Single-Phase Power Transformers
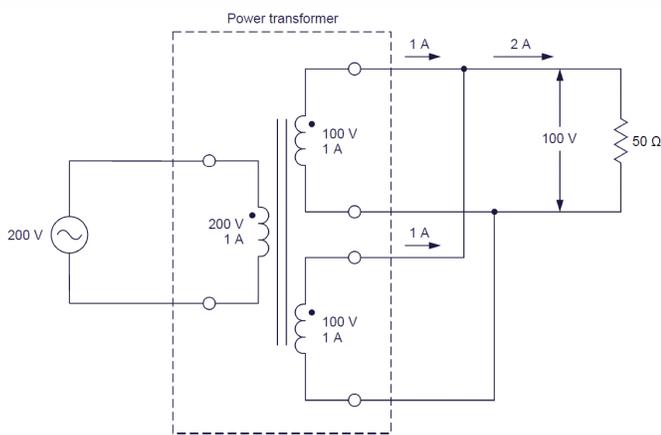
The Single-Phase Power Transformers course covers, through theory and demonstrations, the operating characteristics of single-phase power transformers. Through measurements, students will learn the important characteristics of a power transformer, such as the turns ratio, voltage and current ratios, winding polarity, voltage regulation, power losses, and transformer ratings. The course also covers the effect of frequency on the transformer rating, as well as the operation and special characteristics of autotransformers.

Typical single-phase power transformer

Topic Coverage:

» Explore the relationship between the turns, voltage, and current ratios of a power transformer.

» Examine the different characteristics of step-up and step-down power transformers.

» Determine the polarity of power transformer windings using either an oscilloscope or a voltmeter.

» Analyze the equivalent diagram of a power transformer.

» Study voltage, current, and power ratings of a power transformer and how they can be determined.

» Describe the effect of saturation on the magnetizing current and no-load power losses of a power transformer.
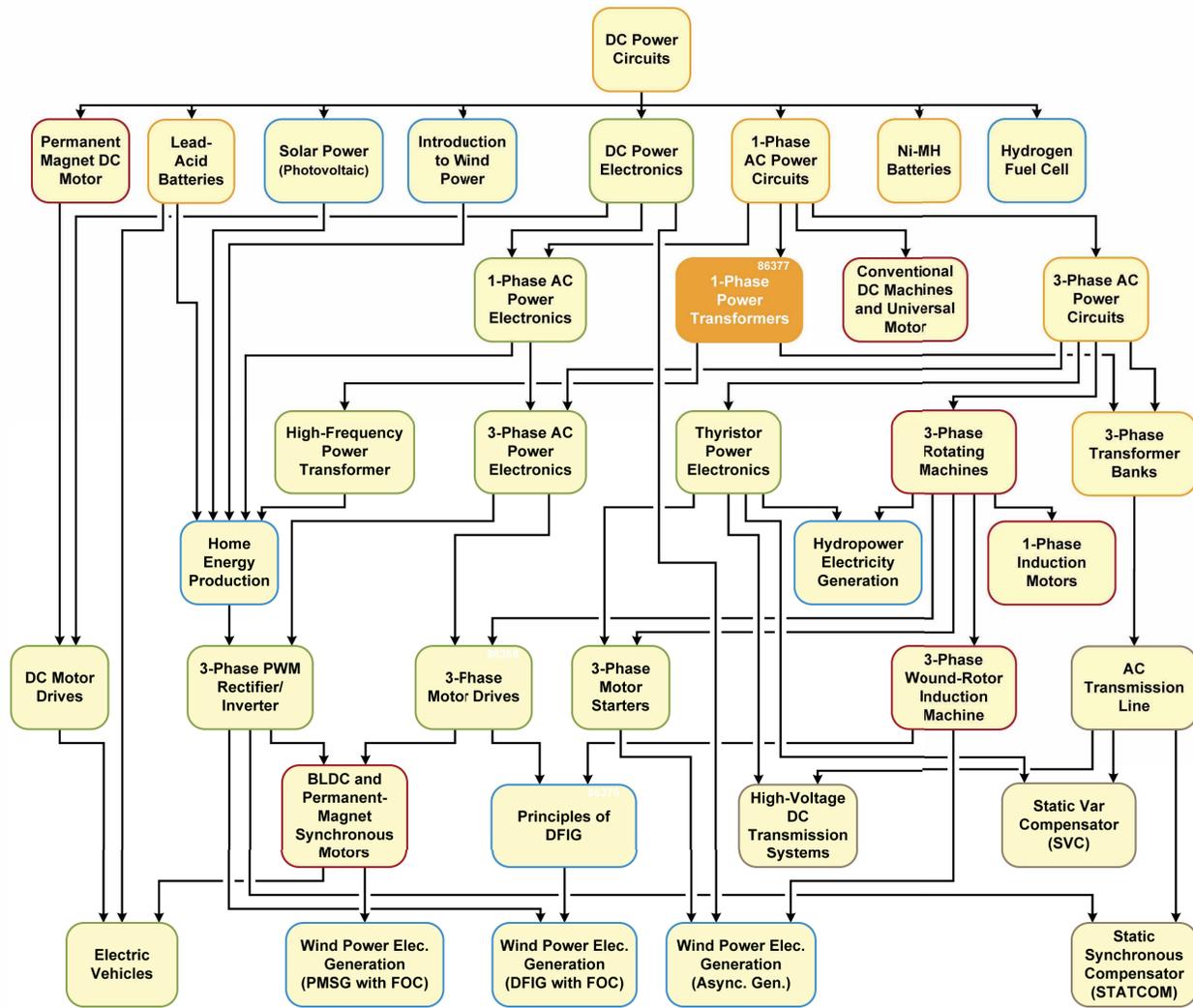
Features and Benefits:

