the operation, installation, and maintenance concerns of valves
- Demonstrate this knowledge on a fill-in-the blank final exam

COURSE CONTENTS

TOPIC 1:
Introduction of valve types

TOPIC 2:
Operating principle of manual valves, control valve, ON-OFF valve

TOPIC 3:
Identify components and accessories

TOPIC 4:
Understand the function of every components and accessories

TOPIC 5:
Flow characteristic and application

TOPIC 6:
Valves maintenance

TOPIC 7:
Site acceptance test procedures

TOPIC 8:
API specification 598: Valve inspection & testing – 10th Edition ISO 5208 Industrial

TOPIC 9:
Valves – Pressure testing of metallic valves test equipment

TOPIC 10:
Practical – Open valve & identify soft and hard parts

TOPIC 11:
Practical – Valve leak test & hydrostatic shell test

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **3 Days.**

PROGRAM FEES

- **TO BE CONFIRMED LATER.**

VALVE OPERATION & MAINTENANCE COURSE

ORGANIZED BY

BINTULU

INDUSTRIAL AUTOMATION SYSTEM COURSES

32. BASIC PROGRAMMABLE LOGIC CONTROL (PLC)
33. BASIC PNEUMATICS
34. BASIC HYDRAULIC
35. ADVANCED PNEUMATICS – TROUBLE SHOOTING
36. ADVANCED (PLC) – TROUBLE SHOOTING
37. ADVANCED HYDRAULIC – TROUBLE SHOOTING

BERDAYA-TEC
TRAINING & CONSULTANCY

OBJECTIVES:

Prepares technicians to take full advantage of vendor training on specific equipment. Covers the basic operating principles of all PLCs, their inputs and outputs, programming, maintenance, and networking.

Upon successful completion of this course the participant should be able to understand the:

- PLC Overview
- Input-Output Section
- Processor Unit
- Programming Devices
- Memory Organization
- Ladder Diagrams
- Number Systems
- Relay Instructions
- Basics of Programming
- Counters
- Timers

COURSE OUTLINE:

TOPIC 1: Introduction to PLC

- PLC applications and limitations; Number systems; Binary-coded decimals (BCD);
- ACSII; Gray code; Boolean logic

TOPIC 2: Examining and Programming the System

- Parts of a PLC system; The input and output sides; The processor; The program loader; Air compressor performance characteristics
- Power supplies; The instruction set; Ladder logic; Boolean programming; The stack register

TOPIC 3: Input/Output Devices

- Pushbuttons; Selector, foot, float, flow, pressure, and limit switches;
- Proximity and Proximity and photoelectric sensors; Thumbwheel switches; Encoders; RTDs;
- Thermocouples; Mimic panels; Relays; Contactors; Motor starters; Solenoid valves

TOPIC 4:Developing a Programmable Logic Controller System

- Equipment operation specifications; Sizing the system; Assembling the documentation package; Functional model; Startup; Debugging

COURSE OUTLINE:

TOPIC 5: Maintenance and Troubleshooting

- Using hardware and software documentation; The maintenance log; Operational
- Documentation; Routine maintenance; Batteries; Troubleshooting

TOPIC 6: System Expansion and Retrofits

- I/O expansion; Configuring the system; The shift register; Special-purpose hardware;
- Indexing table retrofit; Overhead crane retrofit

TOPIC 7: System Integration

- Warming Local area networks; Uses for LANs; Transmission media; Transmission schemes;
- Selection Topologies; Protocols; LAN accessing techniques; Hierarchies; Vendor offerings

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER**

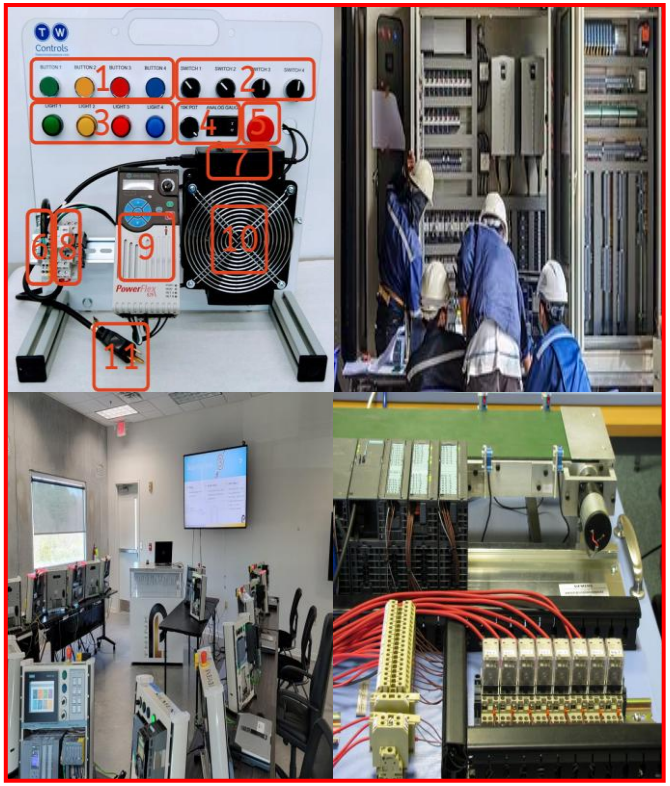
COURSE DURATION

- **3 Days.**

PROGRAM FEES

- **TO BE CONFIRMED LATER**

BASIC PROGRAMMABLE LOGIC CONTROL (PLC) COURSE



ORGANIZED BY

BINTULU

OBJECTIVES:

Covers how work, force, and energy are applied to principles of pneumatics. Shows operating principles of reciprocating, positive displacement, rotary, and dynamic air compressors. Co Includes valves, logic devices, cylinders, and air motors.

Upon successful completion of this course the participant should be able to understand the:

- PLC Overview
- Input-Output Section
- Processor Unit
- Programming Devices
- Memory Organization
- Ladder Diagrams
- Number Systems
- Relay Instructions
- Basics of Programming
- Counters
- Timers

COURSE OUTLINE:

TOPIC 1: Pneumatic Principles

- Fluid power systems; Force, weight, and mass; Pressure; Work and energy; Diffusion and dispersion; Compressibility; Laws of pneumatics; Leverage; Air properties and flow; Bernoulli's Law; Components
- Reciprocating Compressors
- Compressor construction, classification, and operation; Single-, double-acting compressors;
- Cooling requirements; Lubrication; Controls

TOPIC 2: Rotary Compressors

- Vane, rotary-screw, low-pressure, high-volume, diaphragm, centrifugal, and axial-flow compressors; Compressor capacity; Accessories

TOPIC 3: Primary Air Treatment

- Preliminary filtering; Relative humidity; Effects of moisture; Moisture separators; Oil scrubbers; Air dryers and receivers; Using a nomograph
- Secondary Air Treatment
- Contaminant separation and filtration; Filter classification and rating; Surface, depth, adsorption, and absorption filters; Lubricating the air;

TOPIC 4: Piping, Hoses, and Fittings

- Piping requirements and dimensions; Safety; Connections; Metallic tubing; Tube bending, fittings, and installation; Hoses, fittings, and installation
- Directional Control Valves; Manually and automatically operated valves; Control valve elements: spools, poppets, disks, and plates; Two-, three-, four-, and five-way valves; Accessories

TOPIC 5: Pressure-Control Valves

- Safety vs relief valves; Relief valve construction; Pressure regulators; Pilot-operated, remote-controlled regulators; Logic functions

TOPIC 6: Pneumatic Cylinders

- Double-, single-acting cylinders; Two-piston cylinders; Cylinder construction, mounting, and selection; Performance charts; Cushioning
- Pneumatic Motors and Rotary Actuators
- Motor rating; Selection factors: pressure, speed, torque, horsepower, reliability, and service life; Rotary vane and piston motors; Air boosters

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER**

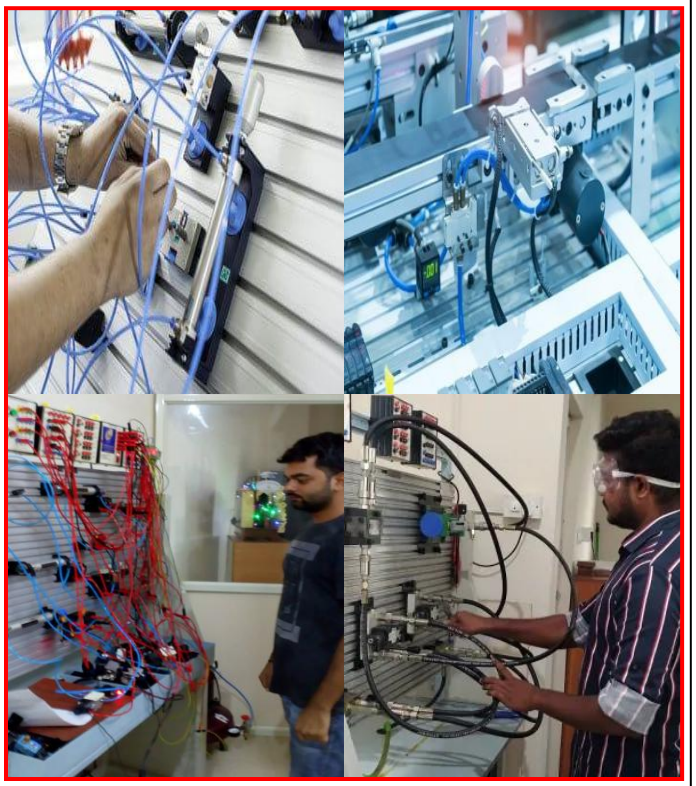
COURSE DURATION

- **3 Days.**

PROGRAM FEES

- **TO BE CONFIRMED LATER**

BASIC PNEUMATICS COURSE



ORGANIZED BY

BINTULU

OBJECTIVES:

The main objective of this learning programme is to gain understanding of the basic principles of hydraulics for achieving the correct awareness of conditions that can occur in hydraulic system and applications, the purpose and application of hydraulic components, hydraulic circuits and logical trouble shooting on hydraulic systems.

