EUREKA PROJECT E!802 - EUROCARE ENACCOUNT

1. General description

Project	E! 802 - EUROCARE ENACCOUNT	**Status**	Finished - 11-JUL-1995
Title	**Life Cycle Of The Environmental Impact And Energy Flow Of Building Materials**		
Class	Sub-Umbrella	**Technological area**	Environment
Start date	01-JUN-1992	**End date**	01-JAN-1995
Duration	31 months	**Total cost**	0.53 Meuro
Partner sought	No		

Summary The Main Objective Is To Utilise A Life Cycle Analysis Of Different Building Materials In Developing Common Methods For The Investigation Of Their Total Energy Consumption And Environmental Impact.

Budget and duration

Phase	Budget(Meuro)	Duration (Months)
Definition phase	0.08	9
Implementation phase	0.45	22
Total	**0.53**	**31**

Member contribution

Member	Contribution	Position	Since
Norway	**81.00%**	**Notified Finished**	**11-JUL-1995**
Finland	19.00%	Notified Finished	11-JUL-1995

Participants

Company	Country	Type	Role
Norwegian Building Research Institute (Byggforsk)	**Norway**	**Research Institute**	**Main**
Norsk Hydro A/S (Porsgrunn)	Norway	Large company	Partner
Vtt/Building Material Laboratory Technical Research Centre Of Finland	Finland	Research Institute	Partner
Norsk Leca A/S	Norway	SME	Partner
Norcem Cement A/S	Norway	Large company	Partner
Moelven Treindustri Gruppen A/S	Norway	SME	Partner
Norske Skog A/S Plater	Norway	SME	Partner
Hydro Aluminium Extrusion Group (Trondheim)	Norway	Large company	Partner
Rockwool A/S	Norway	SME	Partner
Glava A/S	Norway	SME	Partner
Norsk Celluloseisolasjon A/S	Norway	SME	Partner
Fundia Norsk Jernverk A/S	Norway	SME	Partner
Protan A/S	Norway	SME	Partner

Participants

Company	Country	Type	Role
Norgips A/S	Norway	SME	Partner
H-Produkter A/S	Norway	SME	Partner
Platindustrieforbundet V/Bjoern Vik	Norway	Governm./Nat. Admin.	Partner

2. Project outline

Project description

Developing a common system definition on:
1) Energy:
In order to survey the sources, types and quantities of energy involved for the building materials. For this project the total life cycle, from the excavation of raw materials, the material processes through the building construction is of interest. If EC standards along the same line of thought exist, they will be incorporated and used.
2) Environmental Impact:
In order to survey the sources and quantities of environmentally damaging discharge caused by the building industry, the project will test "environmental impact parameters" such as CO2, NO2, SOx in addition to 2-3 sources of pollution specific for each building material.
3) Resources:
In order to survey the resources and quantities of total resources involved in the production process, and the waste product caused by it. Developing a common platform for understanding the problems in question and "project system definition".
4) Developing common methods for further research:
Together with industrial partners, and in cooperation with other international research institutes, the project will develop methods to register today's status for the industry processes. These methods must be comparable for different products and processes and must represent standards that both domestic and the international industry communities will agree to use.
5) Collecting appropriate data:
Developing relevant data to be used in designing buildings. Selecting and specifying buildings to measure the total environmental impact and energy flow of the building materials used.
6) Presentation:
Developing ways to present the findings in order to gain a common understanding in different professional environments. Establishing suitable units.
7) Total life cycle audit:
Undertaking the task of analysing 2-4 different building types and running complete "Environmental impact and energy flow" audits.

Technological development envisaged

Project results and their future use. The project results will be of interest to the following groups:
In general:
Common methods for measuring the use of energy and resources during different phases and total life span of a building. National and international cooperation between research centres in developing and refining databases and tools for interpreting data.
Industry:
The building industry participants clearly see possibilities in developing advantages by focusing

attention on their own environmentally strong lines and areas of improvement as to:
* the process of production where existing projects can be improved as regards the use of resources and energy, and the impact of the production process on the environment;
* product modifications and development where existing products can be modified and improved and new improved products can be developed in preparation for future recycling;
* marketing by developing an active and reliable "ecology profile", by developing tools for product "Energy and Environmental labelling".
This may result in the reconstruction of a strong domestic market for the building and construction industry through the development of environmental know-how and interest and thus a competitive export industry.

