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2012 ICDC International Congress on Durability of Concrete

The first in a series to come

Trondheim, Norway June 18-21, 2012

«This International Congress on Durability of Concrete is a continuation of the CANMET/ACI conferences under new sponsorship of SINTEF and the Norwegian University of Science and Technology, Trondheim, and organized by the Norwegian Concrete Association. Hopefully, this new series will be continued for the foreseeable future.»
Mohan Malhotra, Chair,
Committee for the organization of
International Conferences
formerly CANMET/ACI Conferences

In cooperation with

SINTEF
www.sintef.no

NTNU
Norwegian University of Science and Technology
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Organized by:

norwegian concrete association
www.betong.net

Concrete is the most important construction and building material of the planet with an estimated annual production in excess of 6 billion cubic metres. The objective of the congress is therefore to display how concrete will continue to ensure durable buildings and structures for a sustainable development globally.

Themes addressed by ICDC 2012

In order to ensure its objectives the congress addresses all factors affecting the durability of concrete structures divided into the following topics;

Durability of sustainable cement and concrete

Sustainable cements are cements made with less energy consumption, less emission of greenhouse gases and less consumption of virgin raw materials than ordinary Portland cement and include

- Binary blended cements
- Ternary blended cements
- Sulphoaluminate-belite cements
- Sulphoferrite-belite cements
- Alkali activated binders
- Any inorganic binder

Durability enhancing concrete admixtures

Concrete admixtures are any material added to concrete < 5% of cement mass exemplified by

- Plasticizers for reduced water content and porosity
- Air entrainers for frost resistance
- Hydrophobizing agents
- Corrosion inhibitors preventing rebar corrosion
- Lithium compounds mitigating AAR

Additions for enhanced durability of concrete

Additions are any material added to concrete in typical dosages > 5% of cement mass exemplified by

- Blast furnace slag
- Fly ash
- Silica fume
- Metakaolin
- Any other supplementary cementing material or pozzolan

Concrete deterioration mechanisms

Mechanisms and modelling of for instance

- Chloride ingress, chloride initiation and propagation of corrosion of rebars
- Carbonation
- Alkali aggregate reactions
- Sulfate attack (e.g. Ettringite, Thaumasite)
- Delayed Ettringite formation
- Freeze/thaw attack
- Ice abrasion

Methodology for testing durability

Accelerated test methods for concrete durability and the relation between laboratory tests and field exposure for all preceding concrete deterioration mechanisms.

This congress will gather experts and scientists from around the world to present the state of the art on durability of existing concrete materials and structures as well as recent developments and emerging technologies for the creation of durable and sustainable concrete materials and structures. Thus, ICDC will be an important meeting point for experienced and young scientists alike.

Treatment of existing concrete structures

Includes efforts to increase the service life of concrete structures by external means (i.e. not included in the concrete mix) such as

- Application of membranes
- Application of hydrophobie agents
- Chloride removal techniques
- Re-alkalisation techniques for carbonated concrete
- Cathodic protection of steel reinforcement

Principles of making durable concrete structures

- Concrete of low permeability
- Concrete of high electrical resistivity
- Structural design for durability
- Etc

Durability of off-shore concrete structures like

- Floating structures
- Gravity based structures
- Sea wind mill farms
- Etc

Sustainability

In future, sustainability evaluation is expected to be included in the early conceptual stages of building projects as part of the user requirements and functionality performance. All three dimensions of environmental, life cycle cost and health & comfort performance are subject to assessment methodology development. Contributions are invited on concepts and examples :

- Environmental impact (e.g. EPD)
- Economical considerations
- Codes and standards
- Etc

Modelling and calculating durable materials and degradation processes

The development and use of models and calculation tools vary from analytically based worksheets, via use of commercially available numerical tools based on for example FEM, to a vast range of programs and approaches including multi-scale, stochastic approaches etc. Verified with observations from accelerated tests, other experimental investigations as well as field observations of concrete durability. Papers are invited within

- transport processes
- degradation mechanisms (chemical, physical)
- service life predictions
- comparing models and real data

Welcome to Trondheim, Norway

Note the key-dates:
Maximum 300 word abstracts to be submitted
directly by e-mail or via web-site
www.icdc2012.com
before **1st of October 2010**
Notification of acceptance **15th December 2010**
Full papers submitted **1st April 2011**

www.trondheim.no

For more information: Send e-mail to: icdc2012@tekna.no

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Supporting organizations

American Concrete Institute
Advancing concrete knowledge

Organized by:

norwegian concrete association