Upon successful completion of this course the participant should be able to understand the:

- Explain the basics of hydraulics
- Explain risks and hazards associated with hydraulic work
- Explain the function of different types of pumps and demonstrate how to check start/stop pressure of a pump
- Explain the function of different types of actuators
- Explain the function of different types of valves
- Explain the function of accumulators and demonstrate how to check and precharge them
- Explain the function of different types of sensors
- Identify the components which transfer the oil
- Describe the handling of oil procedures
- Identify and find different components on a hydraulic diagram
- Demonstrate how to measure the hydraulic pressure accurately

COURSE OUTLINE:

TOPIC 1: Introduction

TOPIC 2: Engineering Workshop Safety

TOPIC 3: Hydraulic Introduction

TOPIC 4: Hydraulic Safety

TOPIC 4: Basic hydraulic principles

TOPIC 5: Hydraulic symbols and circuits

TOPIC 6: Pressure-Control Valves

TOPIC 7: Pumps

TOPIC 8: Actuators

COURSE OUTLINE:

TOPIC 9: Accumulators

TOPIC 10: Sensors

TOPIC 11: Pipes, hoses and connections

TOPIC 12: Oil and filters

TOPIC 13: Hydraulic Diagrams

TOPIC 14: Pressure measuring tools

TOPIC 15: Cylinders

TOPIC 16: Hydraulic Motors

TOPIC 17: Troubleshooting and Theoretical Test

TOPIC 18: Summary

TOPIC 19: Evaluation

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER**

COURSE DURATION

- **3 Days.**

PROGRAM FEES

- **TO BE CONFIRMED LATER**

BASIC HYDRAULICS COURSE

ORGANIZED BY

HRD CORP CLAIMABLE

ilcm BINTULU

BERDAYA-TEC TRAINING & CONSULTANCY

ASSOCIATION OF STEAM BOILER OPERATORS & ENGINEER MALAYSIA

OBJECTIVES:

The Pneumatic Troubleshooting training course covers pneumatic systems, schematic symbols and diagrams, installing system components, planned mechanical maintenance, system diagnosis, and troubleshooting. Includes maintenance of air compressors, control valves, air motors, electrical components, and hybrid systems. Participants will construct, adjust, and analyze circuits by following schematic diagrams. They will leave this course with valuable new skills that can be successfully applied to their jobs. This is an excellent course for multi-craft personnel.
Upon successful completion of this course the participant should be able to:

- Describe the differences between pneumatic and hydraulic systems.
- Understand the safety procedures and practices related to pneumatic equipment
- Perform basic troubleshooting and maintenance practices on pneumatic equipment
- Identify of pneumatic components on equipment at facility
- Interpret pneumatic symbols and diagrams & identify pneumatic advantages
- Understand air quality importance and build a pneumatic circuit

COURSE OUTLINE:

TOPIC 1: Pneumatic Systems

- Air supply system; Reciprocating and rotary compressors; Cooling; Compressor maintenance; Air-line filters and lubrication

TOPIC 2: Pneumatic Schematic Diagrams

- Schematic symbol construction; Diagramming an air supply; Simple pneumatic systems; Timing and safety circuits; System schematics

TOPIC 3: Installation of System Components

- Compressor intakes and foundations; Aftercoolers; Receivers; Dryers; Pipe installation and support; Tubing and hose fittings; System installation

TOPIC 4: System Maintenance

- Control system maintenance; Cylinder maintenance; Tool maintenance; Logs and records; Automatic recorders and recording charts

COURSE OUTLINE:

TOPIC 5: Determining System Failures

- Locating troubles; Operations manual; Checking the air supply; Troubleshooting valves and support; Tubing and hose fittings; System installation

TOPIC 6: Troubleshooting Air Compressor

- Compressor cooling, lubrication, and valves; Crankcase ventilation; Piston rings; Bearings; Control systems; Troubleshooting

TOPIC 7: Troubleshooting Control Valves

- Checking manual overrides, circuit sequence, and solenoids; Improper sequence and valve shifting; Control timing; Lubrication problems

TOPIC 8: Troubleshooting Air Motors

- Checking for sufficient air; Contamination; Lubrication; Air motor abuse; Hose and clamp maintenance; Vane and piston motors

TOPIC 9: Troubleshooting Cylinders

- Cylinder construction; Checking for correct size, clogged filters, frozen air lines, and cylinder misalignment; Worn packings and seals; Controls

TOPIC 10: Pneumatic/Hydraulic Systems

- Air-oil tanks; Pressure boosters; Hydraulic control; Pneumatic cushioning; System interlock; Pneumatic servos; Troubleshooting

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER**

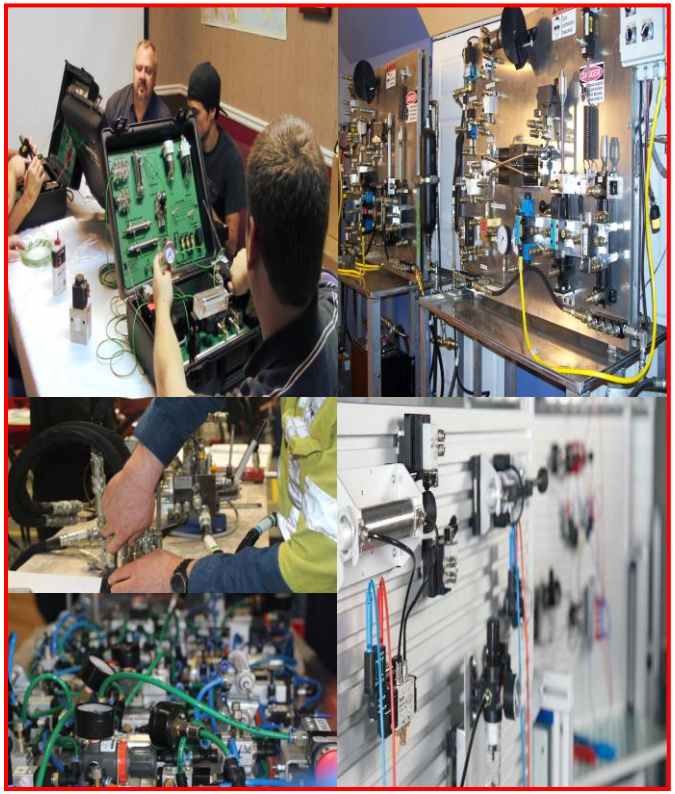
COURSE DURATION

- **4 Days.**

PROGRAM FEES

- **TO BE CONFIRMED LATER**

ADVANCED PNEUMATIC - TROUBLESHOOTING



ORGANIZED BY

BINTULU

OBJECTIVES:

Covers hydraulic principles, types of hydraulic fluids and their characteristics. Describes components of the hydraulic system and their functions, including filters and strainers, reservoirs and accumulators, pumps, piping, tubing and hoses, control valves, relief valves, and actuating devices. Covers a variety of cylinders and hydraulic motors.

Upon successful completion of this course the participant should be able to understand the:

- Understanding lubrication
- Understanding viscosity
- Principles and basics of hydraulics
- Pumps, gear, screw, vane piston
- Check and other poppet valves
- Flow control valves
- Pressure control valves
- Directional control valves
- Hydraulic schematics
- Hydraulic safety

COURSE OUTLINE:

TOPIC 1: Basic Hydraulic And Trubleshooting

- 1.1 Force, weight, mass, pressure, work, power, and energy; Incompressibility; Non-diffusion;
- Hydrostatic pressure; Pascal's Law; Fluid power transmission; Bernoulli's principle

TOPIC 2: Hydraulic Fluids

- Viscosity; Pour point; Fluid selection; Chemical properties; System contamination; Dissolved air; Foaming; Corrosion and rusting

TOPIC 3: Strainers and Filters

- Contaminant removal; Strainer performance; Types of strainers; Fibrous and non-fibrous filter media; Magnetic media; Installation

TOPIC 4: Reservoirs and Accumulators

- Reservoir, air separation requirements; Baffles; Reservoir cooling methods and accessories; Accumulators; Schematic symbols

COURSE OUTLINE:

TOPIC 5: Hydraulic Pumps

- Pump varieties, functions, and selection; Gear, screw, cycloidal, vane, axial-piston, and radial-piston pumps

TOPIC 6: Piping, Tubing, and Fittings

- Fluid flow and velocity; Hydraulic pressure; Pressure loss; Steel pipe and fittings; Tubing and tube bending; Hoses; Hose fittings and couplings

TOPIC 7: Directional Control Valves

- Valve classification; Automatic, two-way, check, pilot-operated, and spool valves; Hydraulic motors; NO, NC, holding valves; Symbols; Flow ratings

TOPIC 8: Pressure-Control Valves

- Poppet, spool, sequence, counterbalance, holding, unloading, and pressure-reducing valves; Shock suppressors; Flow-control valves

TOPIC 9: Cylinders

- Double-, single-acting cylinders; Two-piston cylinders; Positional cylinders; Cylinder construction; Ring, seal, & packing; Cylinder mounting & selection; Flow capacity; Cushioning

TOPIC 10: Hydraulic Motors

- Performance specifications; Starting, running, and stalling torque; Volumetric efficiency; Hydraulic motor construction; Gear, vane, and piston motors

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

- **TO BE CONFIRMED LATER**

ADVANCED HYDRAULICS - TROUBLESHOOTING COURSE

ORGANIZED BY

BINTULU

OBJECTIVES

We offer this program on “Advanced” logic control as a supplement to the “Basic” course.

- The aim is to prepare the student for the labor market in the field of logical control at a high level and to develop skills. It has logical programming.
- This course is for people who want to start their PLC and HMI training for SIEMENS.
- We use SIEMENS equipment and software.
- We teach programming in different languages. Further in the HMI section, we have connected Siemens S7-1200 PLC with the HMI to learn PLC parameter control monitoring.

You will learn how to:

- Understand the basics of control systems and PLC processors.
- Understand how to use ladder logic programming.
- Create and modify a project.
- Use PLC hardware such as I/O modules.
- Communicate across networks.
- Be able to make design, maintenance and troubleshooting considerations.
- Understand fault-finding techniques.

