Power Generation: Turbines, Boilers, Co-Generation, Combined Cycle, Wind & Solar Power

Oil & Gas Engineering
Dubai (UAE)
09 - 13 Mar 2025

Power Generation: Turbines, Boilers, Co-Generation, Combined Cycle, Wind & Solar Power

Ref: 3299_128319 **Date:** 09 - 13 Mar 2025 **Location:** Dubai (UAE) **Fees:** 3900 **Euro**

Introduction

This program provides a detailed understanding of steam power plants, gas turbines, co-generation, combined-cycle plants, wind and solar power generating plants. Each of the components such as compressors, gas and steam turbines, heat recovery steam generators, deaerators, condensers, lubricating systems, instrumentation, control systems, transformers, and generators are covered. The design, selection considerations, operation, maintenance, and economics of co-generation plants and combined cycles as well as emission limits, reliability, monitoring, and governing systems will also be covered. The significant improvements that were made to co-generation, combined-cycle plants, wind and solar power generating plants during the last two decades will also be explained

Course Objectives of Power Generation

- Learn about components and subsystems of the various types of gas turbines, steam power plants, co-generation, combined-cycle plants, wind turbines and generators, wind turbine farms, and solar power generation
- Examine the advantages, applications, performance, and economics of co-generation, combined-cycle plants, wind turbines and generators, wind turbine farms, and solar power generation
- Learn about various equipment including compressors, turbines, governing systems, combustors, deaerators, feedwater heaters, transformers, generators and auxiliaries, wind turbines and generators, wind turbine farms, and solar power generating plants
- Discover the maintenance required for gas turbines, steam power plants, combined cycles, generators, wind turbines and generators, and wind turbine farms to minimize their operating cost and maximize their efficiency, reliability, and longevity
- Learn about the monitoring and control of environmental emissions
- Discover instrumentation and control systems of gas turbines and combined cycles
- Increase your knowledge of predictive and preventive maintenance, reliability, and testing
- Gain a thorough understanding of the selection considerations and applications of co-generation, combined-cycle plants, wind turbines, and generators, wind turbine farms, and solar power generation

Course Outline of Power Generation

DAY 1

Head Office: +44 7480 775 526 | 0 7401 177 335
Email: training@blackbird-training.com
Website: www.blackbird-training.com

Steam Power Plants

- Review of Thermodynamics Principles
- Steam Power Plants
- The Fire-Tube Boiler
- The Water-Tube Boiler
- The Steam Drum
- Superheaters and Reheaters
- Steam Turbines
- Reheaters
- Condensers
- Feedwater Heaters
- Efficiency and Heat Rate
- Supercritical Plants
- Co-generation Plants
- Arrangement of Co-generation plants
- Economics of Co-generation Plants

DAY 2

Steam Turbines and Auxiliaries

- Turbine Types
- Compound Turbines
- Turbine Control Systems
- Steam Turbine Maintenance
- Steam Generators, Heat Exchangers, and Condensers
- Power Station Performance Monitoring
- The Turbine Governing Systems
- Steam Chests and Valves
- Turbine Protective Devices
- Turbine Instrumentation
- Lubrication Systems
- Gland Sealing System
- Frequently Asked Questions about Turbine-Generator Balancing, Vibration Analysis, and Maintenance
- Features Enhancing The Reliability and Maintainability of Steam Turbines

DAY 3

Gas Turbines & Compressors

- Gas Turbine Fundamentals
- Overview of Gas Turbines
- Gas Turbine Design
- Gas Turbine Calculations
- Gas Turbine Compressors
- Combined Cycles

Head Office: +44 7480 775 526 | 0 7401 177 335
Email: training@blackbird-training.com
Website: www.blackbird-training.com

- Single-Shaft Combined Cycle Power Generating Plants
- Economic and Technical Considerations for Combined Cycle Performance Enhancement Options
- Dynamic Compressors Technology
- Compressors Auxiliaries, Off-Design Performance, Stall, and Surge
- Centrifugal Compressors - Components, Performance Characteristics, Balancing, Surge Prevention Systems, and Testing
- Dynamic Compressors Performance
- Compressor Seal Systems
- Dry Seals, Advanced Sealing Mechanisms, and Magnetic Bearings

