

**DEPARTMENT OF ENERGY****Office of Energy Efficiency and Renewable Energy****Motor Challenge Showcase Demonstration Projects**

**AGENCY:** Office of Energy Efficiency and Renewable Energy, Department of Energy.

**ACTION:** Notice inviting participation.

**SUMMARY:** The U.S. Department of Energy (DOE) is interested in obtaining proposals from industrial electric motor system end users for projects that are intended to demonstrate and "showcase" electric motor system energy efficiency, productivity, and environmental improvement in specific industrial facilities and settings. Projects selected by DOE will become "Showcase Demonstrations" and are part of a larger, Federally-sponsored (DOE) program that is an industry-driven collaborative effort called MOTOR CHALLENGE. The experiences and successful results to be gained from the Showcase Demonstrations will be used to encourage other U.S. industrial companies with similar applications to adopt efficient electric motor systems, and therefore, to increase the market penetration of efficient electric motor systems on a widespread basis within the U.S. Currently twenty-one Showcases are underway, and DOE intends to build upon the initial set of Showcases by now focusing on process industries.

**DATES:** Proposals may be submitted between the receipt of this notice and March 31, 1996. Proposals shall be considered as meeting the deadline if they are either: (1) Received on or before the deadline date or, (2) postmarked on or before the deadline date. Proposals which do not meet the deadline will be considered late applications and may not be considered. Acceptance will be done on a rolling basis. Within four weeks of submittal, submitters will be notified regarding acceptance, rejection, or a request for further information and/or clarification. It is envisioned that selected projects will have a duration of no more than 18 months, and therefore, projects are expected to be completed (the project's costs and benefits defined and validated) by September, 1997.

**ADDRESSES:** Showcase proposals should be submitted to: Mr. Andrew J. Szady, Oak Ridge National Laboratory, P.O. Box 2009, 9102-1, Oak Ridge, TN 37831-8038, 423-576-0243, Fax 423 576-0493. If there are any questions concerning Showcase proposals please call the above Motor Challenge Program

contact. For additional information on the MOTOR CHALLENGE Partnership, or to obtain application forms for the Partnership, call the MOTOR CHALLENGE Hotline at 1-800-862-2086.

**SUPPLEMENTARY INFORMATION:** The MOTOR CHALLENGE program is designed to reduce greenhouse gas emissions through increased market penetration of efficient electric motor systems. It is expected that industrial participants will achieve increased electric motor system efficiency through the system integration of a variety of technology and application options including: energy efficient electric motors, adjustable speed drives, and motor-driven equipment (e.g., pumps, fans, and compressors) within industrial operations and processes. DOE is carrying out the MOTOR CHALLENGE program with industrial and manufacturing companies, municipalities, electric motor and drive manufacturers, original equipment manufacturers (OEMs), distributors, utilities, energy service companies, research institutes, other Federal agencies, state energy agencies, public interest groups, and other supporting organizations. DOE will be the Federal agency with the responsibility of selecting Showcase Demonstration projects, and will then develop an Agreement between the government and the respective selected companies.

**Specific Aim of This Request**

The MOTOR CHALLENGE program was launched on October 19, 1993 by the Federal government (DOE) and industry with the signing of the MOTOR CHALLENGE Compact (dated October 13, 1993). As stated within the MOTOR CHALLENGE Compact, DOE would issue an appropriate notice to solicit participants in the MOTOR CHALLENGE Showcase Demonstrations. On October 7, 1994 DOE issued a request for Showcase proposals, and on May 23, 1995 twenty-one Showcases were selected and announced. These Showcases are currently underway. This current request is for additional Showcase Demonstrations (approximately 10) primarily directed at the following industries:

- (1) Paper and Allied Products
- (2) Steel
- (3) Chemical
- (4) Glass
- (5) Aluminum
- (6) Refining
- (7) Metal Casting
- (8) Food Processing
- (9) Textiles

**(10) Federal Operating/Production Facilities**

Additional industries will be considered if, in the judgment of DOE, the Showcase demonstrates energy and environmental savings consistent with the tenets of the Motor Challenge Program, and the industry is currently not represented in a Showcase.