COURSE OUTLINE

Module 1:

- Review the basic concepts of programming with an explanation of the differences between the types of PLC

Module 2:

- Explanation of the differences in connectivity, programming languages and components of the exercise board exercises

Module 3:

- How to connect the device with the hardware configuration method

Module 4:

- Introduction to the TIA PORTAL program and how to open and synchronize it from computers and their windows

COURSE OUTLINE

Module 5 – Module 15:

- Three-bulb traffic light application
- Application consisting of a large number in the market
- Explanation of the types and sizes of memory
- Application for part of a production line and use more than one time with the same timer
- Analog Inputs and Outputs
- Explanation of delivery and start making simple applications
- One application for analog inputs and one for outputs
- How to reset the micromaster inverter
- Connecting the inverter to the automatic control device with the analog inputs and running the motor at different speeds and reading it from the analog outputs from the working screens as a voltmeter from 0 to 10 V data blocks
- Documentation and archiving of programs.
- After learning this course, you will be able to professionally install and program Siemens PLCs in your industrial project or application.

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

- **TO BE CONFIRMED LATER**

ADVANCED PROGRAMMABLE LOGIC CONTROL (PLC) COURSE

ORGANIZED BY

BINTULU

PLANT MAINTENANCE SYSTEM COURSES

38. PLANT ENERGY CONSERVATION

39. CONDITION BASED MAINTENANCE PART 1

40. EFFECTIVE MAINTENANCE PLANNING & SCHEDULING

41. MAINTENANCE MANAGEMENT PART 1 & 2

42. BUSINESS CENTERED MAINTENANCE 1& 2

43. RELIABILITY CENTERED MAINTENANCE PART 1

44. TOTAL PRODUCTIVE MAINTENANCE PART 1 & 2

45. FAILURE MODE AND EFFECT ANALYSIS

BERDAYA-TEC
TRAINING & CONSULTANCY

OBJECTIVES

This course will focus on the steps and procedures necessary to create the most effective preventive and predictive maintenance techniques and analysis possible within cost constrains. Controlling your assets as opposed to your assets controlling you is one of the key goals of a solid maintenance strategy. This course can help you begin the process of not only preventing equipment failures, but also creating a system of predicting when they are going to occur.

Course content :-

- Introduction
  - Definition of Preventive Maintenance
  - The History of Preventive Maintenance
  - Total Maintenance Management
- Breakdown Maintenance
  - Introduction
  - Why Breakdown Maintenance?
- Getting Out of Breakdown Mode
  - Breaking the Habit - Steps 1 to 5
  - The End Results
  - What Role Can Production Play?
- Lubrication
  - Introduction
  - Lubrication Program
  - Lubricant Condition
  - Lubricant Contamination
  - Lubricant Identification
  - Correct Lubrication
- Practical Case Study
- Preventive Maintenance
  - Goals of Preventive Maintenance
  - Functions of Preventive Maintenance
  - Activities of Preventive Maintenance
  - Preventive Maintenance's Place in Maintenance
  - Cost Reduction
  - Preventive Maintenance Methods
- Establish a P.M. Program
  - Write and Publish a Policy Statement
  - Define the Equipment
  - Training of PPM Personnel Procedures
  - Get the Program Underway
- Preventive Maintenance Inspections
  - Preventive Maintenance Inspections
  - Major Functions of Preventive Maintenance
  - The Operator's Role in CLAIR
  - Standards and Checklists
  - P.M. Inspections and Planning and Scheduling
  - Working Out the P.M. Schedule
  - Schedule Using Surveillance Routes
  - P.M. Performance Measurements
- Predictive Maintenance
- Breakdown and Preventive/Predictive Maintenance
  - Preventive Maintenance Overlap
  - Predictive Maintenance Overlap
  - What is Predictive Maintenance?
  - Primary Objectives
  - Reviewing Monitoring Techniques
  - Machine Condition Monitoring
  - Advantages of Predictive Maintenance
  - 12 Essential Steps in Building a Predictive Maintenance Program
- Practical Case Study

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **3 Days.**

PROGRAM FEES

- **TO BE CONFIRMED LATER.**

PREVENTIVE & PREDICTIVE MAINTENANCE COURSE

ORGANIZED BY

HRD CORP CLAIMABLE

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BERDAYA-TEC TRAINING & CONSULTANCY

ASSOCIATION OF STEAM BOILER OPERATOR & ENGINEER MALAYSIA

OBJECTIVES

This course will focus on the steps and procedures necessary to create the most effective maintenance planning and scheduling possible within cost constrains. Among the usual topics examined are ways to increase productivity and reduce over time, the importance of a work order system, how to control the cost of materials and a section on implementing an effective maintenance planning and scheduling

COURSE OUTLINE

I. The Requirements for Maintenance Excellence and Success
- The Maintenance Environment: Today and in the Future
- The 25 Requirements of Maintenance Success

II. Maintenance Planning and Scheduling
- The Need For Effective Planning and Scheduling
- The Planning Function - Developing The Job Plan
- What Gets Measured Gets Done!
- Materials and Parts Requirements
- Planner Knowledge
- Expert Knowledge from Engineering, Shop Foreman, Production, or Vendor
- Job Instructions
- The Maintenance Planner
- Ten Procedures for Planning Maintenance Jobs
- The Work Order Planning Process

III. Techniques for Effective Scheduling
- Types of Maintenance Schedules
- Day-to-Day/Weekly Scheduling Techniques
- Requirements for Effective Scheduling

IV. Planning Major Repairs and Shutdowns
- Preplanning Activities
- Developing Shutdown Procedures
- Developing the Priority of Work and Manpower Schedule
- Using a Critical Path Method for Planning
- Scheduling and Executing the Plan

V. The Maintenance Storeroom: Cornerstone for Effective
- Maintenance Planning
- Inventory Planning and Control - Key to Parts Availability
- Maintenance Planner and Storeroom

VI. Improving and Controlling Maintenance Performance
- Developing an Effective Work Order Control Function
- Designing and Implementing a Priority System that Works – the RIME System

Techniques for Estimating Maintenance Jobs and Measuring Performance
- Measuring Maintenance Performance and Customer Service
- The Three Factors Affecting Craft Labor Productivity
- Selecting Performance Measures for Your Operation

VIII. Measuring the Effectiveness of the Maintenance and Planning Functions
- Craft Utilization, Performance, and Productivity
- Customer Service - A Key Indicator of a Successful Planner
- Maintenance Budget and Cost Control
- Parts Availability/Maintenance Storeroom
- Work Load Balancing
- Measuring Overall Equipment Effectiveness (OEE)
- Re-Engineering the Maintenance Function Includes
  - Maintenance Planning
  - Planning for Maintenance Excellence: The Strategic Maintenance Plan
  - Continuous Maintenance Improvement and Maintenance teams
  - Customer Service and Backlog Control
  - Effective Use of Contract Maintenance Services
  - Integrated Preventive/Predictive Maintenance Requirements

WHO SHOULD ATTEND

Participants at every career level with backgrounds in the field of Engineering, Architecture, Buildings Operations & Maintenance, Property Management, Interior Design, Business Administration, or anyone with an interest in the field of Facility Management

DATE OF COMMENCING AND VENUE;

- **TO BE CONFIRMED LATER.**

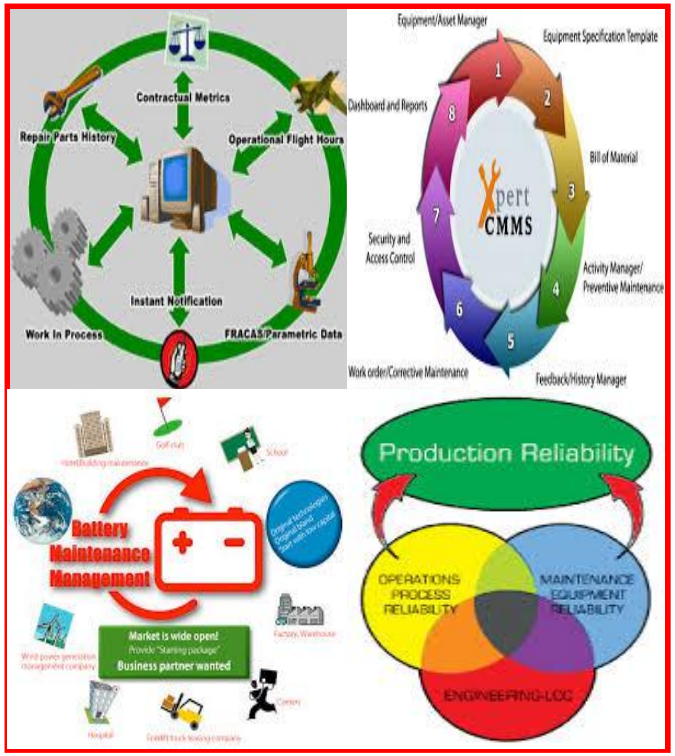
COURSE DURATION

- **3 Days.**

PROGRAM FEES

- **TO BE CONFIRMED LATER.**

EFFECTIVE MAINTENANCE PLANNING & SCHEDULING COURSE



ORGANIZED BY

BINTULU

BACKGROUND

This course is divided to two level of competencies: **MM-1 and MM-2.** This courses will focus how to improve any aspect of your maintenance organization. Beginning on how to achieve world-class maintenance, then investigates how to compare your organization to industry standards. Skill required for effective maintenance management are then studied including such unusual but critical topics as managing work request, works orders and repair history documents. Both preventive and predictive maintenance are examined in depth.

COURSE OUTLINE

1. Definition of Maintenance Management.
   - 1.1. Meaning of Maintenance Management.
   - 1.2. Target and area of Maintenance Management.
   - 1.3. Importance of Maintenance Management.
   - 1.4. Characteristics of Maintenance Management.

2. Degradation Tendency Management and Evaluation of Reliability.
   - 2.1. Failure rate and pattern of degradation.
   - 2.2. Reliability and its level.
   - 2.3. Maintainability and availability.
   - 2.4. Case Study 1.

3. Organisation Program for Maintenance Management.
   - 3.1 Division of labour ;
   - 3.2 Functions.
   - 3.3 Specialised technologies.
   - 3.4 Manufacturing processes.

4. Status of Maintenance Management.
   - 4.1 Central Maintenance and Area Maintenance.
   - 4.2 Departmental Maintenance.
   - 4.3 Combination Maintenance.
   - 4.4 Case Study 2.

5. Operational and Maintenance.
   - 5.1 Relationship and duties of operation department.

6. Characteristic of Maintenance.
   - 6.1 To remove peak load and catastrophic failure.
   - 6.2 To establish back-up system.
   - 6.3 To develop staff capabilities and to organise elite group.
   - 6.4 Application of subcontractors and Industrial Engineering Method.

