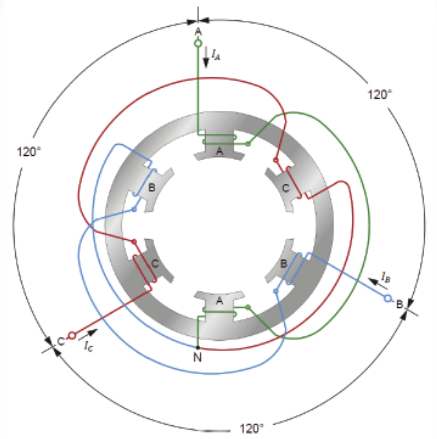
Three-Phase Rotating Machines

Course 86364

The Three-Phase Rotating Machines course familiarizes students with the various three-phase machines used in commercial and industrial motor applications, as well as for large-scale production of electricity from wind power, hydro-power, etc. The course begins with fundamentals of rotating machines, such as the torque, rotation speed, direction of rotation, motor power, power losses in motor, motor efficiency, etc. Students then study the operation (both as a motor and a generator) of the following three-phase machines: squirrel-cage induction machine and synchronous machine.



Three-phase stator windings (two poles per phase).

Photo courtesy of Siemens

Topic Coverage:

- Explore prime mover and brake operation.
- Study the basic operation of motors and generators.
- Calculate work, torque, and power produced in a system.
- Determine the polarity of the speed, torque, and mechanical power measured for a machine operating as either a motor or a generator.
- Analyze the characteristics of a three-phase squirrel-cage induction machine operating as a motor, an eddy-current brake, or an asynchronous generator.
- Learn how to manually synchronize a three-phase synchronous generator to an ac power network, as well as how the generator operates after synchronization.
- Bonus content: using the equipment in this course, the Three-Phase AC Power Circuits course can also be completed.

Features and Benefits:

- Study both generator and motor characteristics using the four-quadrant dynamometer.
- Generator synchronization performed using a computerized synchroscope.

SMART INSTRUMENTATION AND CONTROL

4Q DYNAMOMETER POWER SUPPLY

Photo courtesy of Siemens

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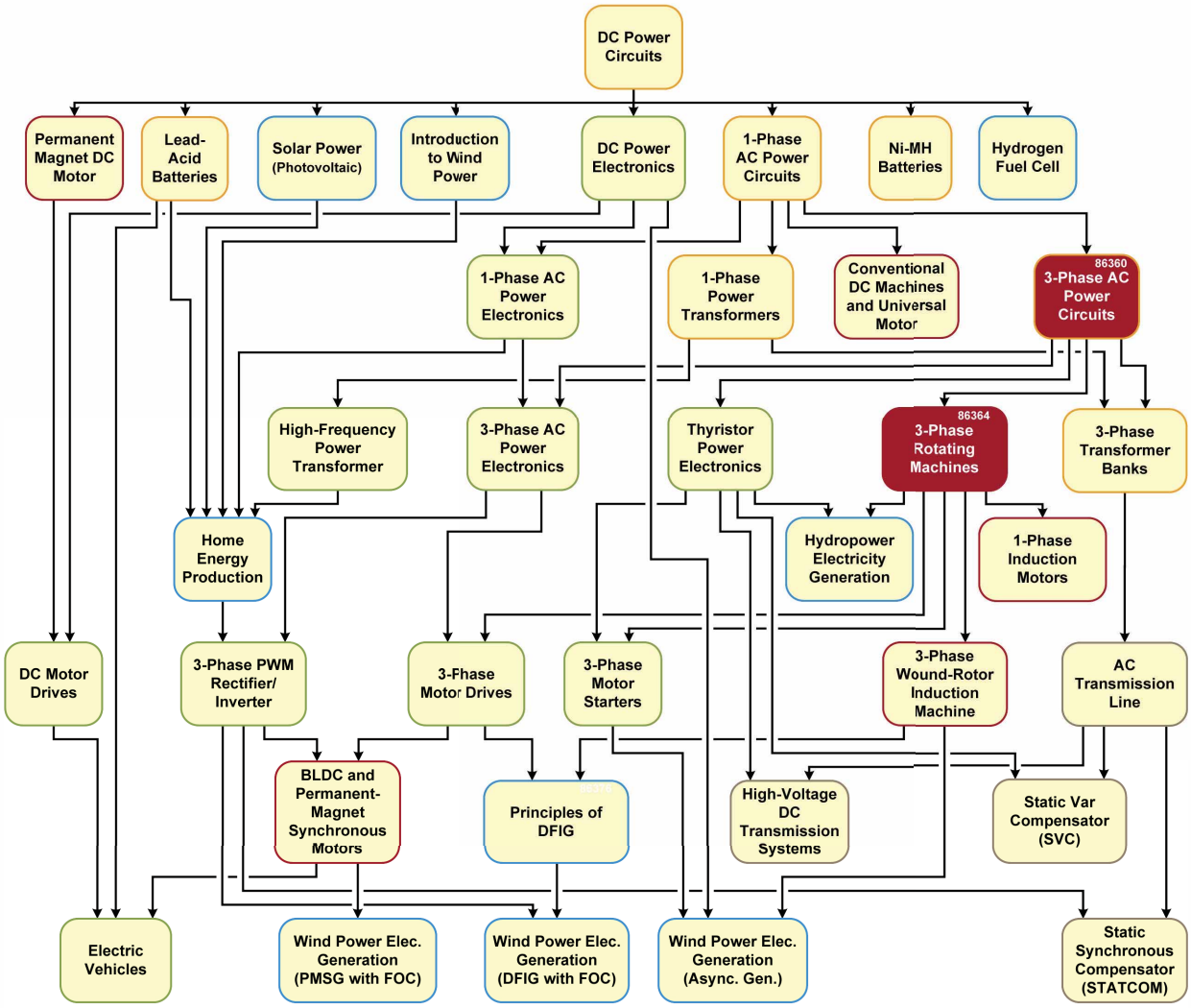

Equipment

Qty	Model	Description
1	8134-2	Workstation
1	8221	Four-Pole Squirrel Cage Motor
1	8241-2	Three-Phase Synchronous Motor/Generator
1	8311	Resistive Load
1	8321	Inductive Load
1	8331	Capacitive Load
1	8621-A	Synchronizing Module/Three-Phase Contactor
1	8823	Three-Phase Power Supply
1	8942	Timing Belt
1	8951-L	Connection Leads
1	8960-C	Four-Quadrant Dynamometer/Power Supply
1	9063-G	Data Acquisition and Control Interface
1	30004-2	24 V AC Power Supply
1	86364/-1	Student Manual/Instructor Guide
Bonus content:		
1	86360/-1	Student Manual/Instructor Guide

Lab-Volt reserves the right to make product improvements at any time and without notice. **Note:** A computer is required to perform the exercises.

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