

# ***INVENTIONS AND INNOVATION***

Helping Bring Your Energy Ideas to Market



U.S. Department of Energy

Office of Energy Efficiency  
and Renewable Energy

Office of Industrial  
Technologies

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## The Inventions and Innovation Program

Are you an individual inventor or small business planning to develop your energy-saving invention or innovation? Have you been searching for financial and technical support to bring your idea to market? The U.S. Department of Energy's (DOE's) Inventions and Innovation (I&I) Program can help.

This program provides financial assistance at two levels—up to \$40,000 or up to \$200,000, depending on the stage of development—for conducting early development and establishing technical performance of innovative ideas and inventions. Technologies within the areas of industry, power, transportation, or buildings that have a significant energy savings impact and future commercial market potential are eligible for financial support through a competitive solicitation process. I&I is particularly interested in supporting technology development and deployment in the agriculture (bio-based products), aluminum, chemicals, forest products, glass, metal casting, mining, petroleum, and steel industries. In addition to financial assistance, this program offers technical guidance and commercialization support to successful applicants.

### Four Steps to Realizing Your Vision

1. **Pre-Proposal Evaluation.** Prior to the annual solicitation, a U.S. individual inventor or small technology-based company may submit an optional, short description (following a DOE format) to the DOE Golden Field Office. DOE provides a timely response regarding the idea's program relevance and information on how to submit a proposal for detailed review.
  2. **Competitive Solicitation.** DOE issues a formal solicitation once each fiscal year, which seeks proposals and includes instructions for completing a proposal.
  3. **Grant Award.** After a detailed review, DOE awards financial assistance grants to the winning proposals based on available funding each fiscal year.
  4. **Mentoring and Networking.** During and after the grant project period, assigned project managers and a network of regional resource providers assist the grantees with their technical program management and market development planning.
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## Examples of Ideas that have Reached Commercial Markets

- **Meta-Lax Stress Relief Equipment** offers distinct advantages over conventional heat treatment methods. It uses less energy, is portable, can handle any size metal part, and treats metal stress in hours versus days. [www.bonal.com](http://www.bonal.com)
  - **Aero Cylinder Technology** replaces conventional cylinders by combining air spring bellows into assemblies for use on machines (such as punch presses) to control motion and large masses. The air springs act as counter balancers and press cushioners and eliminate alignment problems. This proper alignment reduces downtime and compressed air losses, resulting in significant energy savings. [www.webservintl.net/testsites/thomas/smedlberg/home.htm](http://www.webservintl.net/testsites/thomas/smedlberg/home.htm)
  - **Electro-Optic Inspection of Heat Exchangers** is a laser-based, nondestructive evaluation system for inspecting heat exchanger tubing for internal corrosion, erosion, scale buildup, and deformation. Benefits to petrochemical, pulp and paper, and power-generation plants include reduced downtime and increased efficiency. [www.qi2.com/field/fsddef.htm](http://www.qi2.com/field/fsddef.htm)
  - **Hydrodynamic/Multi Deflection Pad Bearing** optimizes bearing operation in high-speed, combined heat and power turbines, high-load electric motors or gear boxes, air or gas compressors, and air conditioning refrigeration equipment. Energy loss due to friction is reduced up to 40% by using fluids as a wedge between pads and moving parts. [www.kmcbearings.com/radial.htm](http://www.kmcbearings.com/radial.htm)
  - **Dinh® Dehumidifier Heat Pipes** pre-cool return air to an air conditioner, thereby raising dehumidification/cooling coil efficiency and condensing more moisture. The heat pipes also reheat supply air to create a more comfortable temperature and relative humidity. This patented technology greatly increases moisture removal capabilities of air conditioners and can lower dehumidification energy consumption by up to 50%. [www.advancedryer.com](http://www.advancedryer.com) or [www.heatpipe.com](http://www.heatpipe.com)
  - **Lenox Polymers** are resins created from pulp mill waste (black liquor). The nontoxic, renewable-source resins have applications, including foundry resins for metalcasting, wood particulate binders (for plywood and particleboard), and compression molding polymer systems. By using lignin, the natural glue that holds together tree fibers, Lenox Polymers save petrochemical resources and are free of formaldehyde, phenol, and styrene. [www.lenoxpoly.com](http://www.lenoxpoly.com)
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## Notable Achievements

- More than 500 inventions have received financial support from DOE, with nearly 25% reaching the marketplace.
- Cumulative sales have reached nearly \$710 million.
- Cumulative energy savings of 0.6 quad have resulted.

## Access to Resources and Expertise

The Inventions and Innovation Program provides non-financial support to awardees by helping innovators find technical partners, commercial sponsors, business plan resources, and financial resources. DOE also provides overall project assistance in the form of commercialization planning, work guidance, a market potential assessment of the innovation, and access to regional service providers in a variety of areas.

Examples of potential program support and resources:

- Mentoring for project development planning and management
- Regional training and learning centers for business planning
- Regional, state, and local level support for economic development
- Incubation centers specializing in small energy-related technology businesses
- Internet sites and information relevant to energy-related innovations
- Technology conferences and trade shows
- Forums for financial investors with particular interest in energy-related businesses.

## Timeline for Fiscal Year 2001 Projects

- Pre-proposal period opens: September 1, 1999
- Pre-proposal period closes: March 17, 2000
- Solicitation opens: Early May 2000
- Solicitation closes: Late July 2000
- Awards announcement: December 2000.

## DOE Office of Industrial Technologies — Industries of the Future

DOE researches, develops, and deploys clean, efficient, and renewable energy technologies to help meet America's energy needs while protecting the environment and strengthening the economy. Energy technologies supported and promoted by the department will play a key role in providing Clean Energy for the 21st Century.

DOE's Office of Industrial Technologies (OIT) encourages industry-wide efforts to boost resource productivity through a process called Industries of the Future. The process, which focuses on energy- and resource-intensive materials and processing sectors, accelerates research and development of advanced technologies identified as priorities by industry. In addition, manufacturing best practices in energy efficiency and waste reduction are promoted through showcase demonstrations. Participants in the process represent the agriculture, aluminum, chemicals, forest products, glass, metalcasting, mining, petroleum, and steel industries.

### For More Information

Information about upcoming events, workshops, pre-proposals, solicitations, and deadlines is posted on the Internet at [www.oit.doe.gov/inventions](http://www.oit.doe.gov/inventions). You can also learn more by requesting materials from the Energy Efficiency and Renewable Energy Clearinghouse (EREC) at (800) DOE-EREC.

#### For additional information, contact:

Inventions and Innovation Program  
Mail Stop EE-24  
U.S. Department of Energy  
1000 Independence Avenue, SW  
Washington, D.C. 20585  
(202) 586-2079

For a copy of the pre-proposal format or solicitation, please visit: [www.oit.doe.gov/inventions](http://www.oit.doe.gov/inventions) or contact:

Inventions and Innovation Program  
U.S. DOE Golden Field Office  
1617 Cole Blvd. #1734  
Golden, CO 80401  
Fax: (303) 275-4788



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