6. Administration of Maintenance Management.
   - System for of Maintenance Management.
   - Optimum program for Maintenance Management
   - Concept of Cost.
   - How to calculate optimum repair cycle.
   - Case Study 3

WHO SHOULD ATTEND

Maintenance managers and supervisors, operations managers and foremen, senior artisans, and maintenance planners.

DATE OF COMMENCING AND VENUE;

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **3 Days.**

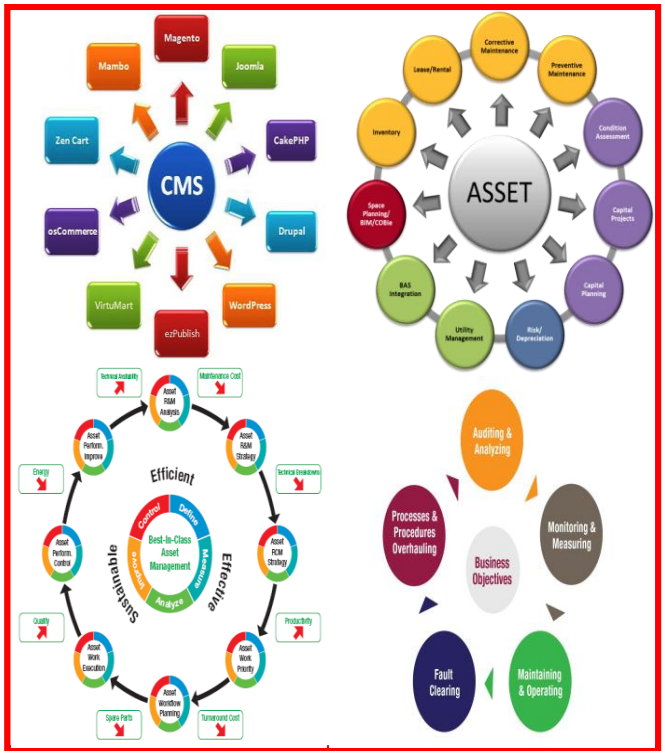
PROGRAM FEES

- **TO BE CONFIRMED LATER.**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

MAINTENANCE MANAGEMENT PART 1 COURSE



ORGANIZED BY

BINTULU

OBJECTIVES

In this course, participant will be expose to energy audits, contract assistance, feasibility studies, and demand side management assistance with utility companies, information exchange, technology transfer, energy awareness, and individual installation consultations for the following programs:

COURSE OUTLINE

1. Employee Awareness
    - 1.1 Top-down leadership.
    - 1.2 Grass roots participation.
    - 1.3 Technical Guidance and Plans
        - 1.3.1 Training
        - 1.3.1 Energy Action Plans
    - 1.4 Feedback.
    - 1.5 Accountability.

2. Operation and Maintenance Policy and Procedures
    - 2.1 Heating Systems.
    - 2.2 Cooling Systems
    - 2.3 Lighting
    - 2.4 Weatherization
    - 2.5 Vertical Transportation.
    - 2.6 Water Fountains.
    - 2.7 Personal Computers.
    - 2.7 Personal Appliances.
    - 2.8 Copiers
    - 2.9 Capital Improvements

3. Energy Management and Control System.
    - 3.1 Lighting Retrofit
    - 3.2 Cogeneration Plant
    - 3.3 Electric Utility System Upgrade
    - 3.4 Mechanical System Upgrade
    - 3.5 Building Insulation.

WHO SHOULD ATTEND

Maintenance managers and supervisors, operations managers and foremen, senior artisans, and maintenance planners.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **3 Days.**

PROGRAM FEES

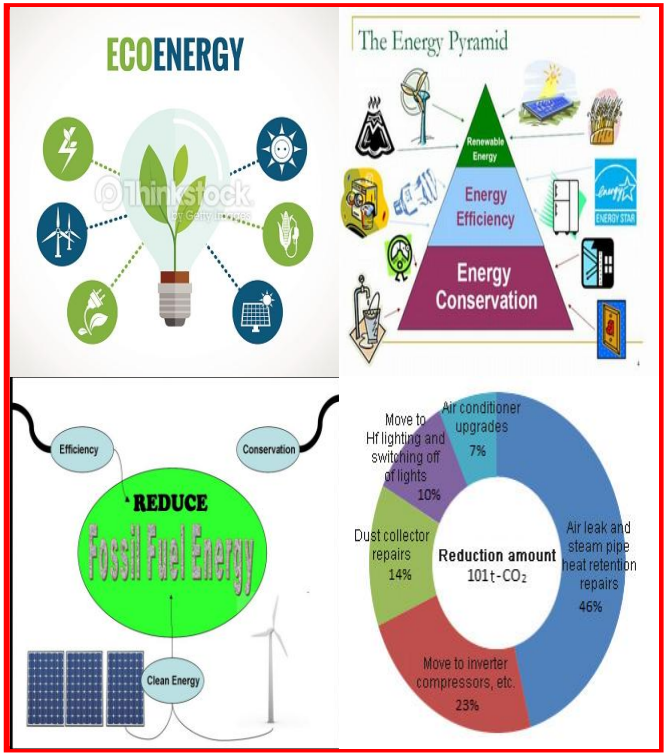
The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER.**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

PLANT ENERGY CONSERVATION COURSE



ORGANIZED BY

BINTULU

OBJECTIVES

Gives a detailed treatment of:

- *Condition based maintenance.*
- *Procedure of condition monitoring.*
- *Bases for the detection of faults in rotating and reciprocating machinery.*

On completion of this module, participants should:

1. Understand the principles and practice of condition based maintenance and of condition monitoring.
2. Understand temperature, lubricant and vibration-based fault detection and diagnostic techniques and their practical implementation.
3. Understand the procedures of system specification and set-up, the selection of parameters to the monitored, the location of monitoring points and the frequency of monitoring.
4. Be able to identify a range of common faults in terms of the symptoms exhibited, the cause of those symptoms and the techniques used to detect, distinguish between and diagnose the associated faults.

COURSE OUTLINE

- Integrated CBM.
- Workshop: hands-on assessment of commercial packages.
- Machine life cycles.
- Trend monitoring.
- Monitoring frequency.
- Parameter symptom limits.
- System set-up.
- Computerised CBM.
- Hard-wired and hand-held data collector methods.
- Thermal monitoring.
- Lubricant monitoring.
- Vibration monitoring.

WHO SHOULD ATTEND

- Maintenance supervisors
- Plant managers
- Industrial engineers
- Maintenance engineers
- Plant, design, and consulting engineers

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **3 Days.**

PROGRAM FEES

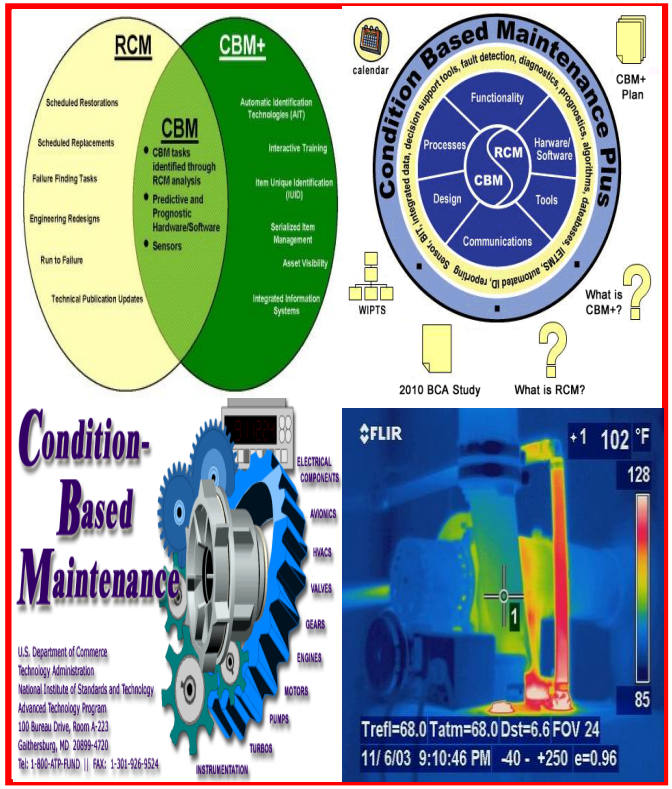
The following fees for the Certificate Program will be applicable accordance to the venue of training; ;

- **TO BE CONFIRMED LATER.**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

CONDITION BASED MAINTENANCE (CBM) PART 1 COURSE



ORGANIZED BY

BINTULU

OBJECTIVES

This course will focus on the steps and procedures necessary to create the most effective maintenance planning and scheduling possible within cost constrains. Among the usual topics examined are ways to increase productivity and reduce over time, the importance of a work order system, how to control the cost of materials and a section on implementing an effective maintenance planning and scheduling

COURSE OUTLINE

I. The Requirements for Maintenance Excellence & Success
- The Maintenance Environment: Today and in the Future
- The 25 Requirements of Maintenance Success

II. Maintenance Planning and Scheduling
- The Need For Effective Planning and Scheduling
- The Planning Function - Developing The Job Plan
- What Gets Measured Gets Done!
- Materials and Parts Requirements
- Planner Knowledge
- Expert Knowledge from Engineering, Shop Foreman, Production, or Vendor
- Job Instructions
- The Maintenance Planner
- Ten Procedures for Planning Maintenance Jobs
- The Work Order Planning Process

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- Using a Critical Path Method for Planning
- Scheduling and Executing the Plan

V. The Maintenance Storeroom: Cornerstone for Effective
- Maintenance Planning
- Inventory Planning and Control - Key to Parts Availability
- Maintenance Planner and Storeroom Relationships
- Planner Capabilities with Computerized Stores Information

VI. Improving and Controlling Maintenance Performance
- Developing an Effective Work Order Control Function
- Designing and Implementing a Priority System that Works – the RIME System

VII. Techniques for Estimating Maintenance Jobs and Measuring Performance
- Measuring Maintenance Performance and Customer Service
- The Three Factors Affecting Craft Labor Productivity
- Selecting Performance Measures for Your Operation

