

This Expression of Interest was submitted in response to call EOI.FP6.2002

- 7<sup>th</sup> June 2002.

## **GREEN Q STANDARDS**

### **Green Quality Minimum Standards for Healthy Costeffective Ecobuilding in Europe.**

#### **1. NEED AND RELEVANCE**

The idea of the proposed integrated project is to focus at introducing healthy, cost effective, energy effective and sustainable ecobuilding in Europe. An area which there will be a very large demand for in the coming years in connection to aims of improving the economic and social development in Europe. There is also prospects of a very large external market for this technology in f.ex Russia, Asia and 3rd world countries.

It is aimed in the integrated project to initiate important quality oriented R&D and demonstration activities concerning ecobuilding and use of best available techniques on a European scale by initiating R&D activities, which will later be tested in connection to real building projects in two steps. First by full size prototype tests, which can be monitored in a realistic environment and improved before the developed technologies are implemented in real demonstration projects.

In connection to this it is the idea to focus on a new type of "value" building process which includes new performance specification and concept development building phases. And to cooperate with interested cities, builders, energy and architectural specialists and the building industry concerning implementation of new standards for high quality best available technologies in demonstration projects, e.g. in connection to a "green" urban management process

This integrated project will contribute to priority area 1.1.6.1 (sustainable energy systems) and will f.ex support the campaign for Take Off and implementation of RUE and RES policies in Europe. The project will help to better coordinate and defragment sustainability and RUE and RES oriented R&D in the building sector, increase the support for the area on an European scale and focus on efficient exploitation of R&D results into useful economic industrial and society benefits.

#### **2. BACKGROUND, SCALE OF AMBITION AND CRITICAL MASS**

An important conclusion, from realised targeted projects in the building sector like the European Housing Ecology Network from 1993-1998 and the European Green cities from 1996-2001, has been that it is important to ensure focus on quality demands based on performance indicators, performance requirements/recommendations and check systems, including use of key figures and introduction of "green cities" quality levels, if a real optimised global solar energy design shall be possible to obtain in practice, see f.ex ([www.europeangreencities.com](http://www.europeangreencities.com)).

The new Energy Performance Directive (EPD) from the EC will now be introduced. This means that there will be a large market concerning energy savings in connection to building projects but there is at the same time no special support for use of innovative energy saving measures in connection to this.

This also illustrates the need for starting up an ambiguous process of involving builders and cities, who already have an ambiguous energy and environmental policy, in a process of defining minimum standards and recommendations concerning sustainable solar low energy building.

If this should be done in an efficient way it will at the same time be important to involve other important partners like building component producers, contractors, energy specialist companies and architects in some kind of procurement partner network.

An effective approach will as mentioned be to initiate important quality oriented R&D and demonstration activities in cooperation with at least 100 different organisations in 19 different countries concerning ecobuilding and best available technologies. Here should be realised R&D activities, which will later be tested in connection to real building projects in two steps. First by full size prototype tests, which can be monitored in a realistic environment and improved before the developed technologies are implemented in real demonstration projects as a basis of introducing minimum quality standards and recommendations in connection to a concept of healthy, cost effective, energy effective and sustainable building in Europe.

Only by realising this project at an European level it will be possible to obtain the necessary critical mass for the envisaged research tasks and develop and introduce new best available technologies with new demands concerning performance requirements and quality measures.

When the mentioned R&D and demonstration campaigns has been realised agreements should be made on how to define benefits to support wanted innovative RUE and RES best available technology measures and to make “quality agreements” concerning this.

At the same time it is an important task to prepare building and rehabilitation projects in Europe which can exist for the next 100 years so they in addition to a low-energy design are prepared for future integration of PV-modules when these become a cost-effective option for the society.

### **3. ACTIVITIES, INTEGRATION AND EXPECTED RESULTS**

Below is shown how a workplan for an integrated project could look like.

