The DuPont™ Energy Efficiency Series is designed to provide facilities around the world with the necessary skills to help improve energy efficiency and profitability.

The first two courses, *Energy Smart* and *Energy Management Best Practices*, help facilities implement their energy optimization program in three key phases:

1. Building the business case and initiating the program.
2. Promoting employee awareness of energy efficiency for all employees.
3. Launching an effective energy optimization program with committed leadership and engaged employees to identify low cost, “quick win” improvement opportunities.

Additional courses deliver proven best practices for targeting and optimizing the most energy-intensive equipment and systems to help realize significant energy cost savings.

These are many of the same best practices that have been instrumental to the success of the DuPont Bold Energy Plan. In 2008, the first full year under the Plan, DuPont sites saved $47 million in energy costs – or five percent of the prior year’s costs.

**AUDIENCE**

The DuPont™ Energy Efficiency Series is designed for industrial organizations looking to begin or improve an energy efficiency program.
NRG001  Energy Smart
Purpose: This course helps promote general energy awareness in all organizations and includes specific tips to help deliver quick energy savings.
Objectives: Define energy management; understand the business case for energy management; create an energy management plan; identify ways to improve energy efficiency; and describe the best practices of energy efficient organizations.

NRG002  Energy Management Best Practices
Purpose: This course discusses the problems that limit energy performance in a facility or plant site. It explains the organizational, leadership, and analytical considerations that are important to establish an effective energy optimization program. Finally, it covers how energy helps determine the competitiveness of products in the marketplace.
Objectives: Establish effective energy optimization program leadership; evaluate existing equipment using energy performance ratios; calculate an hourly operations cost; identify and eliminate the defects that limit energy efficiency; and understand the importance of linking performance improvements to business benefits.

NRG003  Energy System Instrumentation & Controls
Purpose: The instrumentation and control of power equipment has changed dramatically through the years, leaving many plants with a mixture of both old and new technology. This course covers the broad range of energy system instrumentation and control strategies, systems, and technology in use today.
Objectives: Exercise proper safety precautions when working with instrumentation and control systems; identify the elements of a typical process control system; compare common control strategies and their applications; compare different control systems and their operating characteristics; measure temperature, pressure, flow, and level with common field instruments; and apply specific best practices for energy efficiency to instrument systems.

NRG004  Theory of Steam Generation
Purpose: This course covers the theory of steam generation and how facilities can efficiently produce and use steam.
Objectives: Exercise proper safety precautions when generating steam; understand the effects of temperature and pressure on the process of steam generation; convert heat into useful work; use and interpret Mollier diagrams; and apply specific best practices for energy efficient steam generation and use.

NRG005  Fuels & the Combustion Process
Purpose: It is essential that facilities establish energy management procedures that are unique to the fuels, equipment, and systems used. This course covers fuel types and characteristics, the combustion process and its equipment, and the control systems typically used on industrial combustion devices.
Objectives: Exercise proper safety precautions when working with fuels and the combustion process; compare the characteristics of coal, oil, and natural gas; understand the combustion process; control the fuel air ratio of the combustion process using different control systems; and apply specific best practices for energy efficiency to fuels and combustion.

NRG006  Boilers & Auxiliaries
Purpose: This course covers steam boilers and common boiler auxiliary equipment, including superheaters, economizers, air heaters, and feedwater systems. It explains fundamental design and operating parameters and provides guidance for safe, reliable, and efficient operation.
Objectives: Exercise proper safety precautions when working with steam boilers and boiler auxiliary equipment; operate various boilers and superheaters; use economizers; identify and compare the two types of air heaters and various draft-producing equipment; identify and compare the systems and equipment used to control, pump, and heat feedwater; and apply specific best practices for energy efficiency to boilers and auxiliaries.
NRG007 Emission Control & Ash Handling

**Purpose:** This course introduces the categories of emissions and discusses the methods used to control and/or collect the most prevalent and most commonly regulated primary pollutants and byproducts emitted by the combustion process in industrial-fired boilers and process equipment.

