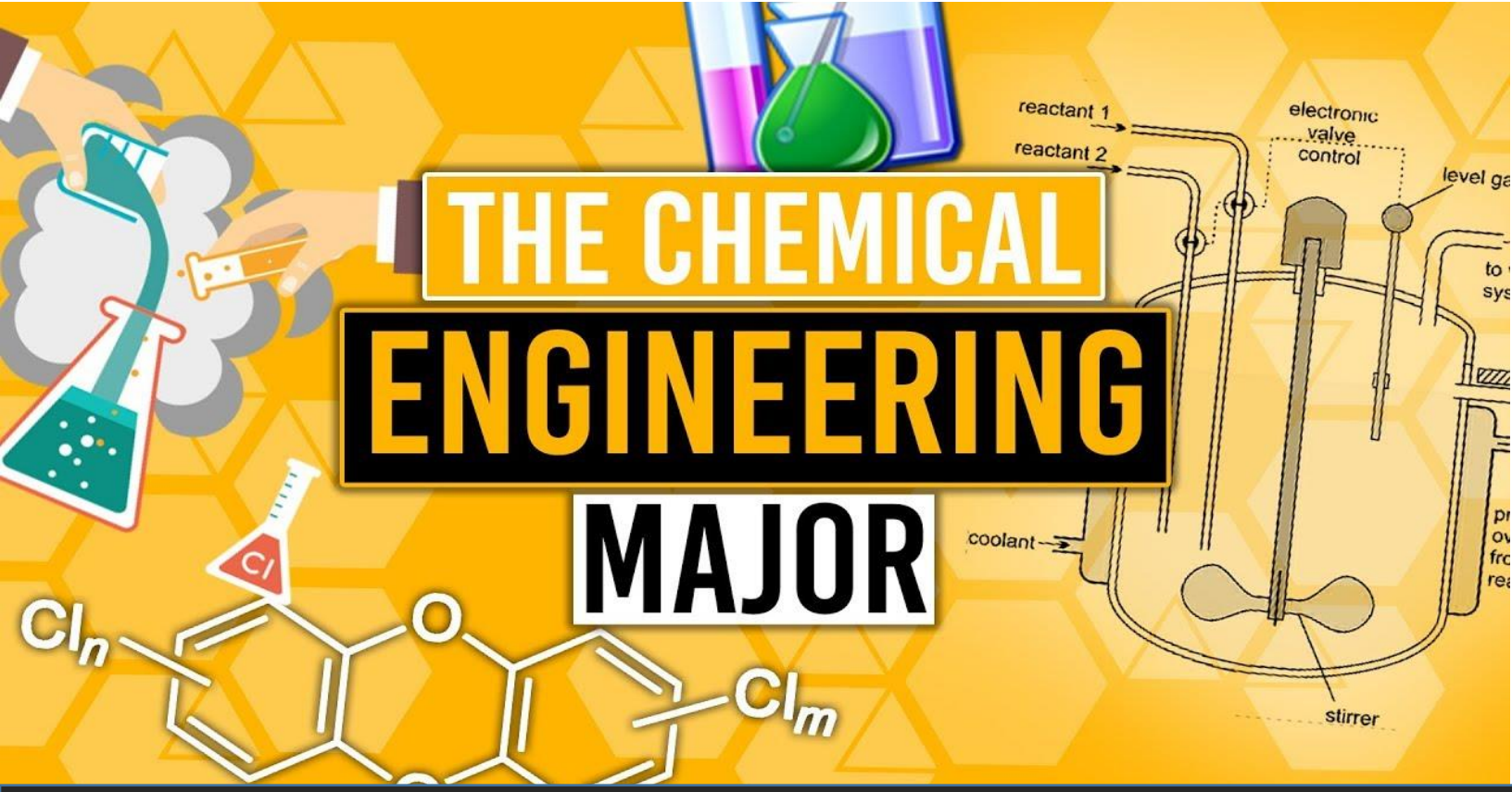

Thermal Power Plant Troubleshooting

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Thermal Power Plant Troubleshooting

Description:

Thermal Power Plant: Design , Operation and Troubleshooting deals with various aspects of a thermal power plant, providing a new dimension to the subject, with focus on operating practices and troubleshooting, as well as technology and design. Its author has a 40-long association with thermal power plants in design as well as field engineering, sharing his experience with professional engineers under various training capacities, such as training programs for graduate engineers and operating personnel.