As one condition of proposing to be a Showcase Demonstration, DOE requires that each company, organization, and/or agency of a proposing team, be a member of the MOTOR CHALLENGE Partnership by submitting an appropriately completed application. (The availability of application forms is discussed in the **ADDRESSES** section above).

**Benefits of Industry Participation**

Industry will receive many benefits by participating as a MOTOR CHALLENGE Showcase Demonstration project team. The principal benefit of participation is for an individual company to achieve energy efficiency, productivity, and environmental performance goals faster than otherwise. This will primarily be accomplished by the adoption of a "systems approach" in the way electric motor and drives are utilized within industrial operations and processes. Participation in the Showcase Demonstration projects provides leveraged access to technical assistance, and more reliable information. Participants will use the experiences of the Showcase Demonstrations to replicate opportunities within similar applications. In addition, participants will gain national recognition for taking a leadership role in a unique industry/government partnership. A secondary benefit of participation is to catalyze and to solidify strategic alliances among team members that otherwise would be more difficult to initiate and/or to maintain.

Specifically, the MOTOR CHALLENGE Showcase Demonstration project teams will be provided the following technical assistance and special access to DOE-funded activities:

(1) *Input to Development of Technical Tools and Best Practices.* DOE is supporting the development of design-decision tools, best practices, and guidelines on various electric motor system application topics (e.g., motors, adjustable speed drives, pumps, fans, compressors, etc.). The Showcase teams will have the opportunity to provide input to DOE to ensure that the tools, materials, and procedures developed, appropriately meet industry's design and decision-making needs and requirements.

(2) *Performance Validation.* DOE will pay for appropriate engineering consulting assistance to advise Showcase Demonstration teams on performance validation issues. Working jointly with individual teams, the consultants will assist and advise teams on the development and design of reliable experimental and performance measurement techniques so that the demonstration's costs and benefits can be validated. At the completion of each project an Independent Performance Validation report will be completed.

(3) *Case Study Documentation and Dissemination.* DOE will pay for the development and documentation of a comprehensive case history for each Showcase Demonstration, and will disseminate the case study results subject to team member's and independent performance validator's review and approval. Likewise, DOE will provide a compendium of Case Study Briefs.

(4) *Access to Experts Group.* Through the Oak Ridge National Lab, DOE has assembled an Experts Group of consultants on electric motor system optimization, specializing in high efficiency motors, variable speed drives, fans, blowers, and pumps. Reasonable access to the Experts Group will be provided to the teams to acquire technical assistance and advice.

(5) *Participation in Showcase Demonstration Workshops.* Team members will be invited to DOE-sponsored workshops where all Showcase Demonstration teams will be provided the opportunity to exchange valuable information and to discuss common implementation experiences with industry counterparts. These workshops will also serve to inform participants of the latest available technology. The first workshop for the Showcases currently underway was held on June 27 and 28, 1995.

#### Benefits to the Government

The knowledge and experiences of the Showcase Demonstrations will be used in future DOE efforts to assist industry in replicating and implementing efficient electric motor systems. DOE intends that the long-term result of highlighting the exemplary and cost-effective benefits of the Showcase Demonstrations is the accelerated and increased market penetration of efficient electric motor systems within U.S. industry. The deployment of efficient industrial electric motor systems will contribute significantly to greater energy efficiency, reduced primary/source energy consumption, deferred new power generation capacity, improved industrial productivity and

competitiveness, and enhanced environmental protection for the United States.

#### Eligible Project Teams

*Only industrial "end-users" are eligible to submit project proposals.* "End-users" are defined as those companies who own and operate the facility where the demonstration will take place. In addition to end-user participation, a project team may involve other partners including, but not limited to, motor and drive manufacturers, original equipment manufacturers (OEMs), distributors, utilities, energy service companies, state energy offices, research institutions, etc. End-user proposers are encouraged to include such participation. Other non-end user entities are also encouraged to catalyze and support proposal submission by end-user project teams.

#### Industry Showcase Demonstration Project Team Obligations

Each proposing project team will themselves provide all the funding to support necessary design, equipment specification, purchase, and installation for the efficient electric motor systems to be demonstrated, along with all the measurement equipment and instrumentation to validate and substantiate all claims of performance and benefits achieved.

