

This Expression of Interest was submitted in response to call EOI.FP6.2002
– 7th June 2002.

GREEN Q RENOVATION
Green Quality Healthy Costeffective and Sustainable Renovation 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 rehabilitation 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 f.ex in Russia, Asia and 3rd world countries.

Several demonstration projects have already been realised in Europe concerning integration of RUE and RES in connection to renovation and rehabilitation projects, and in the best cases it has been possible to f.ex reduce the energy use for heating with 50% compared to the normal renovation standard. Since the renewal of the existing building stock is only around 2% per year there exist an enormous potential for improvement in energy savings and introduction of renewables in connection to the needs for rehabilitation of existing building areas in Europe. This will be even more relevant when the prospective new EU members states will join the EU. And with the right initiatives which could also be coupled with the Energy Performance Directive from the EC it could be possible to obtain a large impact on the high amounts of investments which will be necessary to improve the building stock in f.ex the East European countries, but also in many areas in both West and South European countries.

The aim of this integrated project should be to develop minimum standards and recommendations in connection to healthy, cost effective, energy efficient and sustainable rehabilitation and to agree on actual quality agreements in this field. It is here the intention to realise a common action that can make a real difference in Europe.

It is aimed in the project to initiate important quality oriented R&D and demonstration activities concerning ecorehabilitation and best available retrofitting techniques on a European scale by initiating R&D activities, which will later be tested in connection to real renovation 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.

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).

In the new Energy Performance Directive (EPD) from the EC it is mentioned that it should be used also for renovation projects if the investments are higher than 25% of the value of the involved property. This means that there will be a large market concerning energy savings in connection to rehabilitation but there is at the same time no special support for use of innovative energy saving measures in connection to this.

A solution to this could be to start a process of involving builders and cities, (town planners), who already have an ambiguous energy and environmental policy, in a process of defining minimum standards and recommendations concerning sustainable and energy efficient rehabilitation.

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, architects and engineers in some kind of procurement partner network.

An effective approach here could as mentioned be to initiate important quality oriented R&D and demonstration activities concerning ecorehabilitation and best available retrofitting techniques on a European scale by initiating R&D activities, which will later be tested in connection to real renovation 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.

When the mentioned 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.

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.

3. ACTIVITIES. INTEGRATION AND EXPECTED RESULTS

Proposed activities of the integrated project

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

Activity

- 1 Project coordination/management.
- 2 Development of performance requirements and quality figures check systems and a quality model.
- 3 Work on a “value” rehabilitation process incl. focus on life-cycle costs optimisation.
- 4 R&D and demo project: Development of an optimised energy supply with reduced losses and demand and supply optimisation.
- 5 R&D and demo project: Development of a healthy energy efficient rehabilitation concept.
- 6 R&D and demo project: Use of renewable like solar heating/cooling and PV as basis of a CO2 neutral retrofit building design and sales of green electricity also in connection to solar city plans.
- 7 R&D and demo project: Optimised polygeneration and solar energy assisted district heating/cooling in combination with solar low energy renovation.
- 8 R&D and demo project: Development and implementation of new standards for second generation thermomodernisation with focus on healthy solar low-energy rehabilitation, including optimised energy supply systems and based on a total economy optimisation of life cycle costs.
- 9 Development of minimum standards.
- 10 Implementation of demonstration projects and campaign activities.
- 11 Monitoring and evaluation of demonstration projects.
- 12 Dissemination activities and agreement on quality demands..

Integrated activities can include:

1. Common R&D work on quality figures and quality models, and performance specifications and requirements.
2. Common R&D work on optimised energy supply with reduced losses and demand and supply optimisation.
3. Common R&D work on healthy rehabilitation concepts based on healthy materials and improved ventilation as basis of obtaining a good indoor air climate together with energy savings.
4. Documentation of life-cycle costs optimisation rehabilitation projects following a “value” oriented rehabilitation process.

To achieve this a range of calculation exercises and workshops will be arranged and an E-leaning quality manual will be developed towards architects and decision makers including information on life-cycle costs analysis. Performance requirements and initial minimum standards will be defined for selected areas, and differences between calculated and monitored results will be identified by help of a Green Building Quality Model. Quality inspection procedures will be defined. Recommendations on performance and quality requirements will be defined for different areas as background of ensuring a healthy Eco rehabilitation design. Based on this suggestions on minimum energy and environmental standards will be made and later agreed on by involved builders, cities and other partners.

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 and rehabilitation. 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.

<u>Country</u>	<u>Partner organisation</u>	<u>Contact person</u>	<u>Area of excellence</u>	<u>Role in project</u>
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.
Germany	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 Toggweiler	PV-specialist company.	Core partner.
Austria	SIR	Helmut Strasser	Energy specialist organisation.	Core partner.
France	OPAC38, CSTB, GENECE, LOGIREP/Delphis	Michel Gibert Dominique Caccavelli Pascal Boulanger Christian Giuganti/Francis Deplage	Housing association. Energy specialist. PV specialist comp. Housing Associations.	Core partner. Management team. Core partner. 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 specialist	Management team.
		Georgios Gangas Eugenia Lazari	City. 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.

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) and the European Housing Ecology Network (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. 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. 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 up to 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:

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
DENMARK	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.
GERMANY	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.
IRELAND	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.
SWITZERLAND	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.
AUSTRIA	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
FRANCE	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
SWEDEN	Överums Fönsterfabrik, Teknoterm, Temovex.	Chalmers Byggnadsfysik, Energy and Building Design Lunds University.	EFEM arkitektkontor.	Göteborg.	Familjebostäder, Egnahemsbolaget.
POLAND	ATLAS.	Warsaw University of Technology.	NAPE.	PIASECZNO, one municipality of WARSAW.	EKO-DOM.
ITALY	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.
HUNGARY					
FINLAND	Fenesta Oy.	VTT Technology.	RAMSE Consulting Oy.	City of Kuopio, City of Järvenpää.	NCC Puolimatka Oy AB.
GREECE	Techem Hellas A.E.	University of Athens.	N. Fintikakis and Partners.	Prefecture of Pieria.	AVAX Builders.
PORTUGAL		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.
NORWAY	Hydro Building Systems, Glassbransjeforbundet.	SINTEF, Trondheim.	GASA Architects AS, Oslo.	Oslo, Trondheim, Grong.	AF Ragnar Eversen, Selmer Skanska.
SPAIN	ISOFOTON, TFM.	ESIUS, UPS, FEUGA.	TRAMA TECNOAMBIENTAL, AUIA.	ICAEN, MOLLET DEL VALLÉS, DIPUTACION DE HUELVA, LLIÇÀ D'AMUNT.	INCASOL, ADIGSA.