VIII. Measuring the Effectiveness of the Maintenance and Planning Functions
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- Maintenance Budget and Cost Control
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- Work Load Balancing
- Measuring Overall Equipment Effectiveness (OEE)
- Re-Engineering the Maintenance Function Includes
  - Maintenance Planning
  - Planning for Maintenance Excellence: The Strategic Maintenance Plan
  - Continuous Maintenance Improvement and Maintenance teams
    - Customer Service and Backlog Control
    - Effective Use of Contract Maintenance Services
    - Integrated Preventive/Predictive Maintenance Requirements

WHO SHOULD ATTEND

Participants at every career level with backgrounds in the field of Engineering, Architecture, Buildings Operations & Maintenance, Property Management, Interior Design, Business Administration, or anyone with an interest in the field of Facility Management

DATE OF COMMENCING AND VENUE;

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **3 Days.**

PROGRAM FEES

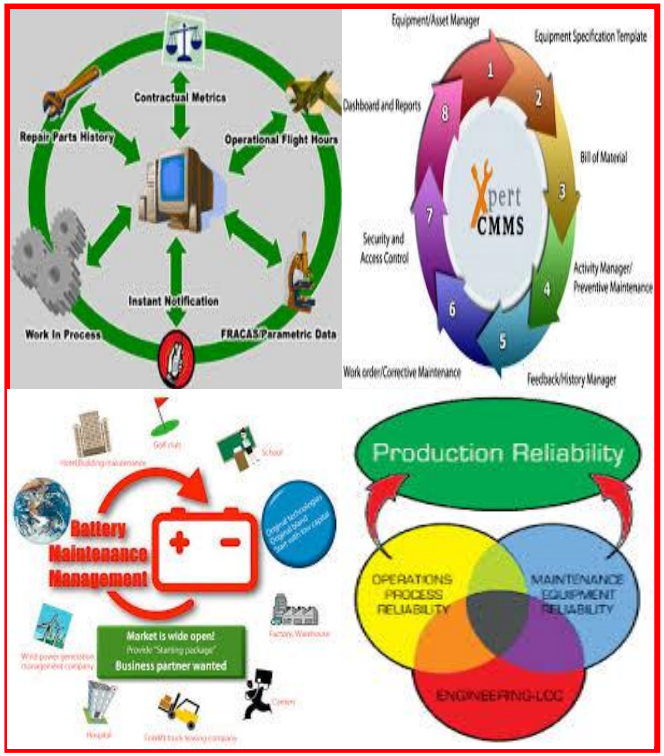
The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER.**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

EFFECTIVE MAINTENANCE PLANNING & SCHEDULING COURSE



ORGANIZED BY

BINTULU

OBJECTIVES

This course is divided to two level of competencies: **MM-1 and MM-2.** This courses will focus how to improve any aspect of your maintenance organization. Beginning on how to achieve world-class maintenance, then investigates how to compare your organization to industry standards. Skill required for effective maintenance management are then studied including such unusual but critical topics as managing work request, works orders and repair history documents. Both preventive and predictive maintenance are examined in depth.

COURSE OUTLINE

T1: Definition of Maintenance Management.
- Meaning of Maintenance Management.
- Target and area of Maintenance Management.
- Importance of Maintenance Management.
- Characteristics of Maintenance Management.

T2: Degradation Tendency Management & Evaluation of Reliability.
- Failure rate and pattern of degradation.
- Reliability and its level.
- Maintainability and availability.
- Case Study 1.

T3: Organisation Program for Maintenance Management.
- Division of labour ;
- Functions.
- Specialised technologies.
- Manufacturing processes.

T4: Status of Maintenance Management.
- Central Maintenance and Area Maintenance.
- Departmental Maintenance.
- Combination Maintenance.
- Case Study 2.

T5: Administration of Maintenance Management.
- System for of Maintenance Management.
- Optimum program for Maintenance Management :
  - Concept of Cost.
  - How to calculate optimum repair cycle.
- Case Study 3

T6: Operational and Maintenance.
- Relationship and duties of operation department.

T7: Characteristic of Maintenance.
- To remove peak load and catastrophic failure.
- To establish back-up system.
- To develop staff capabilities and to organise elite group.
- Application of subcontractors and Industrial Engineering Method.

T8: Administration of Maintenance Management.
- System for of Maintenance Management.
- Optimum program for Maintenance Management
- Concept of Cost.
- How to calculate optimum repair cycle.
- Case Study 4

WHO SHOULD ATTEND

Maintenance managers and supervisors, operations managers and foremen, senior artisans, and maintenance planners.

DATE OF COMMENCING AND VENUE;

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **3 Days.**

PROGRAM FEES

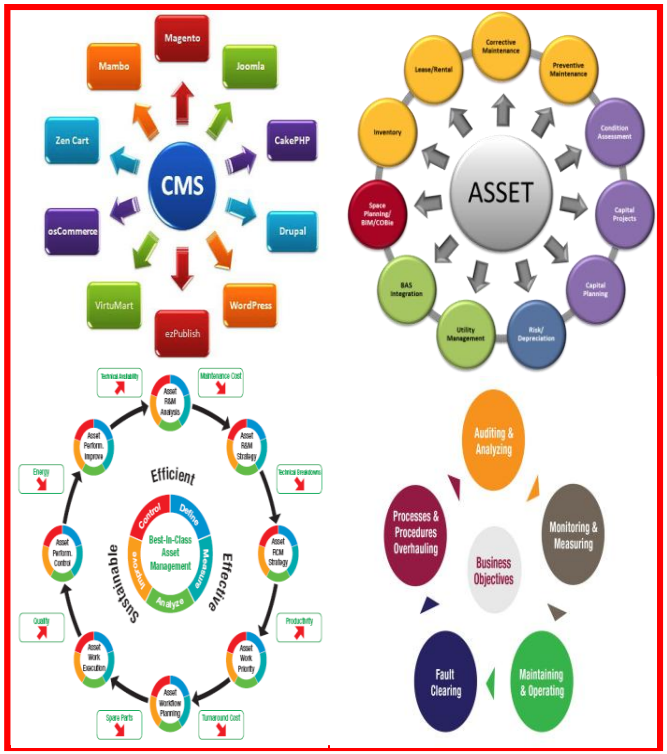
The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER.**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

MAINTENANCE MANAGEMENT PART 1 COURSE



ORGANIZED BY

BERDAYA-TEC TRAINING & CONSULTANCY

BINTULU

OBJECTIVES

This course is a continuity of course MM1.

COURSE OUTLINE

1. **Standardization of Maintenance Duties.**
   - 1.1 Standard for Maintenance Management.
     - 1.1.1 Standards for Facility Maintenance.
     - 1.1.2 Standards for Facility Surveillance.
     - 1.1.3 Standards for Machinery Readjustment.
     - 1.1.4 Standards for Repair.
     - 1.1.5 Standards for Maintenance Work.
   - 1.2 Selection of priority facilities and points.
     - 1.2.1 Facilities Process Analysis.
     - 1.2.2 Facility Unit Analysis.

2. **Preventive Maintenance System.**
   - 2.1 Purpose.
   - 2.2 Inspection Methods and Tools.
   - 2.3 Inspection Records.
   - 2.4 Repair Request on Inspection.
   - 2.5 Inspection of Repairs.
   - 2.6 Reporting of Maintenance Records.
   - 2.7 Six Steps to Preventive Maintenance.
   - 2.8 Predictive Maintenance System.
     - 2.8.1 Advantages of Predictive Maintenance.
     - 2.8.2 Predictive Maintenance Devices.

3. **Failure Analysis.**
   - 3.1 Type of failures
   - 3.2 Zero Breakdowns.
   - 3.3 Basic Principles of Zero Defects: Exposing Hidden Defects.
   - 3.4 Requirements of Zero Breakdown.

4. **Maintenance Work Schedule And Control.**
   - 4.1 Classification of Purpose of Maintenance Work.
   - 4.2 Basic Concept of Maintenance Works Control.
   - 4.3 Role of Work Order.
   - 4.4 Formality of Work Request.
   - 4.5 Work Priority Order.
   - 4.6 Estimating Maintenance Work.
   - 4.7 Remaining Power Control and Schedule Planning.
   - 4.8. Work Schedule Control.
   - 4.9. Shut-down Work.
   - 4.10. Schedule progress check.
   - 4.11. Emergency Work.
   - 4.12. Contractors Work.
   - 4.13. Summary of Actual Maintenance Cost.
   - 4.14. Safety Control Maintenance Work.
   - 4.15. Safety Control for periodical repair/ shut down work.

5. **Measurement Of The Effect of Facility Maintenance.**
   - 5.1. Procedures for Institutionalizing Effect Measurement.
   - 5.2. Evaluation Factors for Effect Measurement.

WHO SHOULD ATTEND

Maintenance managers and supervisors, operations managers and foremen, senior artisans, and maintenance planners.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **3 Days.**

PROGRAM FEES

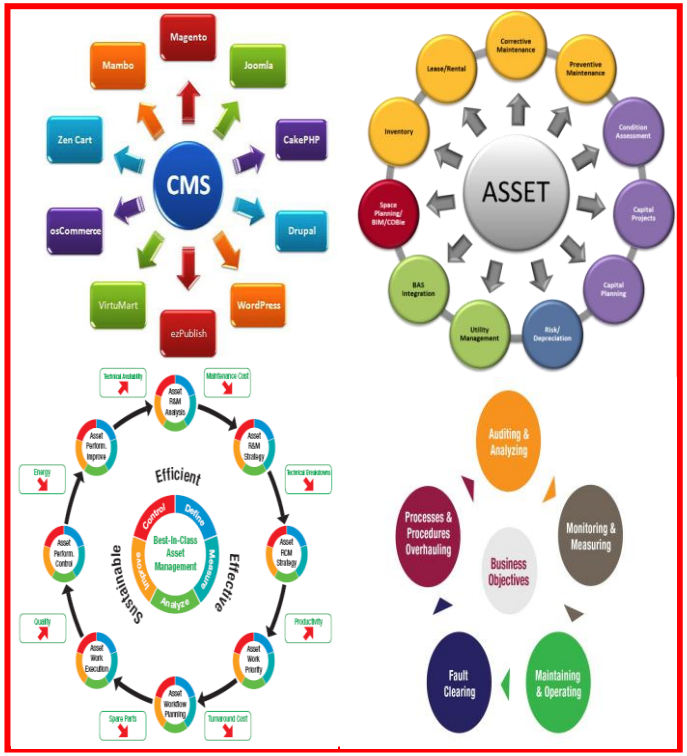
The following fees for the Certificate Program will be applicable accordance to the venue of training; ;

- **TO BE CONFIRMED LATER.**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

MAINTENANCE MANAGEMENT PART 2 COURSE



ORGANIZED BY

BINTULU

OBJECTIVES

This course will focus on the structured approach to the overall task of managing the maintenance of physical assets, especially those of your industrial organization. BCM will guide you from the starting point the clear identification of your business aims. These aims are then translated into maintenance objectives which then form the basis of maintenance strategy formulation.