DAY 4

Co-generation Plants, Wind, and Solar Power Generation

- Applications of Co-generation and Combined Cycle Plants
- Selection Considerations of Combined Cycles and Co-generation Plants
- Co-generation Application Considerations
- University of Toronto Central Steam, Co-generation and District Heating Plant
- Economics of Combined Cycles Co-generation Plants
- Wind Power Generation
- Economics of Wind Power
- Wind Power Turbine Generators - Brushless Double-Feed Generators
- The Solar Power
- Solar Photovoltaic Technologies
- Economics of Solar Power Systems

DAY 5

Transformers & Generators

- Fundamentals of Electric Systems
- Introduction to Machinery Principles
- Transformers
- Transformers Components and Maintenance
- AC Machine Fundamentals
- Synchronous Generators
- Generator Components, Auxiliaries, and Excitation
- Generator Testing, Inspection, and Maintenance

Blackbird training cities

Accra1 (Ghana)	Amman (Jordan)	Amsterdam (Netherlands)	Annecy (France)
Baku (Azerbaijan)	Bali (Indonesia)	Bangkok (Thailand)	Bangkok (Thailand)
Barcelona (Spain)	Batumi (Georgia)	Beijing (China)	Beirut (Lebanon)
Berlin (Germany)	Birmingham (UK)	Bordeax (France)	Boston,Massachusetts (USA)
Brussels (Belgium)	Cairo (Egypt)	Cape Town (South Africa)	Casablanca (Morocco)
Cascais (Portugal)	Copenhagen (Denmark)	Doha (Qatar)	Dubai (UAE)
Düsseldorf (Germany)			

Head Office: +44 7480 775 526 | 0 7401 177 335
Email: training@blackbird-training.com
Website: www.blackbird-training.com

Blackbird Training Category

Human Resources

Audit & Quality Assurance

Finance, Accounting, Budgeting

Marketing, Sales, Customer Service

Secretary & Admin

Law and Contract Management

Project Management

IT & IT Engineering

Supply Chain & Logistics

Management & Leadership

Professional Skills

Oil & Gas Engineering

Health & Safety

Telecom Engineering

Hospital Management

Customs & Safety

Aviation

C-Suite Training

Agile and Refinement

Head Office: +44 7480 775 526 | 0 7401 177 335
Email: training@blackbird-training.com
Website: www.blackbird-training.com

Blackbird training Clients

MANNAI Trading Company WLL, **Qatar**

Alumina Corporation **Guinea**

Booking.com **Netherlands**

Oxfam GB International Organization, **Yemen**

Capital Markets Authority, **Kuwait**

Waltersmith Petroman Oil Limited **Nigeria**

Qatar National Bank (QNB), **Qatar**

Qatar Foundation, **Qatar**

AFRICAN UNION ADVISORY BOARD ON CORRUPTION, **Tanzania**

KFAS **Kuwait**

Reserve Bank of Malawi, **Malawi**

Central Bank of Nigeria **Nigeria**

Ministry of Interior, **KSA**

Mabruk Oil Company **Libya**

Saudi Electricity Company, **KSA**

BADAN PENGELOLA KEUANGAN Haji, **Indonesia**

NATO **Italy**

ENI CORPORATE UNIVERSITY, **Italy**

Gulf Bank **Kuwait**

General Organization for Social Insurance **KSA**

Defence Space Administraion **Nigeria**

National Industries Group (Holding), **Kuwait**

Hamad Medical Corporation, **Qatar**

USAID **Pakistan**

STC Solutions, **KSA**

North Oil company,

EKO Electricity

Oman Broadband

UN.

Authority for

UK Trainig
PARTNER

Head Office: +44 7480 775 526 | 0 7401 177 335
Email: training@blackbird-training.com
Website: www.blackbird-training.com

BLACKBIRD
FOR TRAINING

LONDON TRAINING PROVIDER

www.blackbird-training.com
training@blackbird-training.com
+44 7480 775526 / +44 7401 177335