

Final report

Concrete for the Environment – a Nordic Network

The main objective was to establish a permanent Nordic Network that will create a common understanding of and formulation of criteria for sustainable concrete structures, promote the development and use of sustainable concrete structures and finally promote the use of concrete for the benefit of the environment

Milestones within year three have been fulfilled, i.e..

- Two network meetings, i.e. the 5th and the 6th in the network, have been held.
- The database with information about sustainable concrete structures.
- A newsletter has been made in June 2003.
- A seminar was held in Oslo November 2003.

More than 35 inputs have been filled in the project web, mainly from Sweden, Denmark and Norway. The project web gives an overview of activities in the Nordic countries related to sustainable concrete structures. It appears that the focus related to sustainable concrete structures is different in the different countries according to the table shown below.

Activity	Countries
Reduction of environmental impacts in cement production	All Nordic cement manufacturers
Green concrete technology	Denmark and Finland
Environmental declaration and LCI	Denmark, Norway and Finland
Use of industrial by-products	Sweden and Denmark
Glass concrete	Norway and Denmark
Integrated life cycle design	Sweden
Recycled concrete rubble	Norway and Iceland

The database can be used by the network members for other purposes, e.g. for the European network ECO-SERVE which amongst other activities will prepare a state-of-the-art of sustainable concrete structures in Europe.

Seminar in Oslo

11-12 November 2003 a seminar was held in Oslo called “Concrete – the sustainable construction material, Technical opportunities for the future”. The seminar was co-organised with the Norwegian Concrete Association. The seminar attracted approximately participants mainly from the Nordic countries, however also people from other European countries were present. There were altogether 40 presentations covering the following aspects:

- cement, binders and by-products for concrete production
- creative solutions – increasing service life and solving environmental problems with concrete
- replacing natural aggregates with crushed rocks or recycled aggregates
- Facts and misconceptions – the environmental impact of concrete

- Facing the environmental challenge – the approach in the concrete industry
- Environmental requirements, opportunities and limitations in specifications and standards

The seminar was successful measured from the number of participants (approximately 100), from the lectures given and from the discussions. The Norwegian Minister opened the seminar for Agriculture who presented his very negative opinion about concrete and the environment. His view is that the only sustainable construction material is wood. A review of the seminar has been published in the Norwegian periodic Byggeindustrien. All the presentations can be seen at www.byggforsk.no/default.aspx?DokumentID=1135. In addition an article for American Concrete International will be made.

In addition to the above achievements the network has formulated a project proposal based on a need for documenting the ability of concrete to take up CO₂ to be used in life cycle assessments and in environmental labelling. The project has been accepted by Nordic Industrial Fund for funding; however with a limited financing of 30 % instead of the required 50 %. The cement industry in Norway, Sweden and Denmark has accepted to fund the outstanding financing, thus the project is started 1. December 2003 and the partners are except one partner from the network participants.

Nordic co-operation benefiting the Nordic countries

A subject that underlines the need of Nordic co-operation is the relatively poor environmental image of concrete which is sometimes seen in media and also amongst architects and building owners. It was clearly illustrated at the seminar in Oslo, November 2003 where the Norwegian Minister for Agriculture in his opening lecture promoted wood as THE sustainable construction material without any documentation for that statement.

The seminar showed that the Nordic countries are strong in matters related to sustainable concrete constructions. This is if all the skills from each of the Nordic countries are added. For one company or one country alone it is difficult to have a critical mass that can match e.g. other European countries and the US.

The benefit from the Nordic co-operation is underlined by the network participant's wish of being able to continue the network. Nordic Industrial Fund is asked for a minor financing to be able to continue the secretariat; otherwise the participating will be self-financed.

Evaluation of results

Pioneering in the exploitation of synergistic networks through innovative systems

The network has – as was intended – created contact and information exchange between the industries, institutes and universities that are members of the network. All the Nordic cement manufacturers are members of the network, as well as leading research institutes and universities which care about environmentally friendly concrete. Therefore it seems realistic that the network has led to an efficient and beneficial co-operative structure not only between the players in the network –but also between other players outside the network. The latter is due to the fact that workshops/seminars have been open for other players and that the newsletter has been distributed broadly. Furthermore, the network participant's wish to continue the network – as described in section 1, B), underlines the obtained co-operative structure.

Cutting-edge innovation in efficient infrastructure for small and medium-sized enterprises.

No small and medium-sized enterprises are members of the network. However, it is expected that improvements of the business climate and the opportunities for internationalisation for small to medium-sized enterprises will take place at later stages in the network. One of the goals of the project is to promote the development and use of sustainable concrete structures. Spreading of the positive results regarding this to the small to medium-sized enterprises has been through newsletters, seminars and through the participating institutes such as Danish Technological Institute, Cement och Betonginstituttet and SINTEF whose role it is to provide service to these stakeholders.

