

24th Nordic Concrete Research Symposium in Stockholm – Program

Overview

	Wednesday		Thursday		Friday	
	Room A	Room B	Room A	Room B	Room A	Room B
8-9	Registration		A4 Maintenance (5)	B4 Green concrete (6)		
9-10	Opening session				A7 Moisture (5)	B7 3DP & production (6)
10-11	A1 Long-term effects & roads (5)	B1 ASR (6)	A5 Maintenance, cont. (5)	B5 Green concrete, cont. (6)	Closing session	
11-12						
12-13	Lunch		Lunch		Lunch	
13-14	A2 Structures (5)	B2 Frost (6)	A6 Structures & analysis (6)	B6 Materials (6)	Technical visit	
14-15						
15-16	A3 Structures & tests (6)	B3 Chlorides (6)	Concrete café – teaching (3+)			
16-17						
Evening	Dinner at the venue		Dinner at Fjäderholmarna			

Number of papers within parentheses ().
Some sessions may contain paper(s) with a topic outside the session heading,

Welcoming address

Dear participant,

Svenska Betongföreningen (Swedish Concrete Association) and its Organizing Committee would like to sincerely welcome you to the 24th Nordic Concrete Research Symposium. The series of Nordic Concrete Research Symposia started in 1953 in Stockholm and the Symposia circulate between the five Nordic countries. This is the sixth time in Sweden. The 23rd Symposium took place in 2017 in Aalborg in Denmark and the intention was that Norway would organize the 24th Symposium in 2020 since usually there is one Symposium every third year. This planning was – as you all know – disturbed by the pandemic that also prevented a physical conference in 2021. Since one of the most important aims of the Nordic Concrete Research Symposium is personal meetings between young and more established Nordic researchers, the idea of an online symposium was never considered.

The program covers 82 contributions and the number of participants exceeds 120. All papers are included in an USP stick that is delivered to every participant at the registration. We are very pleased to welcome all participants to the heart of Stockholm and do hope that the Symposium will be successful.

Johan Silfwerbrand – Richard McCarthy – Henrik Vinell – Marie Brunnberg

Wednesday, August 17, 2022

9.00-9.50 Opening Session, Room AB

Chair: Johan Silfwerbrand, SE

Henrik Vinell, President, Swedish Concrete Association: Welcoming address

Satu Huuhka (FI): ReCreate – Reusing precast concrete for a circular economy

Karin Comstedt Webb (SE): Sustainable cement & concrete

Richard McCarthy, Managing Director, Swedish Concrete Association: Program & practical items

9.50-10.10 Coffee break

10.10-12.00 Session A1: Long-term effects on structures & concrete roads

Chair: Mikael Hallgren (SE)

Larissa Strömberg	SE	Possibilities with LCA and LCCA for sustainable concrete and asphalt road
Andreas Alhede	SE	Corrosion-induced cracking of reinforced concrete structures: What do we know and how do we move forward?
Carlos Gil Berrocal	SE	Long-term safety of hybrid reinforced concrete beams with rebar corrosion
Erica Pereira Carneiro	SE	Potential improvements in the life-cycle performance of support structures for onshore wind turbines - an interview study in Sweden
Johan Silfwerbrand	SE	Overnight rehabilitation of concrete pavements using precast concrete technology

10.10-12.00 Session B1: Durability, especially alkali-silica reactions

Chair: Marianne Tange Hasholt (DK)

Jukka Lahdensivu	FI	Alkali-aggregate reaction possibility in existing Finnish concrete facades and balconies
Kathrine Mürer Stemland	NO	ASR expansion - effect of restraint and relation to degradation
Pirkko Kekäläinen	FI	Reacting Aggregate in Finnish Concrete Structures
Benoit Fournier	CA	Alkali-silica reactions: Laboratory vs. field relation - State-of-the-art Report
Jan Lindgård	NO	Management and extension of service life of infrastructures affected by alkali-silica reaction (MESLA)
Tandre Oey	FI	Predicting the incidence of alkali-aggregate reaction in Finnish bridge concretes using machine learning

12.00-13.00 Lunch**13.00-14.50 Session A2: Structures, various items**

Chair: Björn Täljsten (SE)

Anders Ansell	SE	Service-life extension of tunnel shotcrete subjected to steel fibre corrosion
Andreas Sjölander	SE	Structural behaviour of fibre-reinforced shotcrete in interaction with hard rock
Jelena Zivkovic	NO	Confined lightweight aggregate concrete behavior and influencing factors
Fabio Lozano	SE	Explosion loads in densified urban environments: challenges and needs
Terje Kanstad	NO	Eco-friendly C100 concrete: From particle packing to bridge tower design

13.00-14.50 Session B2: Durability, especially frost action

Chair: Jukka Lahdensivu (FI)