Markets application and exploitation

By focusing on energy, resource allocation and environmental impact, consultants, designers and architects will possess new tools in the design process. The choice of materials can be decided on by employing energy, resources and environment as new design parameters in addition to traditional design parameters. This again will have an impact on how future buildings will look and how they are used (and recycled) and thus represent a major contribution towards developing future architectural traditions, both nationally and internationally.
The project results will provide the authorities with the professional background for:
* developing legislation and regulations, for the building and construction industry
* future local and national energy - and environmental policy.
The project results will provide the professional background for institutions approving and certifying products and component parts where energy and environmental aspects play an increasingly prominent part.
This in turn will define national and international parameters for "Energy and Environmental labelling" of building and construction products.
The future will see continuous collaboration with industry in developing processes and products for building components and systems.
This will also include automatic, electronic control components for monitoring energy and environmental conditions during building use.
In Europe by building companies, building material producers, public administration, research programmes.

Project codes

BSI

J	energy technology
JBG	energy conservation
RBJ.D	building conservation
RXH	construction materials
ZIB	legislation

NACE

3. Main participant

Company	**Norwegian Building Research Institute (Byggforsk)** Forskningsveien, 3b 0314 Oslo Norway Tel +47 22 96 55 00 Fax +47 22 96 57 25 www.byggforsk.no
Contact	**Dr. Ing. Sverre Fossdal** Senior Researcher Tel +47 22 96 55 43 Fax +47 22 96 57 25 sverre.fossdal@byggforsk.no
Organisation type	Research Institute
Participant role	Main

Contribution to project

Responsible research body in connection with the Norwegian side of the project. Member of the steering group.

Expertise

NBI is a public institute serving central and local authorities, industry, consultants and members of the public. It has for many years acted as adviser and consultant to manufacturers, suppliers and users of building materials and components. As a result of this experience, the Institute now offers a range of services aimed at improving the quality of buildings and assisting manufacturers to develop and market their products. Organisation activities: NBI is the national R & D centre for the building and construction industry in NORWAY. The Institute works within the fields of building technology, technical installations, energy, climate and physical environment, the building process, user requirements and economy. It is active in ensuring that the results of building research are made available to the Industry in practical form.

4. Partner

Company	**Norsk Hydro A/S (Porsgrunn)** 3901 Porsgrunn Norway Tel +47 35 56 24 54 Fax +47 35 56 28 29 www.hydro.com
Contact	**Dr. Ing. Bjoern Roar Nilsen** Manager

Tel
Fax

Organisation type Large company
Participant role Partner

Contribution to project

Life cycle analysis in general. Life cycle analysis for PVC products.

Expertise

Covers all aspects of PVC processing and finished articles, including environmental matters and life cycle analysis. Organisation activities: Petrochemical Division: producer of PVC, fertilizers, Al and Mg, oil and gas.

4. Partner

Company **Vtt/Building Material Laboratory Technical Research Centre Of Finland**
Kemistintie, 3
020 44 Vtt
Finland

Tel +358 9 456-1
Fax +358 9 456 7004

www.vtt.fi

Contact **Lic. Tech. Tarja Hakkinen**
Senior Research Scientist

Tel +358 9 415 1561
Fax +358 9 415 6710

Organisation type Research Institute
Participant role Partner

Contribution to project

The environmental and health effects of the most important building materials and their production processes will be investigated on the basis of life cycle systematics.

Expertise

Main activities are the research and product development related to new applications for concrete, organic and composite materials, manufacturing technology and durability and repair problems. Organisation activities: government organisation with 33 laboratories, whose main tasks are technical R & D work either on its own initiative or in cooperative projects and contract work. In addition, VTT's important tasks are

technology transfer in connection with R & D development operations and testing.

4. Partner

Company	**Norsk Leca A/S** Risloekka, 0614 Oslo Norway Tel +47 22 88 77 00 Fax +47 22 64 54 54
Contact	**Mr. Arne Monsen** Quality Manager Tel +47 22 88 77 00 Fax +47 22 64 54 54
Organisation type	SME
Participant role	Partner

Contribution to project

Expertise

4. Partner

Company	**Norcem Cement A/S** 3950 Brevik Norway Tel +47 35 57 20 00 Fax +47 35 57 17 47
Contact	**Mr. Oevind Hoeidalen** Research And Development Leader Tel +47 35 57 20 00 Fax +47 35 57 14 00
Organisation type	Large company
Participant role	Partner

Contribution to project

Long term objectives are to promote concrete as a competitive construction material. In this respect, the concrete structures life cycle is considered a major issue (cradle to grave). Member of the steering group.