**Objectives:** Exercise proper safety precautions when operating emission control systems; classify the three basic categories of emissions; remove ash from the furnace using pneumatic or hydraulic systems; remove fly ash from the stack gases in boilers using mechanical collectors, electrostatic precipitators, and baghouses; understand the three general approaches used to control sulfur dioxide emissions; control the emission of nitrogen oxides produced in the combustion process; and apply specific best practices to manage the energy consumption of emission control systems.

NRG008 Steam Distribution

**Purpose:** This course covers various industrial steam distribution lines, their auxiliary components, and their efficient use.

**Objectives:** Exercise proper safety precautions when working with steam distribution systems; compare the different steam distribution lines used in industry; compare and use various steam traps, pressure regulation valves, and pipeline desuperheaters; and apply specific best practices for energy efficiency to steam distribution systems.

NRG009 Steam Turbines & Condensers

**Purpose:** This course covers steam turbines and condensers, their auxiliaries, and their efficient use.

**Objectives:** Exercise proper safety precautions when working with steam turbines and condensers; classify steam turbines; control a turbine’s speed; maintain a turbine’s oil system; extract steam from a turbine; use condensers and their auxiliaries; evaluate turbine performance; and apply specific best practices for energy efficiency to steam turbines and condensers.

NRG010 Electricity Generation & Distribution

**Purpose:** This course covers electrical principles and the efficient operation of various devices and systems that produce, distribute, and use electricity.

**Objectives:** Exercise proper safety precautions when working with and around electrical equipment; apply the principles of electricity; identify the devices that produce electricity and understand their basic operation; identify the equipment required for the distribution of electricity; identify motors, motor controls, generators, and lamps as devices that use electricity and understand their basic operation; and apply specific best practices related to electrical energy conservation.

NRG011 Pumping Systems

**Purpose:** This course covers pumping systems, their components, and their efficient use.

**Objectives:** Exercise proper safety precautions when working with and around pumping systems; apply the principles of pump operation; use various pumps in power and HVAC applications; use common pumping system components; consider key factors prior to designing a pumping system; and apply specific best practices for energy efficiency to pumping systems.

NRG012 Cooling Towers

**Purpose:** This course covers the efficient operation of various cooling towers and spray ponds.

**Objectives:** Exercise proper safety precautions when working with and around cooling towers; classify cooling towers by water distribution system and means used to move air through the tower; understand the principles of cooling tower performance and operation; operate and maintain spray ponds; compare spray ponds and cooling towers; and apply specific best practices for energy efficiency to cooling towers.
NRG013 Water Treatment

**Purpose:** This course covers water supply basics, the impurities present in water, and the efficient use of water treatment systems.

**Objectives:** Exercise proper safety precautions when treating water; classify water by its source; relate the quality of surface water to specific characteristics of the watershed area; list the groups of impurities present in water supplies; understand the clarification, filtration, and chlorination processes; and apply specific best practices for energy efficiency to water supply and treatment systems.

NRG014 Compressed Air

**Purpose:** This course covers compressed air systems, their components, and their efficient use.

**Objectives:** Exercise proper safety precautions when working with and around compressed air systems; identify the key components of reciprocating, screw, and centrifugal compressors and their controls; identify the key components of an air distribution system; and apply specific best practices for energy efficiency to compressed air systems.

NRG015 Refrigeration

**Purpose:** This course covers the components and principles of refrigeration systems and their efficient use.

**Objectives:** Exercise proper safety precautions when working with and around refrigeration systems; identify the parts that all mechanical refrigeration systems have in common; assess the relationship between pressure, temperature, evaporation, and condensation in a refrigeration system; compare common refrigerants; apply the principles of operation of positive displacement and centrifugal refrigeration systems; and apply specific best practices for energy efficiency to refrigeration systems.

NRG016 HVAC & Indoor Air Quality

**Purpose:** This course covers common HVAC systems as well as their controls, components, and efficient use.

**Objectives:** Exercise proper safety precautions when working with and around HVAC systems; compare common HVAC systems and their controls; identify and use the major components of HVAC systems; and apply specific best practices for energy efficiency to HVAC systems.