

Table of Contents

Chapter 1 – The Generator

- 1.1. Principles of Electrical Generators
- 1.2. Turbo-Generator Design and Construction
- 1.3. Stator and Rotor
- 1.4. Armature Windings
- 1.5. Magnetic Circuits and Electromagnetic Characteristics
- 1.6. Generator Excitation Systems
- 1.7. Generator Cooling Systems
- 1.8. Hydrogen Cooling
- 1.9. Generator Bearings and Sealing Systems
- 1.10. Generator Performance and Operating Characteristics
- 1.11. Generator Installation, Testing and Maintenance

Chapter 2 – Main Switchgear and Ancillary Equipment

- 2.1. Switchgear Principles
- 2.2. Circuit Breakers
- 2.3. Isolators and Disconnectors
- 2.4. Busbars and Busbar Arrangements
- 2.5. Current and Voltage Transformers
- 2.6. Earthing Equipment
- 2.7. Switchgear Operating Mechanisms
- 2.8. Arc Interruption and Insulation
- 2.9. Switchgear Testing and Maintenance

Chapter 3 – Electrical Auxiliary Systems

- 3.1. Auxiliary Electrical Supply Systems
- 3.2. Auxiliary Switchgear
- 3.3. Auxiliary Motors
- 3.4. Motor Starters and Control Equipment
- 3.5. Station Service Transformers
- 3.6. Low-Voltage and Medium-Voltage Distribution
- 3.7. Emergency and Standby Supplies
- 3.8. Electrical Cables and Connections

Chapter 4 – Transformers

- 4.1. Transformer Principles
- 4.2. Power Transformer Design and Construction
- 4.3. Transformer Windings and Magnetic Circuits
- 4.4. Transformer Insulation and Cooling
- 4.5. Transformer Protection
- 4.6. Transformer Operation and Performance
- 4.7. Power Cables and Transformer Connections
- 4.8. Transformer Installation and Commissioning
- 4.9. Transformer Testing and Maintenance

Chapter 5 – Protection and Automatic Voltage Regulation

- 5.1. Principles of Electrical Protection
- 5.2. Protection of Generators
- 5.3. Transformer Protection
- 5.4. Busbar and Feeder Protection
- 5.5. Earth-Fault and Overcurrent Protection
- 5.6. Relays and Protective Devices
- 5.7. Automatic Voltage Regulators
- 5.8. Excitation and Voltage Control
- 5.9. Protection Coordination and System Reliability