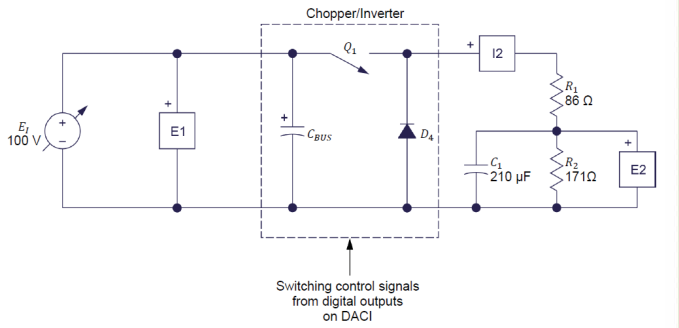
DC Power Electronics

Course 86356

The DC Power Electronics course introduces the student to power electronic components and circuits (choppers) required to manage dc power, such as the dc power stored in batteries or produced from wind or solar power. The course first presents the diode and the switching transistor, the two main semiconductor components used in power electronics. Through the remainder of the course, the student becomes familiar with the main types of choppers, is introduced to high-speed power switching (voltage-type and current-type circuits, free-wheeling diodes, etc.), learns how to control ripple in choppers, and discovers how to build a battery charger using a buck chopper.



Topic Coverage:

- Become familiar with the operation and characteristics of diodes and switching transistors.
- Master the buck, boost, buck/boost, and four-quadrant choppers.
- Examine the concept of voltage-type and current-type circuits, and study free-wheeling diodes.
- Understand the phenomenon of ripple in a chopper.
- Implement a lead-acid battery charger using a buck chopper with feedback loop.

Features and Benefits:

- Low-cost solution for teaching power electronics.
- Highly reliable and easy-to-connect power electronics hardware accelerates the learning process and minimizes troubleshooting of complex circuits.

SMART INSTRUMENTATION AND CONTROL

4Q DYNAMOMETER POWER SUPPLY

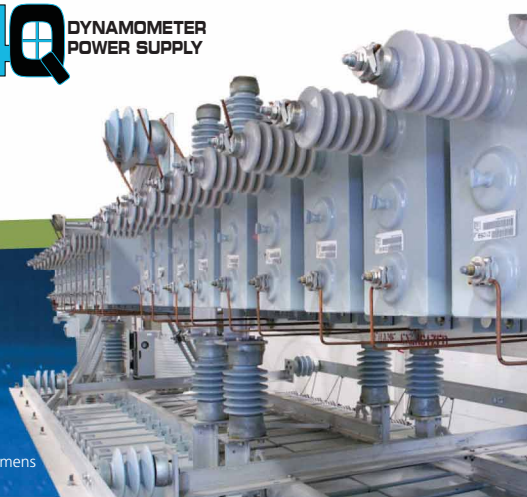


Photo courtesy of Siemens

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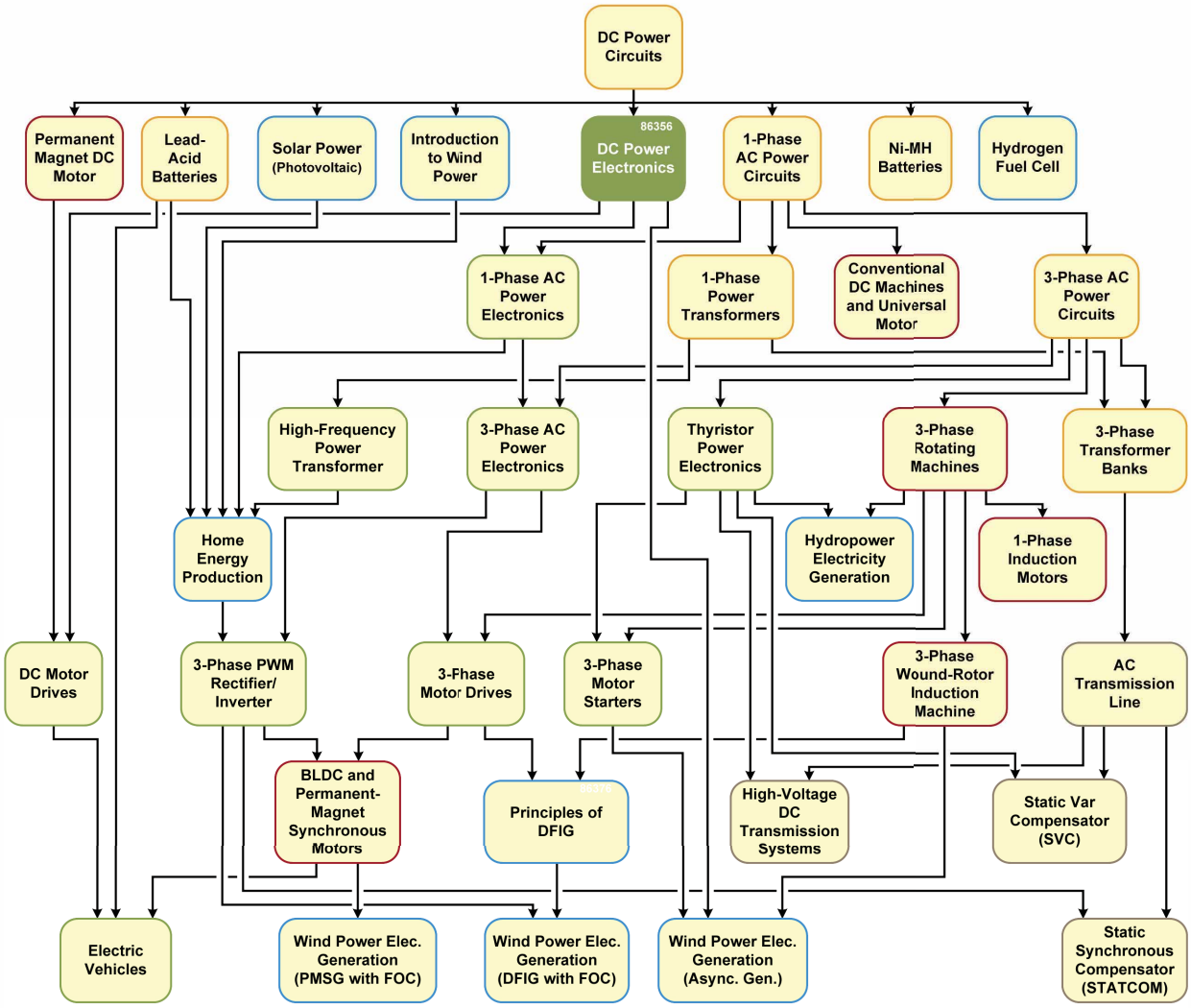

Equipment

Qty	Model	Description	Qty	Model	Description
1	8131	Three-Module Workstation	1	8960-E	Four-Quadrant Dynamometer/Power Supply
1	8311	Resistive Load	1	9063-C	Data Acquisition and Control Interface
1	8325-A	Filtering Inductors/Capacitors	1	30004-2	24 V AC Power Supply
1	8802-1	Lead-Acid Battery Pack	1	86356/-1	Student Manual/Instructor Guide
1	8837-B	IGBT Chopper/Inverter			
1	8951-L	Connection Leads			

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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