

WIND CONCEPTS LEARNING SYSTEM

950-WC1

Introduction to Wind Power Systems
Objective 3: Describe the Role of Wind Power in the Global Energy Portfolio

Wind power is growing tremendously in several countries due to the limited and expensive supply of fossil fuels. Currently there is \$59 billion allocated (AW) of installed wind power capacity globally. Out of that \$53 billion \$39 billion has been installed in 2009, which is a growth rate of approximately 31%.

Some areas like South America and the European Union (EU) have set targets to stimulate wind power growth. For example, the United States wants 20% of its electricity generated from wind by 2030.

Country	Growth Rate (%)
Mexico	302.4
Turkey	146.5
China	110.0
Morocco	101.8
Brunei	77.5
Hungary	66.0
New Zealand	45.5

Wind Turbine Siting
Skill 1: Interpret a Wind Resource Map

Procedure Overview

In this procedure, you will identify values on a wind resource map. You will also use wind speed data and the wind resource map to determine if a location is suitable for a wind turbine.

Wind Turbine Production
Objective 2: Describe the Operation of a Wind Turbine-Yaw System

Yaw refers to the rotation of a horizontal axis wind turbine (HAWT) nacelle. The yaw system controls this rotation so that the rotor is always facing into the wind to maximize efficiency. This rotation is important so that the rotor blades receive the maximum amount of energy from the available wind. It also reduces wear on the wind turbine components from uneven loading of the rotor.

WIND TURBINE TECHNOLOGY™

CURRICULUM IS THE KEY TO LEARNING

Learning Topics:

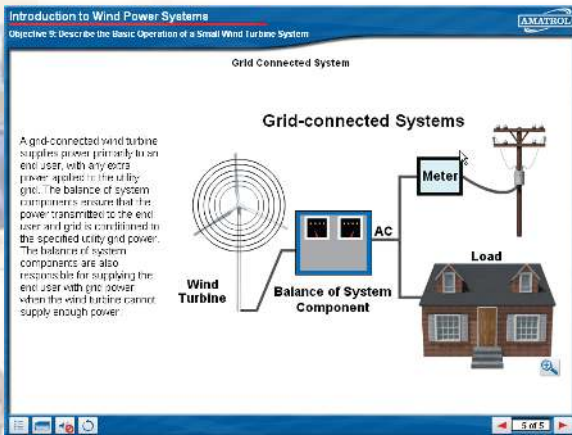
- Wind Power Systems
- Utility-Scale Wind Power Systems
- Small Wind Power Systems
- Wind Power Industry
- Wind Turbine Aerodynamics
- Wind Power Characteristics
- Wind Turbine Ratings
- Wind Turbine Capacity & Availability
- Wind Resources
- Wind Resource Measurement
- Wind Plant Siting
- Wind Plant Economics

Wind energy is a significant source of power whose use is growing dramatically. The Department of Energy has set a goal for 20% of electrical energy used in the United States to be from wind power by 2030. Wind farms can be found throughout the world – from cold, arctic conditions to the tropics, from beaches to mountains to oceans. Understanding the basics of how we can harness wind energy is essential for technicians, engineers, installers, designers, builders, and others who want to apply wind technology either in large utility-scale turbine farms or in small wind applications.

Amatrol's 950-WC1 Wind Concepts Learning System introduces students to a broad range of basic concepts in wind energy technology. Students learn how wind power systems work and what it takes to generate electrical power with wind. The 950-WC1 acts as a foundation for students enrolled in wind-specific as well as general renewable energy programs. Wind Concepts includes student curriculum in PC-based, interactive multimedia format as well as an instructor's assessment guide.