Thermal Power Plant presents practical content on coal-, gas-, oil-, peat- and biomass-fueled thermal power plants, with chapters in steam power plant systems, start up and shut down, and interlock and protection. Its practical approach is ideal for engineering professionals.

Course Content:

Part 1

Introduction

Steam Power Plant Basics

Water treatment plant

Objectives of water treatment

Deaerators

Feedwater

Feedwater Pump selection criteria

Capacity requirements of feedwater pumps

Feed water pump drives

Design and operational considerations for feedwater pumps

Part 2

Types of plants

Advantages and Disadvantages of a Thermal Power Plant

Co-generation,

Basic Concepts of CHP

An Ideal Cogeneration Plant

Part 3

Components, Systems and Service for Thermal Power Plants

Transformer Care

- degassing
- dewatering
- oil insulation filtration

Generator

- Lubrication / Cooling systems Lifting systems,
- emergency function lubrication

Steam Turbine Control

- Electro-hydraulic safety controls
- Electro-hydraulic oil supply unit

Fuel Gas Filtration

- Fuel-gas filter
- Main component in the fuel package

Fuel Oil Filtration

- Fuel-oil filter
- Main component in the fuel package

Compressors

- Cleaning and conditioning of sealing gas
- Reducing wear and tear on sealing gas seals

Turbine / Generator Lubrication

- Standard lifting systems (also as redundant model)
- Bladder and / or piston accumulator stations for emergency lubrication

Gas Turbine Control

- Electro-hydraulic safety controls
- Safety controls
- Modular hydraulic units

Part 4

Secondary Functions / Service, Balance of Plant (BoP)

Treatment of water-based media

- Automatic back-flushing filter
- Cooler protection
- Nozzle protection (e.g. sprinkler system)
- Sealing water filtration for seal protection

Treatment and conditioning of hydraulic and lubricating media

- Oil-conditioning units
- filtering hydraulic and lubrication fluids

Fluid conditioning units

- for separating solid particle contamination from hydraulicand lubricating media
- Stationary power units

- Integrated fluid sensors

Filter elements

VMU VarnishMitigation Unit for treating mineral oils

- Removal of oil ageing products

Flue Gas Conditioning

- Water filtration for nozzle protection on NOX systems
- OK-EL oil-air cooler use in NOX systems

Part 5

Thermal power plant troubleshooting

Boiler troubleshooting

- Boiler systems
- What needs to be checked
- Steam traps
- Pressure gauges
- Insulation
- Pumps
- Valves
- Safety limits, sensors, and controls
- Electrical systems
- Carbon monoxide
- Prevent costly downtime and expensive equipment failures

Steam turbine troubleshooting

- Turbine Operation, Overspeed Trip Check
- Turbine Operation, Effects of Uneven Heating & Cooling
- Turbine Operation, Shaft Bow
- Turbine Operation, Packing Box Leakage
- Turbine Operation, Steam Deposits

Auxiliaries systems troubleshooting

- Lubrication and Fuel Systems
  - Lubricating systems
  - Gas fuel systems
  - Liquid fuel systems
  - Duel fuel systems
  - Fuel types,
  - Treatment for trace metals and sulfur
- Instrumentation and Control (I&C) Systems
  - s turbine protection (including pressure switches)
  - Instrumentation and control systems
  - Instrumentation used for vibration analysis
  - Start-up sequence, normal operation
- Emission Guidelines and Control Methods
  - Emissions from gas turbines an dboiler
  - General approach for a national emission guideline, NOx emission target levels
  - Low NOx combustors, ultra low NOx combustors
  - Emission levels for other contaminants
- Gland Sealing System

- Condensation System
- Turning Gear Condition monitoring

Part 6

- Visual checks/inspections
- Trending
- Vibration
- Thermography
- Oil analysis
- Ferrography : wear particle analysis
- Ultrasonic: material flaws, leaks
- Performance checks/inspections
- On line alignment measurement

Turbine Maintenance

- Long, Effective Machine Life
- Safe Operation