



Announcement

“Application of Nanotechnology in the Energy Business”

Project funding by the E.ON International Research Initiative 2008

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1. Purpose of funding, legal basis

In its research initiative, E.ON will invest around €60 million in international research projects until 2016. The funding program was launched in 2007 and supports universities and institutes in a variety of research topics relevant to the energy business.

The focus of the current project funding, providing approx. €6 million, is **“Application of Nanotechnology in the Energy Business.”** E.ON believes that this investment into research, in order to meet future challenges in energy technology, is its responsibility as the world’s largest investor-owned energy service provider. Consequently, E.ON will not claim ownership of the results of the research. All the results arising from the project are the property of the funding recipient.

2. Subject of the funding

E.ON’s second call for proposals recognizes that research focused on novel, more powerful and cost-effective uses of nano-technology could have significant applications in the field of energy production, conversion, storage and use. A broad range of research projects will be considered although it is essential that in all proposals, the relevance and anticipated function of the research results in the energy business is clearly outlined. Only applied research in this specific research area will be funded and technological applications as a result are appreciated.

The topics outlined below give an indication of the types of application of research that would be eligible for the call including but not limited to:

- **Production:** Will there be benefits for existing or novel energy production techniques (e.g. biofuel production or coal liquefaction) by using nanotechnology? To what extent will this research enable new techniques to become commercially viable? Would this project allow further efficiency improvements to be made in the rest of the energy supply chain?
- **Generation:** How will specific nanotechnology applications enable energy generation (e.g. efficiency improvements for renewable energy technologies or further developments in low-carbon power plants) to become more cost effective, operate at higher efficiencies and become less carbon-intensive? Improvements resulting from the research should relate directly to the generation method(s) it would improve, either existing or novel.
- **Storage:** How would the proposed application of nanotechnology deliver benefits for energy storage systems (e.g. hydrogen storage, natural gas storage or efficient and large-scale electricity storage solutions)? Why are developments in this specific storage area important? Could the research result in a commercially viable storage system? What would be the impact on the energy supply chain?
- **Transport and distribution:** Would the research with the proposed application of nanotechnology change the way energy is transported and distributed? Or does it improve the existing network (e.g. power lines capable of carrying significantly greater loads or highly efficient distribution infrastructure)?
- **End use efficiency:** How could your research change the way we use energy or make the use of energy more efficient (e.g. reduction of energy consumption, decentralized power generation or electric vehicles)? What is the expected extent of the impact of your development?

All project proposals must clearly outline the benefit of the nanotechnology application to the energy business.

3. Funding recipients

Universities and noncommercial research facilities (outside of universities) are entitled to apply. Applications will be accepted from any country around the world. Private persons will not be funded.

The funds may not be used to fill gaps in budgets nor may they cause other sponsors to reduce their grants correspondingly. Applications should not be submitted for the purpose of:

- Topping up travel assistance or scholarships of third parties
- Testing and development work on problems that have already been solved scientifically
- Evaluating patents
- Increasing basic budgets

4. Preconditions for funding

The applicant must have the necessary specialist qualifications demonstrated by relevant previous achievements and a sufficient capability to execute the project.

Association projects, particularly with multinational participation, are welcome. Partners in association projects are to declare their cooperation in an agreement prior to the decision on funding.

The funding recipient should demonstrate that the best possible implementation of research results will be ensured. Therefore an implementation plan and a financing plan are to be provided with the application. The funding recipient is expected to achieve the implementation plan.

Previous or current funding relating to the research proposed for the E.ON International Research Initiative Call 2008 should be stated along with an indication of the significance of these third-party contributions.

5. Type, scope and amount of funding

The funding is granted on application; there is no legal entitlement to funding at all or to a specific amount. The forms published by the E.ON International Research Initiative must be used for the application.

The funding comprises 100 percent of the approved financing plan. Overpayments resulting after the conclusion of the project are to be returned without request. If third parties are to participate in the project financing, then the prior approval of E.ON must be obtained. The funding is reduced by the amount of third-party subsidies. In the case of third-party funding already stated in the application, approval is regarded as issued unless there are any other stipulations in the funding agreement.

A non-refundable subsidy can be granted as project funding for the execution of the project over a period of up to three years. Extension to a total funding period of five years is possible in exceptional cases after reapplication and review of the work results submitted by an E.ON expert. Deviations from the duration require the prior approval of E.ON.

The projects completed by universities or institutes who are not members of a consortium should employ between one and three scientific employees. The amount of funding depends on the scope and personnel level of the project. Only approved, eligible project expenditure will be funded.

Personnel expenses including social security charges and other statutory costs, expendables, travel costs, expenditure for the awarding of contracts to third parties as well as for the procurement/manufacture of objects for the project can be funded. Personnel expenditure is to be stated in the amount of prevailing country-specific remuneration.

Please provide details of any expenditure for infrastructure performances (so-called overheads) as these may be considered for funding in the 2008 call. However, we reserve the right to decide how much of these overhead costs will be funded.

