Engineering Science and Technology Division

The Engineering Science and Technology Division (ESTD) is one of the largest research divisions at Oak Ridge National Laboratory (ORNL), with more than 300 staff, numerous national user facilities, and laboratories located in 13 buildings. The division has an annual R&D effort of more than $100M to support the missions of the Department of Energy and other agencies and organizations.

Our Mission

To make a positive difference in the world around us by supporting the missions of the Department of Energy and by

- conducting valuable engineering-based, interdisciplinary research, development, and deployment;
- accelerating the deployment of products and programs that enhance the safety, security, productivity, and energy efficiency of the United States; and
- analyzing and influencing key energy and environmental policies affecting the security of our country.


Strength-Amplifying Machine

Our Vision

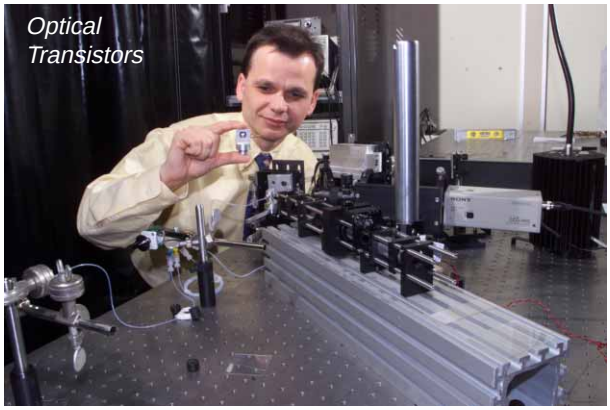
- To be the leading scientific and engineering organization in improving energy and other complex systems to further national goals through research, development, deployment, and use of advanced information technologies; and
- To be considered by the research community to be the desired organization for employment because of the innovativeness of our research, our concern for staff, and our modern research facilities.


Hybrid Lighting

Recent Research Accomplishments

Our staff received two of the 2002 R&D 100 Awards (honoring the year's 100 best scientific and technological accomplishments):

- Any Source, Any Position Fluid Handler (ASAP). Pharmaceutical companies and researchers testing genetic materials will find this technology valuable and cost-effective in testing and developing new drugs. ASAP enables the high-speed transfer of small volumes of liquid between source and target. The ability to transfer small amounts means that less liquid is used during experimentation and development, translating into significant cost savings.
- DSI AIR: Defect Source Identifier — Automated Image Retriever. DSI AIR is a software product that solves manufacturing problems in semiconductor fabrication environments. The system works by comparing images of the product defect against hundreds of thousands of historical images that are maintained in the plant's data management system.


Optical Transistors

UT-BATTELLE

OAK RIDGE NATIONAL LABORATORY

MANAGED BY UT-BATTELLE FOR THE DEPARTMENT OF ENERGY

11/14/02

Research Staff

ESTD's emphasis on interdisciplinary research is reflected in the range of staff expertise. Our staff hold 95 Ph.D.'s, 115 M.S. degrees, and 29 B.S. degrees. Fields of study include engineering, physics and chemistry, social sciences, and business.

Success Story

An ESTD study has confirmed savings from ENERGY STAR clothes washers. A DOE-sponsored demonstration of an energy-efficient washer in a Boston suburb has produced such significant results that the Massachusetts legislature is using the research results to support a bill that would make ENERGY STAR appliances tax-exempt in that state. The study also showed that dryers used 13% less energy to dry clothes washed in the new washers and that the washers used 27% less detergent. If every Boston household used energy-efficient washers, Boston could save 1.5 billion gallons of water annually and enough power to run 14,000 homes.

Hybrid Vehicle

Research Areas

Our research has eight focus areas:

- Industrial energy efficiency
- Buildings
- Transportation
- Solar energy
- Sensors, electronics, and signal analysis
- Cooling, heating, and power technologies
- Fuels, engines, and emissions
- Robotics and energetic machines

Research Facilities

- Buildings Technology Center—A National User Facility
- Cooling, Heating, and Power Integration Laboratory—A National User Facility
- Fuels, Engines, and Emissions Research Center—A National User Facility
- National Transportation Research Center (NTRC)—A National User Facility
- Power Electronics and Electric Machinery Research Center—A National User Facility
- Environmental Effects Laboratory
- Nanoscience, Engineering, and Technology Laboratory
- Powerline Conductor Accelerated Testing Facility
- Robotics Development Laboratory

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