COURSE OUTLINE

- **Maintenance and the industrial organization**
  - A system view of maintenance management
- **Plant acquisition policy and maintenance life-cycle costs**
  - Life-cycle costing
  - Capital asset management
  - Summary
- **Formulating maintenance strategy, a business centred approach**
  - The maintenance system
  - Application of the approach
  - The effect of 21-shift operation on maintenance
  - The strategic thought process
- **The structure of plant**
  - Introduction
  - Modeling industrial plant
  - The reason for maintenance
  - Capital replacement policy
  - Maintenance strategy
- **The reliability of plant components**
  - Introduction
  - Engineering reliability, probability and statistics
  - Item reliability
  - Statistical analysis of component lifetimes
  - Probability density function
  - Measure of component reliability
  - Time to failure
  - The whole-life item failure profile
  - Diagnosis of recurrent failures and prescription of the remedy
  - Weilbull analysis of item lifetimes
- **The reliability of plant systems**
  - Introduction
  - Reliability block diagrams
  - Series reliability
  - Active-parallel reliability
  - Active parallel reliability with partial redundancy
  - Reliability analysis of complex or large systems
  - System reduction
- **Maintenance objectives**
  - Introduction
  - The maintenance objective
  - Maintenance resources and plant output factors
  - General statement of a plant maintenance objective
  - A procedure for formulating maintenance objectives
  - Maintenance objectives in practice
- **Principles of preventive maintenance**
  - Introduction
  - The plant item – a definition
  - Maintainability diagrams
  - Maintenance procedures and their selection
  - The timing of maintenance action
  - Guidelines for establishing the best timing of a maintenance action
  - Example of maintenance procedure selection
  - Universal maintenance procedures
  - Assembling the maintenance life plan for a unit

WHO SHOULD ATTEND

Maintenance managers and supervisors, operations managers and foremen, senior artisans, and maintenance planners.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

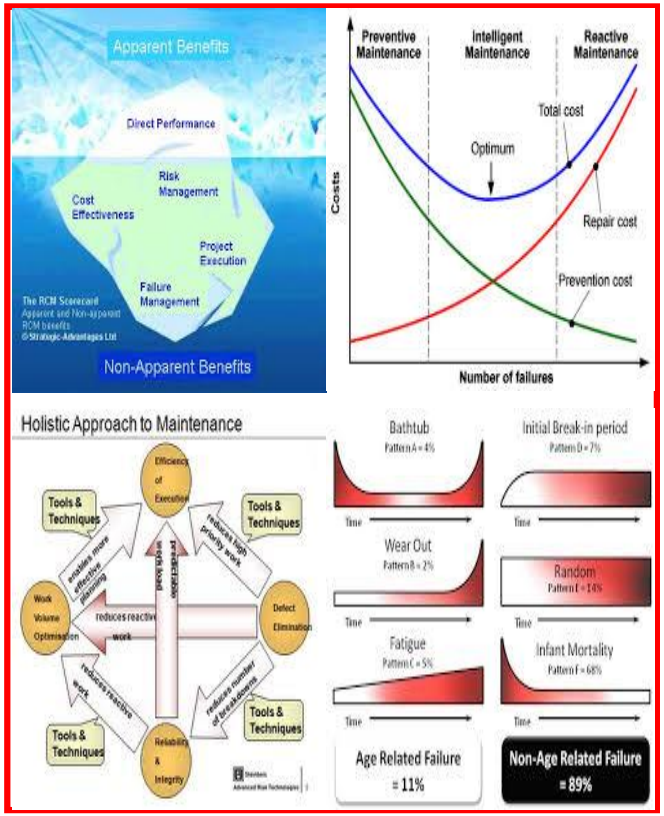
The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER.**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

BUSINESS CENTERED MAINTENANCE COURSE (BCM) PART 1



ORGANIZED BY

BINTULU

OBJECTIVES

This course is a continuity of course BCM 1.

COURSE OUTLINE

- **Determining the life plan and schedule - the top-down bottom-up approach**
  - Introduction
  - The top-down bottom-up (TDBU) approcah
  - TDBU Application
  - Comments
  - Using the TDBU approach
- **Controlling plant reliability**
  - Reactive control of plant
  - Pro-active control of unit reliability
  - Incorporation reliability control systems into the organization
- **Case studies in maintenance strategy**
  - Introduction
  - Case study 1
  - Case study 2
  - Case study 3
  - Case study 4
  - Case study 5
  - Case study 6
  - Case study 7
- **Exercises in maintenance strategy**
  - Introduction
  - Exercise 1
  - Exercise 2
  - Exercise 3
- **Reliability Centred Maintenance**
  - Introduction
  - History and basic philosophy of the RCM approach
  - The RCM procedure
  - RCM in civil aviation
  - RCM in Industry
  - The benefits of RCM
  - RCM and the TDBU approach
- **Total Productive Maintenance - its uses and limitations**
  - Introduction
  - What is total productive maintenance
  - An early case study
  - Fundamentals of TPM
  - European applications by non-Japanese
  - Conclusion
- **Conclusions**
  - Reliability Centered Maintenance (RCM)
  - Total Productive Maintenance (TPM)
  - Business Centred Maintenance (BCM)

WHO SHOULD ATTEND

Maintenance managers and supervisors, operations managers and foremen, senior artisans, and maintenance planners.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **4 Days.**

PROGRAM FEES

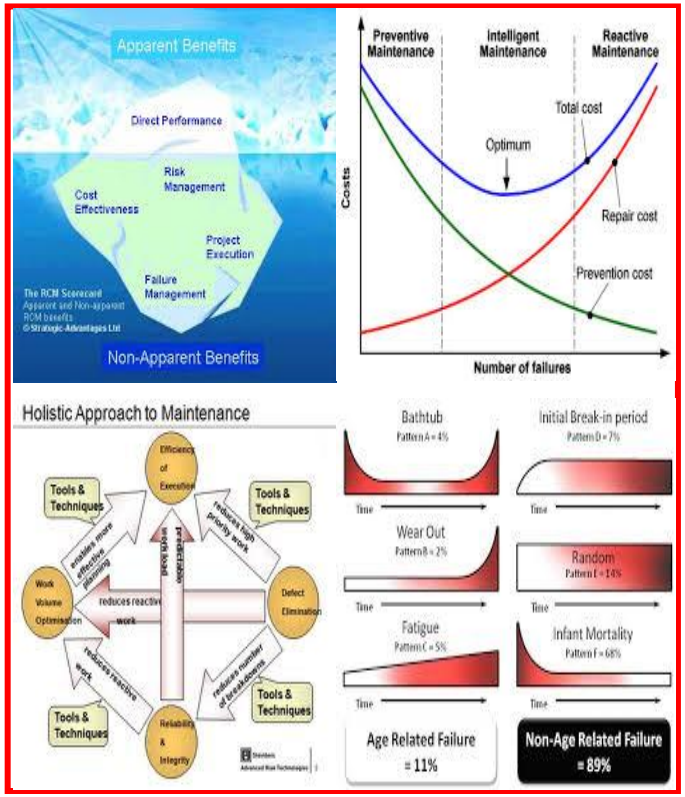
The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER.**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

BUSINESS CENTERED MAINTENANCE (BCM) COURSE PART 2



ORGANIZED BY

BINTULU

OBJECTIVES

This course is divided to two level of competencies: **RCM-1 and RCM-2.** This courses will focus on how you can improve your company performance according to the following:

- greater safety and environmental integrity
- improved operating performance
- reliable maintenance cost-effectiveness
- longer useful life of expensive items
- greater individual motivation.

This course will guide you a proven, step by step program for implementing RCM on various types of manufacturing shop floor, especially in the equipment oriented assembly industry.

COURSE OUTLINE:

1. **Introduction**
   - Instructor, Participants, Topics
   - What the course will help you identify, What is RCM
2. **Business Strategy**
   - Strategy for improvement and main areas of concern
   - Reasons for non productive time
   - Tools, Paradigm and Maintenance organizations
3. **Failure Curves**
   - Time related failure, Bath tub and Interpretation
4. **RCM in Maintenance**
   - Factors, Failure modes and RCM matrix sheet
5. **Asset Management**
   - Asset and Cost center
6. **Equipment Functions and Operating Context**
   - Primary and Complex equipment functionality
7. **Functional Failures and Operating Context**
   - Performance standards and Criticality of functional failures
8. **Failure Modes and Operating Context**
   - Root causes of failures and identification
9. **Failure Effects**
   - Description of consequences
10. **PM Program**
    - Consequences and preventive tasks
11. **Reliability Centered Inventory**
    - ABC analysis
12. **Overall Equipment Effectiveness**
    - Six losses and RCM Features

WHO SHOULD ATTEND

Maintenance managers and supervisors, operations managers and foremen, senior artisans, and maintenance planners.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **3 Days.**

PROGRAM FEES

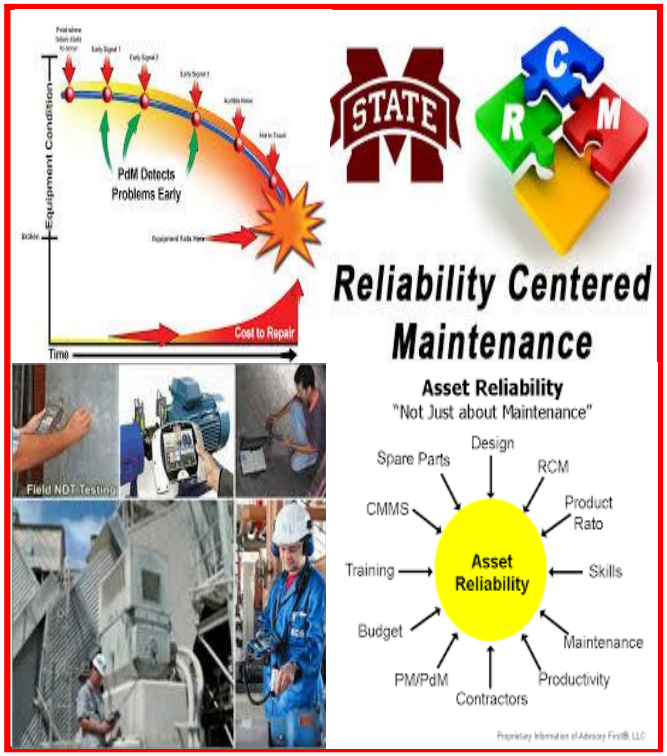
The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER.**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

RELIABILITY CENTERED MAINTENANCE (RCM) PART 1 COURSE



ORGANIZED BY

BINTULU

OBJECTIVES:

This course is divided to two level of competencies: **TPM-1 and TPM-2.** This courses will focus on the procedures necessary to create step by step Total Productive Maintenance (TPM) program which involves a newly defined concept for maintaining plants and equipment. This course will also focus on how to maximize machine optimization and same time increasing employee morale and job satisfaction. The course emphasizes on tools such as employee empowerment, benchmarking and documentation This course will define TPM in some detail, evaluate its strengths and weaknesses as a maintenance philosophy, and discuss implementation procedures. Examples of successfully implemented programs will be also presented.

