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GENERAL KNOWLEDGE

- Electrical machine definition
- Basic principles of energy conversion
- Design and constructional features of a rotating machine
- Copper loss
- Mechanical loss
- Efficiency of energy conversion
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- Duty types

TRANSFORMERS

- Equivalent circuit of two-winding transformer
- No-load operation and no-load test
- Magnetizing current harmonics
- Short-circuit state, short-circuit test and parameters
- Transformer under load

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- Magnetic core arrangements
- Electrical connection of windings
- Zig-zag connected winding
- Standard connections for 3-phase transformers
- Voltage control in transformers. Tap changing
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- Autotransformers
- Three-winding transformers
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INDUCTION (ASYNCHRONOUS) MACHINES THEORY

- Magnetic field in the air gap of 3-phase machine
- Emf induced by rotating (travelling) magnetic field
- Principles of operation of induction machine
- Emf induced in rotor winding
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- Rotor electrical circuit: emf, current, impedance
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3-PHASE INDUCTION MOTORS

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- Stability of the motor operation
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- Special application of induction machine. Induction regulator

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- Theoretical considerations
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SYNCHRONOUS MACHINES THEORY

- Fundamentals of construction and operation
- Phasor representation
- Special cases of armature reaction
- Equivalent circuit of cylindrical machine

SYNCHRONOUS MACHINES OPERATION AND CHARACTERISTICS

- No-load and short-circuit characteristics
- Steady-state operating characteristics of generator
- Operation of synchronous generator with a power system
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DIRECT CURRENT MACHINES 1

- Principles of operation
- Simple-lap armature winding
- Simple-wave armature winding

DIRECT CURRENT MACHINES 2

- Cross-section of DC machine
- Total emf induced in armature winding
- Total electromagnetic torque
- Possible mutual connections of windings

DIRECT CURRENT MACHINES 3

- DC generators
- DC motors
- Starting of DC motors
- AC commutator machine

DICTIONARIES

- English-Polish dictionary
- Polish-English dictionary