Expertise

Has played an important role in promoting Norwegian concrete R & D. Support has been given to major national R & D programmes relating to concrete technology. In this respect, NORCEM R & D's development of cement for offshore oil platforms and oilwell cement has contributed to the successful development of the offshore oil industry. NORWAY is considered to be amongst today's world leaders in the area of concrete technology. Organisation activities: has taken part in the upgrading of the two existing cement-producing facilities in NORWAY. The modernisation of the two siter has resulted in two of the most modern cement plants in Europe, particularly in the field of environmental and energy efficiency.

4. Partner

Company **Moelven Treindustri Gruppen A/S**
2391 Moelv
Norway

Tel +47 62 34 71 26
Fax +47 62 36 90 88

Contact **Mr. Rolf Bergsodden**

Tel
Fax

Organisation type SME
Participant role Partner

Contribution to project

Expertise

4. Partner

Company **Norske Skog A/S Plater**
(Not Available),
2435 Braskereidfoss
Norway

Tel +47 62 42 33 03
Fax +47 62 42 38 81

Contact **Mr. Richard Heiberg**

Tel
Fax

Organisation type SME
Participant role Partner

Contribution to project

Expertise

4. Partner

Company

Hydro Aluminium Extrusion Group (Trondheim)
Hoegskoleringen, 7
7034 Trondheim
Norway

Tel +47 73 59 33 90
Fax +47 73 59 33 80

Contact

Mr. Carsten Dreier

Tel
Fax

Organisation type Large company
Participant role Partner

Contribution to project

Expertise

4. Partner

Company

Rockwool A/S
Torshov, (Not Available),
0401 Oslo
Norway

Tel +47 22 18 20 80
Fax +47 22 15 91 78

Contact	**Mr. Svein Elvenes**
	Tel
	Fax
Organisation type	SME
Participant role	Partner

Contribution to project

Expertise

4. Partner

Company	**Glava A/S** Majorstuen (Not Available), 0301 Oslo Norway
	Tel +47 22 46 59 15 Fax +47 22 60 11 44
Contact	**Mr. Per Oodegaard**
	Tel
	Fax
Organisation type	SME
Participant role	Partner

Contribution to project

Expertise

4. Partner

Company	**Norsk Celluloseisolasjon A/S** (Not Available), 6770 Nordfjordeid Norway

Tel +47 57 86 11 33
Fax +47 57 86 06 49

Contact **Mr. Arne Krumsvik**

Tel
Fax

Organisation type SME
Participant role Partner

Contribution to project

Expertise

4. Partner

Company **Fundia Norsk Jernverk A/S**
8601 Mo
Norway

Tel +47 75 12 04 86
Fax +47 75 12 08 18

Contact **Dr. Oeystein Stroemnes**
Chief Engineer

Tel
Fax

Organisation type SME
Participant role Partner

Contribution to project

Expertise

4. Partner

Company **Protan A/S**

3002 Drammen
Norway

Tel +47 32 22 16 00
Fax +47 32 22 17 00

Contact **Mr. Arne W. Rebo**

Tel
Fax

Organisation type SME
Participant role Partner

Contribution to project

Expertise

4. Partner

Company **Norgips A/S**
Tangen, (Not Available),
3002 Drammen
Norway

Tel +47 33 77 11 95
Fax +47 33 77 13 10

Contact **Mr. Vidar Olsen**

Tel
Fax

Organisation type SME
Participant role Partner

Contribution to project

Expertise

4. Partner

Company	**H-Produkter A/S** Blindheimsbreivika, 6010 Aalesund Norway Tel +47 70 14 71 00 Fax +47 70 14 71 05
Contact	**Mr. Leif Hofseth** Tel Fax
Organisation type	SME
Participant role	Partner

Contribution to project

Expertise

4. Partner

Company	**Platindustrieforbundet V/Bjoern Vik** Bygdoe Alle, 8 0262 Oslo Norway Tel +47 22 55 39 88 Fax +47 22 55 66 90
Contact	**Mr. Bjoern Vik** Tel Fax
Organisation type	Governm./Nat. Admin.
Participant role	Partner

Contribution to project

Expertise