COURSE OUTLINE

1. **TPM AIMS TO THE ELIMINATION OF LOSSES**
   - 1.1. The shop floor suffers from Diverse Mistakes.
   - 1.2. The shop floor flooded with losses.
   - 1.3. Understanding the nature of losses.
   - 1.4. Why losses occur.
2. **SUMMARY OF TPM**
   - 2.1 Six major losses.
   - 2.2 The effect and an evaluation of TPM.
   - 2.3 The TPM Master Plan.
   - 2.4 TPM Organization.
3. **5 COUNTERMEASURES TO ACHIEVE ZERO B/DOWN**
   - 3.1 The basic strategy to attain zero breakdown.
   - 3.2 Who takes the 5 countermeasures.
   - 3.3 Restructuring the Roles of the Production & Maintenance Department.
   - 3.4 Roles of the Production & Maintenance Department.
4. **THE AUTONOMOUS MAINTENANCE PROGRAM**
   - 4.1 The aim of Autonomous Maintenance.
   - 4.2 The Autonomous Maintenance Development Program.
   - 4.3 The step by step Development of Autonomous Maintenance.
   - 4.4 Work Procedure and Standard.
   - 4.5 Educational System in Autonomous Maintenance.
   - 4.6 Twelve Key points of Autonomous Maintenance.
5. **INITIAL CLEANING.**
   - 5.1 Aims from the Equipment Perspective.
   - 5.2 How to Develop Step 1.
   - 5.3 How to Proceed with Initial Cleaning.
   - 5.4 Key points of an Autonomous Maintenance Audit.
   - 5.5 Case Study 15
6. **COUNTERMEASURES TO SOURCES OF CONTAMINATION.**
   - 6.1 Aims from the Equipment Perspective.
   - 6.2 How to Develop Step 2.
   - 6.3 Key points of an Autonomous Maintenance Audit.
   - 6.4 Case Study 2
7. **CLEANING AND LUBRICATING STANDARDS.**
   - 7.1 Aims from the Equipment Perspective.
   - 7.2 How to Develop Step 3.
   - 7.3 Establishing a Lubrication Control System.
   - 7.4 Key points of an Autonomous Maintenance Audit.
   - 7.5 Case Study 3
8. **OVERALL INSPECTION.**
   - 8.1 Aims from the Equipment Perspective.
   - 8.2 The Necessity of Overall Inspection.
   - 8.3 How to Develop an Overall Inspection.
   - 8.4 Establishing a Lubrication Control System.
   - 8.5 Key points of an Autonomous Maintenance Audit.
   - 8.6 Case Study 4.

WHO SHOULD ATTEND

Maintenance managers and supervisors, operations managers and foremen, senior artisans, and maintenance planners.

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **6 Days.**

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER.**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

TOTAL PRODUCTIVE MAINTENANCE (TPM) PART 1 & 2 COURSE

ORGANIZED BY

BINTULU

OBJECTIVES:

FMEA is a powerful technique used to identify and minimize potential problems in process and product design. The key points of FMEA is to eliminate costly failures in the manufacture of a product or a service by ensuring that critical issues are addressed before expensive commitments are taken. The collective knowledge, experiences and ideas of the people involved in the design, manufacture, management and maintenance of the product are harnessed to bring about great improvement impact on the process and product performance. FMEA, **being** a **dynamic** document, compliments the **organization's** documentation system.

COURSE OUTLINE

1. Overview of FMEA - Principles,
2. Definitions, Terms & Benefits.
3. Quality Planning Process Flow Diagram.
4. FMEA Application - Field of Application & Uses.
5. Applicable Tools Involved.
6. Design FMEA
7. Identify Design Failure Modes.
8. Criticality Analysis
9. Severity,
10. Frequency and Detection.
11. Risk Priority Number.
12. Design Measures.
13. Case Study.
13. Process FMEA
14. Identifying Process Failure Modes.
15. Assigning Severity, Frequency & Detection rating.
16. Process Control Measures.
17. Case Study.
18. Service FMEA – a complete example

DATE OF COMMENCING AND VENUE

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **3 Days.**

PROGRAM FEES

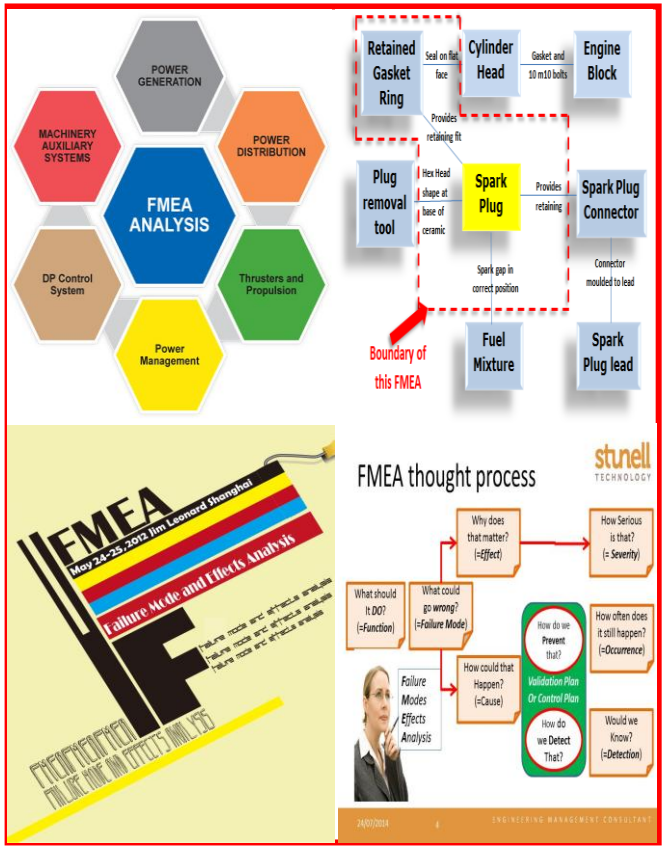
The following fees for the Certificate Program will be applicable accordance to the venue of training;

- **TO BE CONFIRMED LATER.**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

FAILURE MODE AND EFFECT ANALYSIS (FMEA)



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BINTULU

INDUSTRIAL SAFETY COURSES

46. CHEMICAL HAZARD MANAGEMENT
47. OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT
48. INSIDENT REPORTING AND INVESTIGATION

BERDAYA-TEC
TRAINING & CONSULTANCY

BACKGROUND

The course is aimed at workers, supervisors and safety representatives, in any sector where chemicals are used. The introductory courses will give learners a quick, free and invaluable introductory guide to identifying and managing hazardous chemicals in the workplace.
The short interactive course provides a general overview of chemical safety in the workplace, including a broad outline of the types of chemical substances found in workplaces. Course objectives include developing a chemical inventory, understanding information on the labels and safety data sheets and identifying hazardous chemicals. The course also provides an overview of chemical risk assessment, information on exposure and how to implement a hierarchy of control.

At the end of this course learners should be able to:

- identify all hazardous chemicals in the workplace
- recognise the difference between hazardous/ non-hazardous chemicals
- identify ways hazardous chemicals can enter the body
- develop a chemical inventory
- find information on chemicals through the use of labels and Safety Data Sheets
- examine risk and determine possible risk reduction measures using the hierarchy of control.

COURSE OUTLINE

MODUL 1: FOR WORKER

- Module 1: Introduction to Chemical Safety in the Workplace
- Module 2: Chemical Hazards and Exposures
- Module 3: Control Approaches and Emergency Responses
- Module 4: Hazard Communication
- Module 5: Your Participation in Chemical Safety

COURSE OUTLINE

MODUL 2: FOR MANAGEMENT

- Module 1: Introduction to Chemical Safety Management
- Module 2: Your Responsibilities in Chemical Safety Management
- Module 3: Strengthen Worker Engagement in Chemical Safety Management
- Facility-Specific Chemical Safety Training Development Toolkit

WHO SHOULD ATTEND

Health and Safety Managers, OHS Officers, Human Resources Managers, Facility Managers, Compliance Officers

DATE OF COMMENCING AND VENUE;

- **TO BE CONFIRMED LATER.**

COURSE DURATION

- **3 Days.**

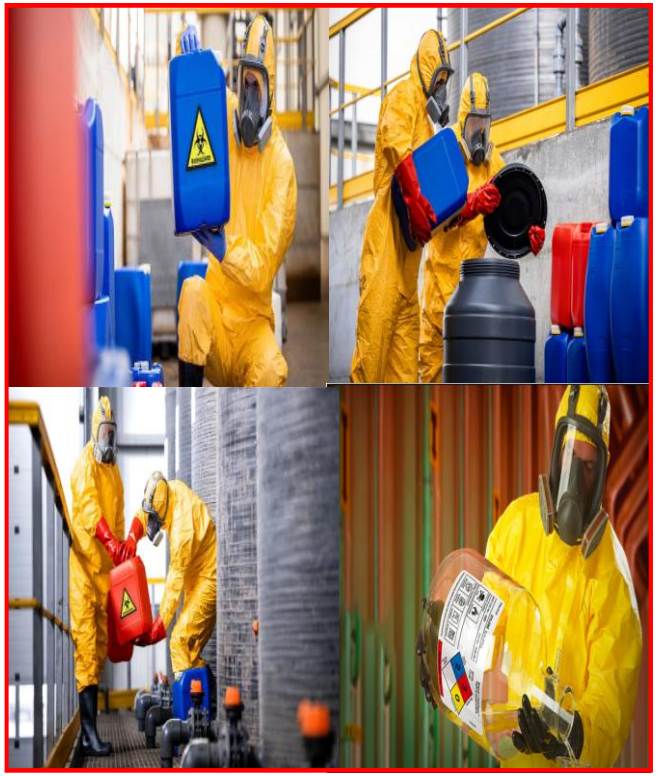
PROGRAM FEES

- **TO BE CONFIRMED LATER.**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

CHEMICAL HAZARD MANAGEMENT COURSE



ORGANIZED BY

BINTULU

BACKGROUND

This Occupational Safety Health Training is targeted specifically at those who work in various industry and it covers essential topics like OSH legislation, safe work practice, building fire safety, machine safety, indoor air quality, ergonomics, safe lifting techniques, box cutter safety, materials handling, and much more. It`s ideal for showing new employees the right and wrong way of getting started, but it's also an excellent refresher for existing workers who have been a little lazy in some areas of workplace safety. This training is conveniently conducted in English and Bahasa Malaysia language.

