Energy Research Center

117 ATLSS Drive; 610-758-4090

The mission of the Energy Research Center is to find solutions to national and global energy and energy-related problems by collaborating with federal, state and local agencies, energy businesses, technology developers and suppliers, the research community and academic institutions. The Energy Research Center accomplishes this mission through its continued commitment to innovative research and development, while recognizing the important link between energy and the environment. The Center brings together faculty and professional staff within Lehigh University to conduct research, foster partnerships between government and industry, provide funding, research and educational opportunities to university graduate and undergraduate students, and promote international research collaboration. Originally founded in 1972 as the Task Force for Energy Research, the Center was organized into its present form in 1978.

ENERGY RESEARCH

Research within the Center falls into five major categories. Projects of interest include:

Energy Conversion/Power Generation

This research program area has several components. The largest focuses on the equipment and processes used in large fossil-fired electric power plants, with research on methods of improving power plant conversion efficiency, of reducing emissions of carbon dioxide and of other gaseous pollutants, and of reducing the cost of generating electricity. A second group of projects deals with fusion energy, with an emphasis on the physics of magnetic plasma containment in fusion reactors. Other projects deal with topics such as fuel cell conversion systems, hydrogen production, capture of carbon dioxide, and reduction of fresh water requirements for power plant cooling.

Energy-Related Environmental Research

The Center’s environmental research program deals with air pollution, solid waste, and ground water contamination issues resulting from power generation and energy conversion activities; and reduction of amounts of fresh water required for power plant cooling.

Energy-Related Materials Research

This focus area considers materials issues in the energy field. Examples include high temperature coatings for boiler tubes, welding processes for new alloys, containment vessels for nuclear waste materials, component life prediction, and development of catalysts for pollution control. Energy Conservation and Renewable Energy.

The Center’s research program in energy conservation deals with reducing energy use in manufacturing and with the development of high efficiency electric motors. Renewable energy research focuses on utilization of biomass materials as fuels.

Basic Energy Sciences

Faculty and students in engineering and science also carry out research to improve our understanding of the basic phenomena that underlie the knowledge base required for developing new and improved energy technologies.

Educational Opportunities

The Center’s research programs provide opportunities for graduate students interested in working in the energy area. Most of the departments in the College of Engineering and Applied Science, as well as several departments within the College of Arts and Sciences, are active in energy research and offer both masters and doctoral degree programs suitable for studies of energy-related topics.

All degrees are granted by the academic departments and graduate students interested in energy enroll in traditional graduate degree programs in departments of their choice. These students specialize in energy by complementing their programs with a selection of energy-related courses. They pursue their graduate research in energy areas under the supervision of faculty from the Energy Research Center or from other research centers or academic departments.

Financial support for graduate students is available through fellowships and research assistantships.

OUTREACH AND INDUSTRIAL LIAISON ACTIVITIES

The Center’s Energy Liaison Program is a mechanism for providing consulting and problem-solving to member companies. The Liaison Program also provides opportunities for involving industry in sponsored research projects.

ADDITIONAL INFORMATION

For more information, write to Dr. Carlos E. Romero, Director, Energy Research Center, Lehigh University, 117 ATLSS Drive, Bethlehem, PA 18015, or e-mail at cerj@lehigh.edu (ekl0@lehigh.edu). Please visit our website at www.lehigh.edu/energy