Activity:

- 1 Project coordination/management.
- 2 Development of “value” building process.
- 3 Development of quality figures and performance specifications and requirements in connection to integrated sustainable solar energy planning as part of a Green City urban management.
- 4 Development of an optimised energy supply with reduced losses for heating, cooling incl. polygeneration, solar assisted district heating and cooling and cost effective solar thermal systems. Besides focus on demand and supply optimisation.  
(Besides as a medium to long term oriented activity focus on PV assisted heatpumps and hydrogen and fuelcell technologies).
- 5 Development of healthy energy efficient building concepts based on healthy materials and improved ventilation as basis of a good indoor air climate, optimised building envelope systems incl. glazing system, daylighting and bioclimatic building and intelligent and user oriented EMS.
- 6 Development of a “value” building process with focus on sustainable, zero and low energy building design, global quality building process, optimised life-cycle costs, architectural competitions with focus on optimised costs and energy and environmental quality demands.
- 7 Development of optimised principles for PV integration in buildings.
  - Optimised building integrated grid connected PV systems.
  - CO<sub>2</sub>-neutral building design using PV e.g. for ventilation, lighting and the whole building.
  - PV implementation plans in cities.
- 8 Campaigns for new standards for optimised healthy cost effective and sustainable solar low energy “quality” ecobuilding as basis of future CO<sub>2</sub>-neutral building in Europe.
- 9 Introduction of results from R&D projects into preliminary recommendation and minimum standards for different regions of Europe.
- 10 Definition of important demonstration projects f.ex:
  - 10.A: Development and implementation of new standards for healthy solar low energy building based on a total economic life-cycle cost optimisation.
  - 10.B: Implementation of new standards for solar assisted district heating and cooling also in combination with solar low energy building and use of polygeneration energy systems (e.g. using large solar collector fields in combination with absorption cooling).
  - 10.C: Implementation of new standards for sustainable solar low energy quality ecobuilding which at the same time is prepared for a future CO<sub>2</sub>-neutral building design based on building integrated PV-modules.
  - 10.D: Development and implementation of new standards for integrated solar energy planning in practice, including focus on bioclimatic architecture and green urban management.
- 11 Realisation of demonstration projects and campaign activities incl. prior testing activities on site, based also on “green city” sustainable urban management and introduced minimum standards.
- 12 Commissioning on an European scale.
- 13 Monitoring and evaluation incl. performance verification process.
- 14 Dissemination and promotion activities.

Integrated activities will include establishment of minimum quality standards, joint training and studies, exchange of employees, workshops to identify in details the integrated approach, establishment of shared web-sites, databases and E-learning systems towards the construction industry, users, decision makers and other partners, making guidelines and launching calls for proposals by the consortium to invite new members to undertake specific tasks.

#### 4. EXPERTISE NEEDED

In the identification of the core group for the integrated project it has been the ambition to involve important organisations and individuals in Europe which has experience with practical realisation of sustainable solar low energy building. Besides it is the idea to include a broad range of organisations like builders, cities, housing associations, energy specialists, energy agencies, architects, energy suppliers, building research institutes and universities.

The core group of the project could consist of the following 27 partners who have been involved in the preparation of the EOI and have been willing to sign a letter of intent, in all representing 19 European countries.

Country	Partner organisation	Contact person	Area of excellence	Role in project
Denmark	Urban Renewal Copenhagen	Jacob Klint	Urban Renewal Company involved in PV implementation plans.	Coordinator.
	Cenergia Energy Consultants, Green City Denmark, SolarVent.	Peder Vejsig Pedersen Jens Frendrup Klaus Boyer	Energy specialist company. Training org. for RUE&RES. Architect/energy specialist.	Management team. Core partner Core partner.
	Ecofys GmbH	Frank Wouters	Energy specialist, sustainable buildings.	Management team.
The Netherlands	Bear Architects	Tjerk Reijenga	Architect company.	Core partner.
United Kingdom	Perthshire Housing Association	John Kernahan	Scottish housing association.	Core partner.
Ireland	UCD-Energy Research Group	John Goulding	University.	Core partner.
Switzerland	Enecolo	Peter Togweiler	PV-specialist company.	Core partner.
Austria	SIR	Helmut Strasser	Energy specialist organisation.	Core partner.
France	OPAC38, CSTB,	Michel Gibert Dominique Caccavelli Pascal Boulanger	Housing association. Energy specialist.	Core partner. Management team.
	GENEC,		PV specialist comp.	Core partner.
	LOGIREP/Delphis	Christian Giuganti/Francis Deplage	Housing Associations.	Core partners.
Sweden	EFEM/Göteborg2050	Hans Eek	Architect.	Core partner.
Poland	NECA-NAPE	Aleksander Panek	Energy specialist institute.	Management team.
Lithuania	EBO/local housing association	Erik Christiansen	Part owner of housing association, chairman of EHEN.	Core partner.
Italy	Metec, Conf Cooperative	Salvatore Cali Roberto Ballarotto	Energy specialist. Cooperation of housing associations.	Core partner. Management team.
Hungary	EMI	Karoly Matolcsy	Building Research institute.	Core partner.
Finland	Ramse	Antero Punttila	Energy company.	Core partner.
Greece	University of Athens (NKUA), City of Volos, CRES	Mats Santamouris	Prof. – solar energy specialis City.	Management team.
		Georgios Gangas Eugenia Lazari	RES specialist.t	Core partner. Core partner,
Portugal	Tirone Nunes SA	Ken Nunes	Bioclimatic architect company	Core partner.
Norway	NTNU	Anne Grete Hestnes	Prof. – solar energy specialist, ISES chairman	Core partner.
Belgium	Zonnige Kempen	Luc Stijnen		Core partner.
Spain	Pich-Aguilera,	Filipe Pich Aguilera	Bioclimatic architects.	Core partner.
	Cimne, Trama TecnoAmbiental	Jordi Cipriano, Oriol Gavaldà Torrellas	Simulation specialist. PV-specialist company.	Core partner. Core partner.