Models for management issues and business culture

The network has through a seminar and a newsletter worked on the improvement of the environmental image of cement and concrete that will lead to a strengthening of the competitive power on an international level. The seminar has attracted people from outside the Nordic countries and the newsletter has been distributed to people outside the Nordic countries. Furthermore, an article will be prepared from the seminar to be published in American Concrete International. Thus it is assumed that goodwill is achieved for the Nordic countries also from a global perspective.

Pioneering in areas which have been identified as being of importance for the Nordic skills market

The database with Nordic activities with concrete for the environment, the newsletter and the presentations at the seminar clearly illustrate the strong Nordic skill market regarding sustainable concrete constructions. It is the network member's impression from contact (conferences, other projects etc) to European and international players that the Nordic cement and concrete industry is in front regarding environmental issues.

List of contacts and addresses

Navn: Per Fidjestøl
Adr.: Elkem ASA Materials
Boks 8126 Vaagsbygd
N-4675 Kristiansand
Norge
Tlf.: +47 38 01 75 00
Fax: +47 38 01 49 70
E-mail: per.fidjestol@elkem.no

Navn: Mette Glavind
Adr.: Teknologisk Institut,
Byggeri, Beton
Postboks 141
Gregersensvej
DK - 2630 Taastrup
Tlf.: +45 72 20 22 20
Fax: +45 72 20 23 73
E-mail: mette.glavind@teknologisk.dk

Navn: Gisli Gudmundsson
Adr.: Icelandic Building Research Institute (IBRI)
Rb - Keldnaholt

112 Reykjavik
Island
Tlf.: +354 570 7300
Fax: +354 570 7311
E-mail: gudmundsson.g@rabygg.is

Navn: Einar Aassved Hansen
Adr.: SINTEF Civil and Environmental Engineering
Cement and Concrete
Richard Birkelands Vei 3
N-7034 Trondheim
Norge
Tlf.: +47 73 59 52 24
Fax: +47 73 59 71 36
E-mail: einar.hansen@civil.sintef.no

Navn: Jesper Sand Damtoft
Adr.: Aalborg Portland A/S, Research & Development Centre (RDC)
Rørdalsvej 44,
Postboks 165
DK - 9100 Aalborg
Tlf.: +45 98 16 77 77
Fax: +45 98 16 47 41
E-mail: jsd@aalborg-portland.dk

Navn: Jan Erik Jonasson
Adr.: Tekniska Högskolan i Luleå
Centrum for Högpresterande Cement
SE - 971 87 Luleå
Sverige
Tlf.: +46 920 91 350
Fax: +46 920 91 913
E-mail: jan-erik.jonasson@ce.luth.se

Navn: Oskar Klinghoffer
Adr.: Force Instituttet
Park Allé 345
DK - 2605 Brøndby
Tlf.: +45 43 26 72 55
Fax: +45 43 26 70 11
E-mail: osk@force.dk

Navn: Björn Lagerblad
Adr.: Cement och Betong Instituttet
Drott. Kristinas Väg 26
100 44 Stockholm
Sverige
Tlf.: +46 8 696 11 00
Fax: +46 8 24 31 37
E-mail: bjorn.lagerblad@cbi.se

Navn: Åsa Nilsson
Adr.: Cementa AB

Box 300 22
200 61 Limhamn
Sverige
Tlf.: +46 40 361 500
Fax: +46 40 158 624
E-mail: asa.nilsson@cementa.se

Navn: Per-Erik Petersson
Adr.: SP Sveriges Provnings- och Forskningsinstitut
Box 857
SE - 50 1 15 Borås
Tlf.: +46 33 16 50 00
E-mail: pererik.petersson@sp.se

Navn: Vladimir Ronin
Adr.: Tekniska Högskolan, Luleå
Centrum for Högpresterande Cement
SE - 971 87 Luleå
Sverige
Tlf.: +46 920 72 356
E-mail: vladimir.ronin@ce.luth.se

Navn: Erik Stoltenberg-Hansson
Adr.: Norcem
3950 Brevik
Norge
Tlf.: +47 355 72 000
Fax: +47 355 70 400
E-mail: erik.stoltenberg-h@norcem.no

Navn: Jacob Mehus
Adr.: Norges Byggeforskningsinstitut
P.B. 123 Blindern
Forskningsveien 3b
N - 0314 Oslo
Norge
Tlf.: +47 22 96 55 55
Fax: +47 22 96 57 25
E-mail: jacob.mehus@byggforsk.no

Navn: Jorma Virtanen
Adr.: Finnsementti Oy
21600 Barainen
Finland
Tlf.: +358 245 4567
Fax: +358 4542 6535
E-mail: jorma.virtanen@finnsementti.fi