Teams will provide DOE with sufficient data to substantiate and document the energy and environmental performance of the project and the economic benefit/cost of the result. Additionally, teams will provide appropriate information to DOE to allow for DOE contractors to perform an independent performance validation report and to prepare a comprehensive case study document. For activities within the Showcase Demonstration, DOE will respect all proprietary interests to which selected demonstration hosts are entitled. These activities will be addressed in the previously referenced Agreement between DOE and the project team.

#### Showcase Demonstration Team's Intellectual Property Rights

The Agreements to be signed by DOE and each MOTOR CHALLENGE Showcase Demonstration project team does not envision a commitment by the Participants to perform research and development. DOE's intellectual property policies will not apply to Participant's inventions because the work performed by the Participants in developing the demonstration projects for the MOTOR CHALLENGE Showcase Demonstrations are not wholly or

partially funded by DOE. Therefore, rights to intellectual property developed by Participants and demonstrated by the MOTOR CHALLENGE Showcase Demonstrations will not vest in the United States Government. Language to this effect will be incorporated into any resulting Agreement.

#### Proposal Submission Format

The proposals must include the following sections at a minimum:

##### *Section 1—Project Abstract*

A brief abstract of the project should include:

- (a) Project title;
- (b) Brief narrative describing the project (1 or 2 sentences);
- (c) Proposing industrial end-user company;
- (d) Management and technical point of contact of end-user company (name, title, address, phone, fax);
- (e) Supporting team member companies, organizations, and points of contact (title, address, phone, fax);
- (f) Facility name and location where the demonstration is proposed.

##### *Section 2—Description of the Project*

(This section should take no more than two pages) A description of the industrial application to include the kind of efficient electric motor system [drive, motor, and load] the proposed project is intended to address. Estimates of the energy, environmental, and economic costs and benefits that might reasonably be expected to result from an assumed successful demonstration [relative to the present or conventional system], should be presented. Also, extrapolated costs and benefits of the demonstrated system if it were it to be replicated in other similar applications, within the proposer's corporate facilities should be estimated.

A description of the technical approach of how and where the demonstration will be implemented within the facility should be explained. Also, a description of the technique and methodology to be employed to measure and evaluate the performance of the demonstration should be provided.

The overall project cost should be estimated along with the approximate cost-share breakdown by all parties providing resources to the project. A project schedule should be included which addresses the following items:

- (a) Procurement
- (b) Installation
- (c) Start-up
- (d) Data acquisition
- (e) Final reporting

### Section 3—Letter of Intent

Appropriate upper management within the industrial end-user company must provide a letter of intent to support the demonstration project. This letter will show evidence that the company upper management (e.g., Vice President, Engineering Director/Manager, Plant Manager, etc.) is aware, endorses, and is supportive of the project at the proposed facility, and the company will provide the necessary resources to the project, if selected.

### Section 4—MOTOR CHALLENGE Application Forms

Each participating proposing Showcase Demonstration team member company or organization must join the MOTOR CHALLENGE program by submitting an appropriately completed application. Applications can be obtained by calling the MOTOR CHALLENGE Hotline number 1-800-862-2086. This section should contain all completed application forms.

#### Availability of Federal Funds

Approximately \$1.5 million in FY 1996 of Federal funds is expected to be available to support the activities, authorized pursuant to Section 2101 of the Energy Policy Act of 1992, 42 U.S.C 13451, in support of the Showcase Demonstrations. These Federal funds will be managed through the DOE Office of Industrial Technologies' Motor Challenge program. Subject to the availability of appropriated funds, up to 10 proposals may be selected as Showcase Demonstrations in accordance with the evaluation criteria stated below. All selected Showcase Demonstration projects will receive no Federal financial assistance, but will be provided technical assistance by DOE as stipulated above.

#### Technical Evaluation Criteria and Review Process

Proposals will be reviewed and technically evaluated by staff members of the Oak Ridge National Laboratory.