DESIGNED FOR LEARNING

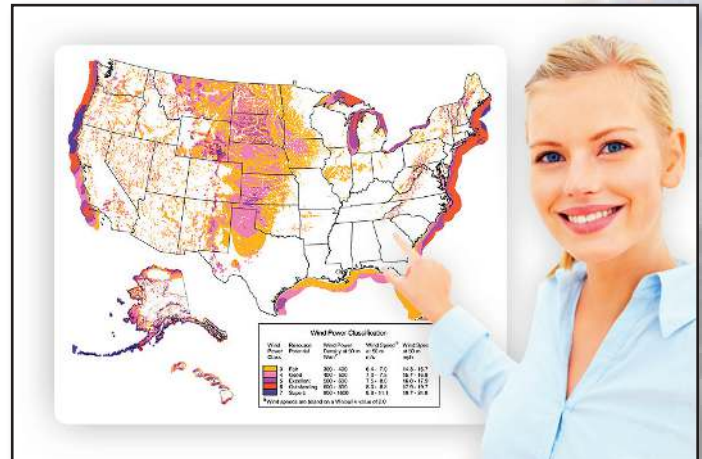


Interactive, Engaging Multimedia

Amatrol's interactive multimedia provides an engaging, stimulating experience for students. The Wind Concepts Learning System includes interactive computer-based instruction with both theory and hands-on tutorials consisting of text, digital video, voice, online self-review tests, interactive simulations, color diagrams and color photos. Amatrol's strong interactive multimedia includes visual, auditory, and text based learning styles to reinforce each other in well organized learning segments.

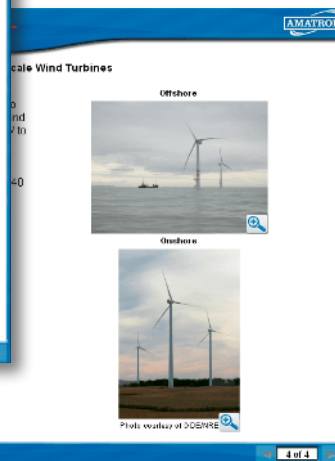
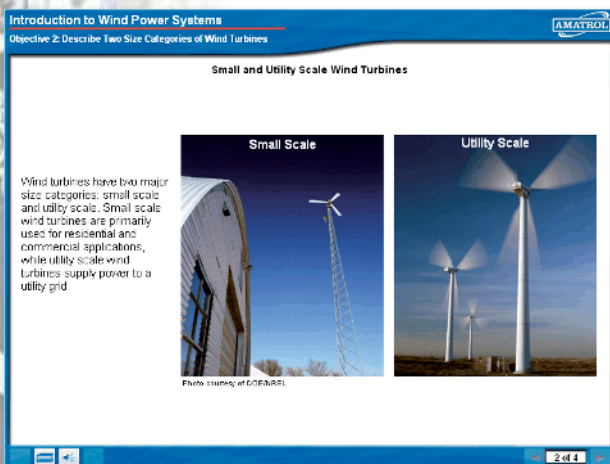
Using Wind Technology to Capture Wind Energy

Siting a wind farm or turbine is important. With utility-scale wind turbines costing several million dollars, understanding how much energy you can produce from the turbine in a specific location is key. The amount of wind available at different heights varies tremendously and is shown in courses utilizing maps like the one shown to the right. In the 950-WC1, students gain knowledge and skills in applying science and mathematical skills. Amatrol's Wind Concepts teaches students about many of the factors involved in the critical turbine siting decision.



The Many Types of Wind Power Systems

Wind power is harnessed by a broad array of wind power systems. The most striking difference is between residential or small wind and utility-scale turbines. While each have their place in the energy landscape, they are very different in both application and design. Understanding the fundamentals of these various systems and how they are used is a good base from which to launch a strong knowledge of wind power. Amatrol's 950-WC1 Wind Concepts teaches students about the range of wind power systems and how they are applied.



TECHNICAL DATA

Student Curriculum

PC-Based Multimedia, 1 Seat, M20011.
Includes (3) interactive multimedia curriculum modules covering wind power systems, utility-scale wind power systems, small wind power systems, wind power industry, wind turbine aerodynamics, wind power characteristics, wind turbine ratings, wind turbine capacity and availability, wind resources, wind resource measurement, wind plant siting, and wind plant economics

Instructor's Assessment Guide, C20011

Additional Multimedia Seats Available