6. Other provisions for funding

The E.ON International Research Initiative places value on funding recipients making their results accessible to the public preferably via the usual specialist technical journals. Any publication by the funding recipient is to refer to the support by the E.ON International Research Initiative. Furthermore, E.ON would also like to be mentioned in information distributed to the general public regarding the projects it funds. E.ON requests cooperation in this matter.

The E.ON International Research Initiative plans to invite funding recipients to an annual symposium and asks them to present an update regarding the progress in their projects.

7. Application and evaluation process

7.1 Application

The funding measures are supported by:

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40479 Düsseldorf, Germany
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F +49 2 11-45 79-14 22
research_initiative@eon.com

Project applications can be submitted to the E.ON International Research Initiative based on this announcement, from **March 31, 2008 to May 30, 2008**. We cannot guarantee that any applications submitted after this date will be considered. Only applications in English will be considered.

The earliest possible start date for research projects is **October 1, 2008**. This should be taken into account in the project schedule provided in the project application.

The application comprises:

- 1) A standardized application to be generated using the electronic application assistant (project application). If the work is to be carried out in a consortium, each partner should make their own funding application.
- 2) A comprehensive project description (project description).
- 3) In the case of a consortium, a cooperation agreement will need to be drawn up prior to signing of the funding agreements (cooperation agreement).

All sections of the application are to be submitted in both electronic and paper form.

The electronic application assistant, funding agreement as well as funding provisions can be obtained from: www.eon.com/research_initiative. The electronic application assistant must be used to prepare the formal application for funding.

The project description should be no longer than 20 pages and must contain a brief, purposeful project title and be organized as follows:

- Abstract (maximum 1 page)
- Research content (maximum 14 pages)
- Candidate/Consortium experience (maximum 2 pages)
- Project management (maximum 3 pages)

7.2 Evaluation, selection and decision criteria

The evaluation of the project application based on the submitted documents will be weighted as follows:

- Research content: 50%
- Candidate/Consortium experience: 25%
- Project management: 25%

The project description must address the following evaluation criteria (with the weighting of these summary criteria given in brackets) and therefore should be organized accordingly. Further explanation of the evaluation criteria have been detailed below.

• Abstract

An overview of the entire project proposal, including the aims of the project, the designated scientific approach, the expected results and the impact through the project.

• Research content (50%)

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| <i>Scientific quality</i> | Outline of the problem, current status of the science and technology specific to the proposed research topic, possible solutions, a description of the specific project aims and the expected outcome of research results in relation to solving this problem. |
| <i>Practical applicability</i> | A detailed, convincing description of the benefits of applications which would result from research specifically in the energy business. |
| <i>Originality of research</i> | The extent to which this project proposal is a new approach to research in this area. What is the likelihood that progress will be made soon in this area by another researcher? |
| <i>Benefit for society, environment and future energy supply</i> | How significant is the contribution of this project to solve environmental challenges? Is there a positive benefit for society and future energy supply through this project? |
| <i>Impact on the energy business</i> | Will this research improve current methods used in the energy supply chain or enable a new approach? What is the scope of the applications of this research in the energy business? |
| <i>Contribution to the field of research</i> | Will this project accelerate research activities in this area? Do you expect that it could take research in this area to the next level? |

• **Candidate/Consortium experience (25%)**

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| <i>Quality of project participant(s)</i> | } | <ul style="list-style-type: none"> • A summary of candidate's experience both generally and in the field of research proposed in this application. • A chronological account of recently concluded and current projects relating to the specific research topic. • Three papers published by the applicant (or a consortium member) determined by the candidate(s) to be of the most relevance and importance to the project proposal which demonstrate an excellent track record of successful research in proposed research area. • A link to the website(s) of the researcher(s) or the university/institute(s) where possible. |
| <i>Experience of project participant(s)</i> | | |
| <i>Overall value of collaboration (where applicable)</i> | | |

• **Project management (25%)**

| | |
|--|---|
| <i>Project-related costs</i> | The funding amounts are to be submitted in agreement with the intended coordinator, partners and cooperation models are to be stated. |
| <i>Time and resource management</i> | A realistic Gantt diagram (work and time schedule) with milestones on a monthly basis should be produced. |
| <i>Overall degree of risk</i> | Outline of main obstacles that may prevent further development along with an indication of the risks involved and planned ways in which these will be overcome. |
| <i>Implementation of project results</i> | Planned measures for the scientific and economic implementation of the project results expected. |

Project applications are evaluated by international E.ON-internal experts and external scientists. The E.ON International Research Initiative maintains strict confidentiality regarding the evaluation. The final decision on funding of the projects is made by E.ON with consideration of the funds available. The announcement of selected projects is scheduled for the **beginning of September, 2008**. The selection results will be announced in writing.

The provisions for funding (www.eon.com/research_initiative) apply to the approval, payment and interruption of funding as well as for the verification and review of use as well as, if necessary, to the cancellation of the funding agreement and the return of the funding granted.

This agreement and the following are exclusively subject to the laws of the Federal Republic of Germany regarding its realization and in all its effects.