Start of R&D projects could e.g. be in the summer of 2003 and with the first useful results in the summer of 2005. Based on this, useful demonstration and design work for these could start e.g. from 2004 and with realisation in 2007 and finalised monitoring in 2008.

## **5. PROMOTION OF RESULTS**

Promotion of the results and further networking will be obtained by linking the proposed integrated project to existing network cooperations like the European Green Cities ([www.europeangreencities.com](http://www.europeangreencities.com)) and the European Housing Ecology Network ([www.ehen-europe.net](http://www.ehen-europe.net)), especially in relation to dissemination work. Also the Energy Research Group, UCD from Ireland is a very relevant partner concerning dissemination f.ex by help of websites. There will also be a special focus on training activities which will be coordinated by Green City Denmark.

In general it is aimed to promote sustainable measures and green financing by help of the GreenBuild energy and environmental point system which can be found in an interactive version in the website: [www.greenglobal21.com](http://www.greenglobal21.com). Cooperation initiatives will be made to involve industry, research, builders and cities organisations incl. regional development organisations

## **6. MANAGEMENT**

The idea is to establish a core group of 27 project partners representing the 19 involved European countries. It is intended to establish a steering group with representation from all core partners which will be overall responsible for the integrated project.

As administrative coordinator is suggested the Urban Renewal Copenhagen company and working with a management team which also should include Cenergia, Ecofys, CSTB, Neca, University of Athens and Conf Cooperative.

Besides it is the idea to establish a management group for both R&D activities and demonstration activities which can be responsible for day to day project coordination.

For each local project a list of other main partners will be identified. This will include producers of best available technologies, RTD performers, architectural/energy specialist organisation and cities and builders. From the enclosed list of connected partners it is aimed to identify at least 100 organisations to be directly involved in the different mentioned R&D activities in connection to the integrated project. Besides a list of other connected partners can also be identified.

It is intended to present the Green Quality Standards proposal and a large number of relevant documents in connection to this in the European Green Cities network website: [www.europeangreencities.com](http://www.europeangreencities.com). Here it is aimed to present at least 200 prospective connected partners in total for the project from 19 different countries in Europe. And it is also the idea to update with new relevant information from the core partners.

Start of R&D projects could e.g. be in the summer of 2003 and with the first useful results in the summer of 2005. Based on this, useful demonstration and design work for these could start e.g. from 2004 and with realisation in 2007 and finalised monitoring in 2008.

It is the idea to directly involve at least 50 different producers of best available building components as stake holders in the project, and SME's are already involved in the core group of the consortium and other will be involved f.ex in high-tech R&D, as testbeds for BAT's etc.

In connection to f.ex 25 realised demonstration projects which include initial R&D activities so they have a total budget up to 2.4 MEURO each equal 60 MEURO in total eligible costs we expect an EU-funding of at least 35% equal to 21 MEURO. Besides medium to long term R&D activities with a budget of up to 20 MEURO concerning PV, hydrogen and fuelcell technologies can also be realised with upto 50% EU-support. Financing in excess of the one from the EU can be obtained partly from national funding and partly from involved builders, producers and similar partners.

