Online Training
RELIABILITY MATTERS

Combined Cycle Fundamentals Bundle

105 Total Lessons

Module 1 – Power Plant Basics (9)

Energy Conversion

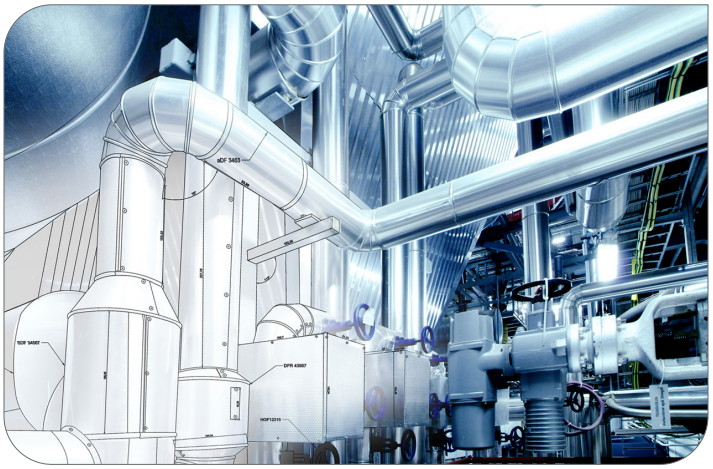
501-02	Steam Turbine Basics
501-03	Combustion System Component Overview
501-04	Boiler Water and Steam Cycle Overview
501-05	Generator Overview

Industrial Mathmatics and Science

170-01	Introduction to Industrial Math
170-02	Industrial Math – Measurements and Calculations
170-03	Industrial Math – Fractions, Percentages, and Ratios
171-10	Introduction to Physics – Force and Motion
171-11	Introduction to Physics – Energy, Work, and Power

Module 2 – Basic Electricity (8)

401-01	Electron Theory
401-02	Magnetism and Electromagnetism Explained
402-01	Introduction to Alternating Current (AC)
402-02	Ohm's and Kirchhoff's Laws involving AC Circuits
402-07	Fundamentals of 3-Phase AC
409-01	AC Induction Motors
409-02	AC Generators
415-01	Transformer Basic Operation and Theory



Module 3 – Plant Instrumentation and Control Theory (6)

603-01	Instrumentation and Control Overview
603-06	Temperature Instruments
603-07	Pressure Measuring Devices
603-08	Level Measuring Devices
603-09	Flow Measuring Devices
613-01	Introduction to Automated Control

Module 4 – Introduction to Plant Equipment (5)

219-01	Introduction to Centrifugal Pumps
215-01	Introduction to Valves and Their Components
223-01	Heat Exchanger Theory
231-01	Introduction to Positive Displacement Pumps
243-01	Introduction to Hydraulics

Module 5 – Plant Drawings (2)

611-01	P&ID Basics
611-02	Reading a P&ID

Module 6 – Combustion Turbine Fundamentals (12)

511-01	Gas Turbine Fundamentals and Configuration of Generating Facilities
511-02	Introduction to the GE LM Series Gas Turbine
511-03	Introduction to GE Frame Series Gas Turbines
511-04	Introduction to the Siemens V-Series Gas Turbine
511-05	Heavy Duty Gas Turbines – Major Components and Support Systems
511-07	Aero-derivative Gas Turbines – Major Components and Support Systems
511-10	Fundamentals of Gas Turbine Operation and Routine Maintenance
511-11	Overview of Gas Turbine Control Schemes
511-12	Gas Turbine Fuel and Combustion Systems
511-13	Gas Turbine Lube Oil and Control Oil Systems
511-14	Gas Turbine Air Systems
511-15	Gas Turbine Water Wash and Drain System

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Module 7 – Combined Cycle Power Plant Operations (11)

582-01	Combined Cycle Power Plants
582-02	Combined Cycle Power Plant Components
582-03	HRSG – Flow Path and Major Equipment
582-04	HRSG – Auxiliary Equipment and Systems
582-05	HRSG – Basic Operating Concerns and Conditions
582-06	Combined Cycle Steam and Feedwater Operating Principles
582-07	Combined Cycle Condensate and Circulating Water Systems
582-08	Combined Cycle Auxiliary Systems
582-10	Steam Turbines in a Combined Cycle Plant
582-12	Combined Cycle Instrument and Control Air Systems
582-13	Control Loops in a Combined Cycle Plant

Module 8 – Steam Turbines (3)

505-01	Steam Turbine Design
505-02	Steam Turbine Valves and Controls
505-03	Steam Turbine Auxiliaries

Module 9 – Plant Systems (3)

551-01	Introduction to the Circulating Water System
553-01	Introduction to the Condensate System
553-02	Introduction to the Feedwater System

Module 10 – Power Generation (8)

507-01	Generator and Auxiliary Systems' Functions
507-02	Generator and Auxiliary Systems' Flow Paths and Major Components
507-03	Generator Construction and Process Control
507-04	Generator and Auxiliary Systems' Start-up
507-05	Generator and Auxiliary Systems' Normal Operations
507-06	Generator and Auxiliary Systems' Shutdown
345-01	NERC Overview and Application for Generator Operators
350-10	Generator Protection

Module 11 Environmental Protection (8)

535-01	Flue Gas Desulfurization System
535-02	Flue Gas Desulfurization System (FGDS) Open Spray Design, Part 1
535-03	Flue Gas Desulfurization System (FGDS) Open Spray Design, Part 2
535-04	Dry Scrubber Operation
535-05	Selective Catalytic Reduction (SCR)
535-09	Introduction to Continuous Emission Monitoring Systems
535-10	Fundamentals of Using a CEMS
563-15	Environmentally Sensitive Operations

Module 12 Electrical Systems and Equipment (16)

411-04	Motor Control Centers
417-01	Switchgear
417-02	Low Voltage Breakers
417-03	Medium and High Voltage Switchgear
417-04	General Switchgear Maintenance
417-05	Switchgear Specific Maintenance Procedures
417-06	Circuit Breaker Time Travel
418-03	Protection Relays
418-04	Generator, Transformer, and Motor Protection
418-05	Grounding and Bonding
427-01	Electrical Freeze Protection Components and Application
560-01	Main Transformers
560-02	Station Service System
560-03	Fuses and Circuit Breakers
560-04	Protective Relays and Instrument Transformers
560-05	Equipment Disconnects and Grounding

Module 13 – Plant Controls (4)

565-01	Distributed Control System Fundamentals
565-02	DCS Components
565-03	Using DCS Diagrams
565-04	Power Plant Unit Control

Module 14 – Steam Tables (2)

567-01	Understanding the Basic Properties of Water and Steam
567-02	Saturated Steam Tables Module 15 Basic Water Chemistry and Treatment (8)
559-01	Molecular Chemistry of Water
559-02	Elements and the Periodic Table of Elements
559-03	Chemical Compounds
559-04	Corrosion Causes and Effects
559-05	Corrosion Control in a Power Plant
559-06	Steam Chemistry Control and Guidelines
559-07	Power Plant Water Treatment Systems
559-10	Reverse Osmosis

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