#### Proposal Technical Evaluation Criteria

All proposals submitted in response to this notice will be technically evaluated by two major categories as follows:

*Category (1) Overall technical merit.* The overall technical merit will consider such factors as the practicality and likelihood that the project will achieve success and the benefits claimed; and reliable and defensible performance measurement techniques will be employed to ascertain the project's costs and benefits.

*Category (2) Economic significance if the project were to be successfully replicated within the company and throughout the United States.* Factors to be evaluated that will influence the ability of the Showcase Demonstration to impact the market are: the estimated cost-effectiveness of the demonstration, the qualitative level of productivity gain and non-energy cost savings from the application, and the comparative significance of estimated energy cost savings if the demonstration were to be replicated more broadly at the facility and within the end-user's company.

#### Proposal Policy and Programmatic Factors and Applications of Greater Interest

DOE will use policy and programmatic factors to select the proposals of greatest interest. To attempt to ensure that a broadly representative group of proposals are selected, DOE will seek diversity in the Showcase Demonstrations selected by considering: geographical location, application type, industry type, and facility size (e.g., annual electricity costs) of the Showcase Demonstration.

DOE prefers proposals for projects that are no further along than the engineering design stage. However, if a project is further along, DOE will consider the project as a Showcase Demonstration candidate, if a reliable and defensible methodology of establishing a performance baseline of a conventional system is available. For example, if another conventional system is currently operating, and a performance baseline of the conventional system can be measured and reliably compared to the demonstration project, then this would be acceptable to DOE.

DOE has identified the following seven broad technical applications as those in which it is most interested in receiving Showcase Demonstration proposals:

(1) Applications where new efficient electric motor and drive designs are creatively and cost-effectively integrated within specific mechanical component systems (e.g., pumps, fans, compressors, etc.), or processes so as to yield improved energy efficiency, productivity improvement, and reduced life-cycle cost relative to typical conventional operating systems.

(2) Applications where an efficient electric motor and drive system replaces a less efficient heat-engine/mechanical drive system (e.g., steam turbine) to yield primary energy savings, productivity improvement, and environmental improvement both at the facility and on a global basis.

(3) New manufacturing production lines where state-of-the-art motor and drive system utilization results in energy efficiency and productivity improvement compared to similar conventional operations.

(4) Novel electric motor, drive, and mechanical system retrofits that are more optimally matched to yield overall improved system energy efficiency, reliability, and productivity improvement.

(5) Demonstration of exemplary electric motor and drive system management policies and maintenance practices that result in higher process reliability and gradual, but continual, overall energy efficiency improvement. Topical areas of interest could be motor repair and rewind techniques, electrical distribution improvement, and mechanical system maintenance and optimization.

(6) Demonstrations that identify and implement the solution to power quality problems, and by doing so, effectively increases total system efficiency and productivity. Specifically, projects addressing the impact of power quality on motor drives and other motor system components which quantify the true cost/benefits of power quality enhancement with respect to total motor system efficiency, reliability and productivity.

(7) Implementation and retrofit of efficient motor and drive systems on industrial heating, ventilating, and air conditioning (HVAC) equipment or motor-driven industrial process heating or cooling systems. These systems should be integrated creatively and cost-effectively within an entire, or a portion of, an industrial facility or process to yield improved energy efficiency, reduced life-cycle cost in an environmentally-acceptable manner. [HVAC for industrial or manufacturing facilities are only of interest, not HVAC for space conditioning of an office or commercial facility].

Projects could involve a single unit of equipment, a unit operation, a series of replicable equipment, an entire process, or an entire facility. In general, proposals are desired which could lead to demonstrably higher U.S. industrial productivity, energy efficiency, environmental enhancement, and improved competitiveness once the application is replicated on a widespread basis throughout the United States. This listing is meant to be illustrative, not exclusive.

#### Final Proposal Selection

The recommendations of the technical merit review will be provided by Oak Ridge National Laboratory to

representatives of the Deputy Assistant Secretary for Industrial Technologies. Final selection will be made by the Deputy Assistant Secretary for Industrial Technologies.

Issued in Washington, DC on November 20, 1995.

Denise Swink,

*Deputy Assistant Secretary, Office of Industrial Technologies.*

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