**List of connected partners in 14 out of 19 countries in relation to the Green Quality Standards project which has been proposed by the core partners of the project in these countries.**

- Divided into: **A.** Producers of best available technologies:  
**B.** RTD performers (like universities):  
**C.** Architects&Energy specialist companies:  
**D.** Municipalities:  
**E.** Builders:

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
<b>DENMARK</b>	Rockwool, Vitral, Dasolas, Icopal, Ecovent, Gaia Solar.	Solar Energy Centre-TI, DTU, Danish Building Research Institute.	Cenergia Energy Consultants, Nielsen&Rubow, Danish Centre for Urban Renewal.	Copenhagen, Frederiksberg, Århus, Roskilde, Kolding.	KAB, DB, Fruehøjgård, FSB, AlmenBo.
<b>GERMANY</b>	Bau Innovation, Schüco, Wagner&Co Solartechnik.	Niedrig Energie Institute GbR, Fraunhofer Gesellschaft.	Ecofys Gmbh, Post+Welters.	Gelsenkirchen, Köln.	Wilma Bau und Bauträger Gmbh, Ecomandant Gmbh.
<b>IRELAND</b>	Thermomax, Kollektaire	ERG-UCD (NUID), TDC (University of Dublin), DIT (Dublin Institute of Technology).	Various architectural and engineering practices specialising in energy efficient building design/retrofitting.	South Dublin County Council, Dublin Corporation, Dun Laoghaire Rathdown County Council, Fingal County Council, Cork Corporation, Cork County Council and various other municipalities.	Various municipalities and Commercial sector builders.
<b>SWITZERLAND</b>	E.Schweizer Metallbau AG, Solstis Sàrl, Flumroc.	Zürich, Lausanne, Several Technical High Schools.	Various Architects and Energi specialists	Zürich, Bern, Basel, Lausanne Geneva, etc.	Colt, E.Schweizer, Schmidlin, Glas Trösch.
<b>AUSTRIA</b>	Fa. AKS DOMA, Fa. Josko, several producers of biomass-boilers.	AEE-INTEC; arsenal research, TU-FRAZ/Institut für Wärmetechnik.	Arch. Simon Speigner, archsolar, Energie Tirol, Energieinstitut Vorarlberg, EVA.	Elixhausen, Grödig, St. Johann, Neumarkt, strasswalchen, Wals-Siezenheim, Mariapfarr, Weissbach, Hallein, St. Koloman, Salzburg.	GSWB, Heimat Österreich, "die salzburg", experta
<b>FRANCE</b>	Clipsol T21, PHOTOWATT, GIORDANO.	CSTB, CLER, ADEME, R&D, technology and test centre..	Bureau d'études SIDLER, ADRET.	Parc Naturel Regional du Vercors, ECHIROLLES	Opac38, Opac69, Opac13, Amicus Group, A.T.C. Turin, CONF COOPERATIVE FEDERABITAZIONE
<b>SWEDEN</b>	Överums Fönsterfabrik, Teknoterm, Temovex.	Chalmers Byggnadsfysik, Energy and Building Design Lunds University.	EFEM arkitektkontor.	Göteborg.	Familjebostäder, Egnahemsbolaget.
<b>POLAND</b>	ATLAS.	Warsaw University of Technology.	NAPE.	PIASECZNO, one municipality of WARSAW.	EKO-DOM.
<b>ITALY</b>	Solarwall Italia Srl, Siemens Solar Italia, Chromagen Italia, Wiessmann Italia.	Politecnico of Torino.	Architect Fabio Nonis, SEA Energia-Aosta, 3E, GOLDER Associates.	Provincia di Torino, Municipality of Sulmona, Regione Abruzzo.	ATC Torino, ATER L'Aquila, ALER Brescia.
<b>HUNGARY</b>					
<b>FINLAND</b>	Fenesta Oy.	VTT Technology.	RAMSE Consulting Oy.	City of Kuopio, City of Järvenpää.	NCC Puolimatka Oy AB.
<b>GREECE</b>	Techem Hellas A.E.	University of Athens.	N. Fintikakis and Partners.	Prefecture of Pieria.	AVAX Builders.
<b>PORTUGAL</b>		Universidade Nova de Lisboa, Universidade do Porto.	Tirone Nunes Arquitectura, Lda, Edsaco, Lda.	Municipality of Lisbon, Municipality of Porto.	Edificadora Luz & Alves, Lda, Alves Ribeiro, SA.
<b>NORWAY</b>	Hydro Building Systems, Glassbransjeforbundet.	SINTEF, Trondheim.	GASA Architects AS, Oslo.	Oslo, Trondheim, Grong.	AF Ragnar Eversen, Selmer Skanska.
<b>SPAIN</b>	ISOFOTON, TFM.	ESIUS, UPS, FEUGA.	TRAMA TECNOAMBIENTAL, AUIA.	ICAEN, MOLLET DEL VALLÉS, DIPUTACION DE HUELVA, LLIÇÀ D'AMUNT.	INCASOL, ADIGSA.