This training will provide the participants with a basic understanding of the main risks in manufacturing and some of the steps that can safeguard the Occupational Safety and health of employees, contractors and visitors. The programme contains information on the health and safety responsibilities of those involved in manufacturing according to Malaysia Law (Occupational Safety & Health 1994 or OSHA 1994) and also the latest Occupational Safety and Health (Amendment) Act 2022.

COURSE OUTLINE

Module 1: Occupational Health Services (OHS)

- Objectives of OHS
- Work Organisation
- Surveillance
  - Workplace
  - Health
- Counselling
- Workplace Health Promotion
- Work Ability and Rehabilitation
- First Aid/Accident Management
- Occupational Health and Primary Health

Module 2: Management of Occupational Health Services (OHS)

- Planning and Management of OHS
- Ethics
- Education and Training of OHS Personnel
- Competencies
- Multidisciplinary Team Working in Occupational Health
- Financing of OHS
- Quality Management

Module 3: Occupational Safety and Health Management System

- Main Elements
- Policy
- Organising
- Planning and implementation
- Evaluation
- Action for improvement

Module 4: Hazard Identification and Assessment

- Collect Existing Information About Workplace Hazards
- Inspect the Workplace for Safety Hazards
- Identify Health Hazards
- Conduct Incident Investigations
- Identify Hazards with Emergency and Nonroutine Situations
- Characterize the Nature, Identify, & Prioritize the Hazards

Module 5: Hazard Prevention and Control

- Identify Control Options
- Select Controls
- Develop and Update a Hazard Control Plan
- Select Controls to Protect Workers
- Implement Selected Controls in the Workplace
- Follow Up to Confirm that Controls are Effective

Module 6: Education and Training

- Provide Program Awareness Training
- Train Employers, Managers, and Supervisors
- Train Workers on:
  - Their Specific Roles
  - Hazard Identification and Controls

Module 7: Program Evaluation and Improvement

- Monitor Performance and Progress
- Verify that the Program is Implemented and is Operating
- Correct Program Shortcomings and Identify Opportunities

Module 8: Occupational Health and Safety Legislations

- Main Objectives, Factories Act
- Workmen's Compensation Act, Employees' Act
- Inadequacy of OHS Legislation

WHO SHOULD ATTEND

Health and Safety Managers, OHS Officers, Human Resources Managers, Facility Managers, Compliance Officers

COURSE DURATION

- **3 Days.**

PROGRAM FEES

- **TO BE CONFIRMED LATER.**

OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT COURSE

ORGANIZED BY

BINTULU

BACKGROUND

- Fahami peruntukan: di bawah Pemberitahuan Kemalangan, Kejadian Berbahaya, Pekerjaan
- Peraturan Keracunan dan Penyakit Pekerjaan 2004 (NADOPOD 2004)
- Dapat menjalankan penyiasatan kemalangan yang berkesan
- Dapat mengenal pasti punca asas, langsung dan tidak langsung kemalangan
- Membuat cadangan praktikal untuk mengelakkan kemalangan daripada berulang di tempat kerja

COURSE OUTLINE

Module 1:
NADOPOD 2004

Module 2:
Polisi Penyiasatan Kemalangan

Module 3:
Model Punca Kemalangan

Module 4:
Metodologi Penyiasatan

Module 5:
Prinsip Pencegahan Kehilangan

Module 6:
Polisi Penyiasatan Kemalangan

Module 7:
Alat dan Teknik untuk Penyiasatan

Module 8:
Pengukuran Prestasi dan Kadar Pengiraan Kemalangan

Module 9:
Penulisan Laporan Kemalangan

WHO SHOULD ATTEND

Health and Safety Managers, OHS Officers, Human Resources Managers, Facility Managers, Compliance Officers

COURSE DURATION

- **3 Days.**

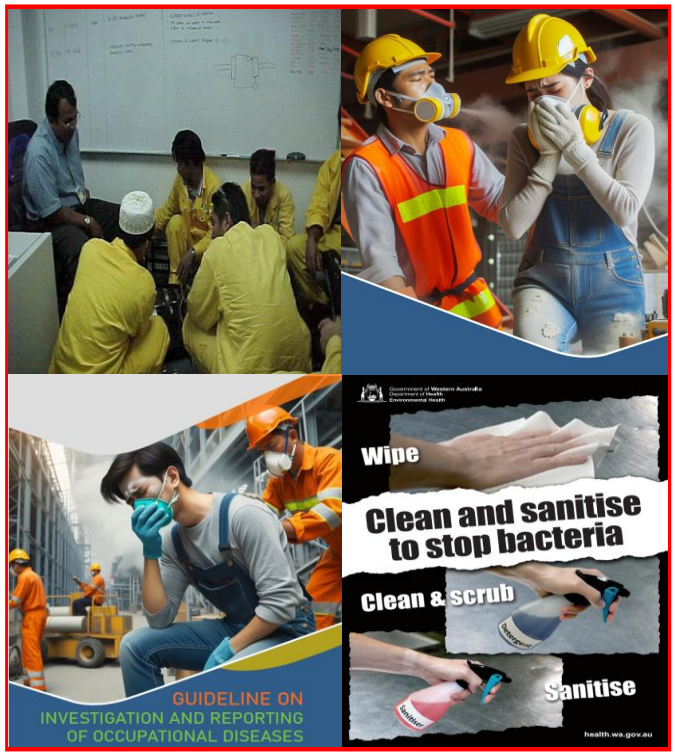
PROGRAM FEES

- **TO BE CONFIRMED LATER.**

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

INSIDENT REPORTING AND INVESTIGATION COURSE



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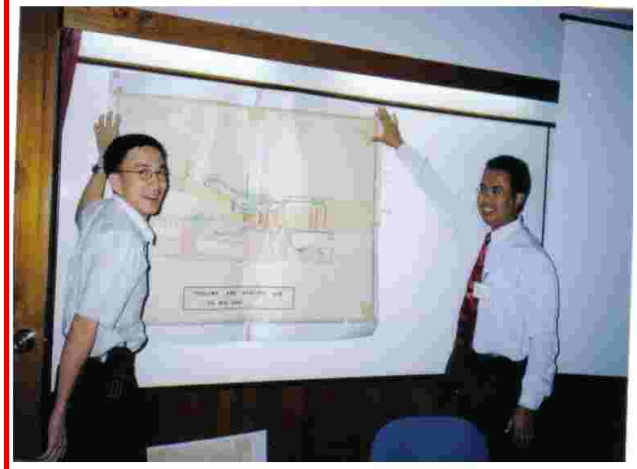
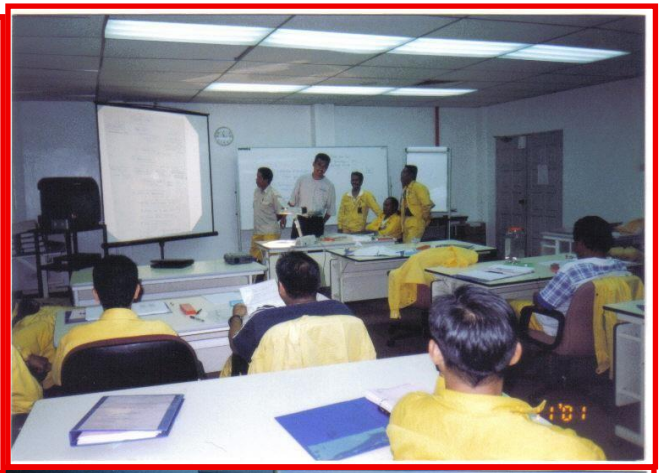
BINTULU




KURSUS
PENGURUSAN KESELAMATAN DAN
KESIHATAN DIMAKMAL
27-29 JULAI 1999



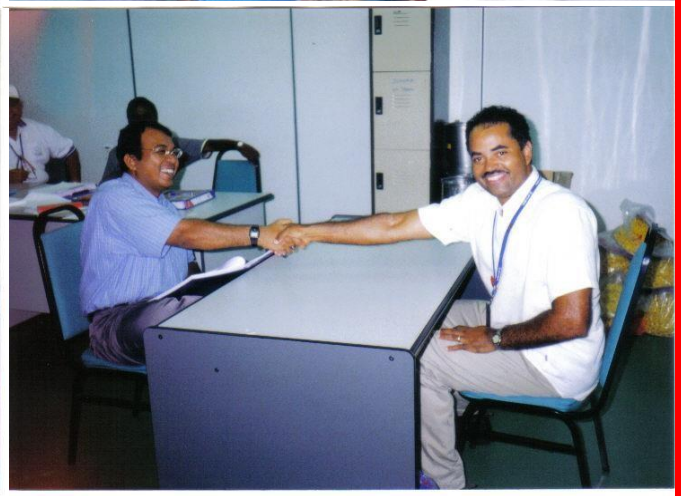












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