» Multiple-winding (4) power transformer.

» Independent access to each winding allows various transformer configurations.

» Variable-frequency ac power source to study the effect of frequency on transformer rating.

» Low-cost training solution.

SMART INSTRUMENTATION AND CONTROL

4Q DYNAMOMETER POWER SUPPLY

Lab-Volt®

Lab-Volt Electric Power Technology Training Program

DC Power Circuits

- Permanent Magnet DC Motor
- Lead-Acid Batteries
- Solar Power (Photovoltaic)
- Introduction to Wind Power
- DC Power Electronics
- 1-Phase AC Power Circuits
- Ni-MH Batteries
- Hydrogen Fuel Cell

- 1-Phase AC Power Electronics
- 86377 1-Phase Power Transformers
- Conventional DC Machines and Universal Motor
- 3-Phase AC Power Circuits

- High-Frequency Power Transformer
- 3-Phase AC Power Electronics
- Thyristor Power Electronics
- 3-Phase Rotating Machines
- 3-Phase Transformer Banks

- Home Energy Production
- Hydropower Electricity Generation
- 1-Phase Induction Motors

- DC Motor Drives
- 3-Phase PWM Rectifier/Inverter
- 3-Phase Motor Drives
- 3-Phase Motor Starters
- 3-Phase Wound-Rotor Induction Machine
- AC Transmission Line

- BLDC and Permanent-Magnet Synchronous Motors
- Principles of DFIG
- High-Voltage DC Transmission Systems
- Static Var Compensator (SVC)

- Electric Vehicles
- Wind Power Elec. Generation (PMSG with FOC)
- Wind Power Elec. Generation (DFIG with FOC)
- Wind Power Elec. Generation (Async. Gen.)
- Static Synchronous Compensator (STATCOM)

Equipment

Qty	Model	Description	Qty	Model	Description
1	8134-2	Workstation	1	9063-B	Data Acquisition and Control Interface
1	8311	Resistive Load	1	30004-2	24 V AC Power Supply
1	8353	Transformer	1	86377/-1	Student Manual/Instructor Guide
1	8951-L	Connection Leads			
1	8960-C	Four-Quadrant Dynamometer/Power Supply			

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