Frank Spörel	DE	16 years of monitoring the freeze-thaw attack on a lock by resistivity and temperature measurements
Matthias Mueller	DE	Freezing point depression in concrete pores - effect of de-icing salts
Ludovic Fülöp	FI	Air entrained concrete - Overview of a comprehensive bridge inspection program in Finland
Ludovic Fülöp	FI	Excessively air entrained structural concrete - Characterization of the basic mechanical and durability properties
Andrei Shpak	NO	Salt frost scaling testing HVFA concrete to -52C: internal cracking measured with dilatometry
Jan Suchorzewski	SE	Combined carbonation-frost resistance of sustainable high-performance concrete with very high slag content

14.50-15.10 Coffee break

15.10-17.00 Session A3: Structures, loading tests

Chair: Anders Ansell (SE)

Johan Magnusson	SE	Shear in Concrete Structural Elements Subjected to Dynamic Loads
Johan Silfwerbrand	SE	Design by testing - Lessons learned from full-scale loading tests on industrial fibre concrete floors
Viktor Peterson	SE	Evaluation of dynamically tested concrete beams reinforced with stiff and mild steel qualities
Gabriel Sas	SE	Testing of a prestressed concrete box girder bridge over the Kalix River
Ulla Kytölä	FI	Restraint moment tests on precast prestressed beams made continuous
Per Goltermann	DK	Full-scale testing as a means to upgrading the traffic

15.10-17.00 Session B3: Durability, especially chloride ingress

Chair: Wolfgang Kunther (DK)

Marie Helene Bjørndal	NO	Chloride ingress in mortar samples prepared with novel composite cements - impact of leaching conditions during the exposure
Max Patzelt	DE	Automatic Quantification of Cracks in Concrete Thin Sections by Using Modern Image Analysis & Machine Learning
Miguel Prieto Rábade	SE	Evaluation of performance of functional admixtures in concrete under real marine service conditions
Jukka Lahdensivu	FI	Assessment of the Climate Change Effects on Finnish Concrete Facades and Balconies
Yongqiang Li	SE	Durability study of simulated seawater and sea-sand concrete under the combined effects of carbonation and chloride redistribution
Jonas Magnusson	SE	Transport of chlorides through clay layer into concrete

Thursday, August 18, 2022

8.00-9.50 Session A4: Maintenance

Chair: Stefan Jacobsen (NO)

Carlos Gil Berrocal	SE	SensIT: towards data-driven infrastructure management
Louise Andersson	SE	Preventive bridge maintenance- accelerated test setup for the effect of high-pressure washing of concrete
Pia Schönbeck	SE	Evidence based configuration of concrete structures to ensure adequate magnetic resonance imaging
Cosmin Popescu	SE	Remote bridge inspection using optical methods
Björn Täljsten	SE	Wireless monitoring for assessment of concrete railway bridges – Experiences from field tests

8.00-9.50 Session B4: Green concrete

Chair: Pirkko Kekäläinen (FI)

Mehrdad Torabzadegan	NO	Use of Calcium Nitrate in combination with blended cement types to reduce CO2 emissions from concrete production
Wolfgang Kunther	DK	Short-term chloride binding and biofouling in calcined clay – limestone binders exposed to Øresund strait environment
Arezou Baba Ahmadi	SE	Zeta potential of composite cementitious suspensions with high solid fraction and its relation to C-A-S-H chain length
Tobias Danner	NO	Experimental Studies on Different Approaches to Produce Alkali-Reduced Bauxite Residue as Supplementary Cementitious Material
Claus Vestergaard Nielsen	DK	Green concrete made with cement mixed with limestone filler and calcined clay – comparison of durability properties
Katarina Malaga	SE	BETCRETE 2.0 - how Swedish cement- and concrete producers implement climate neutral concrete in practice.

9.50-10.10 Coffee break

10.10-12.00 Session A5: Maintenance (cont.)

Chair: Terje Kanstad (NO)

Øyvind Bjøntegaard	NO	Concrete R&D activities involvement; Norwegian Public Roads Administration
August Jansson	SE	Experimental design for shotcrete tunnel lining with distributed optical fibre monitoring
Magdalena Rajczakowska	SE	Is “smart” concrete capable of self-repair after a fire?
Sigríður Ósk Bjarnadóttir	IS	Circle House Iceland - circular solutions in a changing climate
Björn Täljsten	SE	Non-destructive testing of prestressed concrete bridges – Experiences from field test

10.10-12.00 Session B5: Green concrete (cont.)

Chair: Claus Vestergaard Nielsen (DK)

Iveta Novakova	NO	Evaluation of optimal replacement of natural aggregates by recycled concrete aggregates to achieve sufficient durability
Harald Justnes	NO	Durable Aluminium Reinforced Environmentally-friendly Concrete Construction – DARE2C
Oisik Das	SE	A sustainable solution: Biochar in concrete
Ingemar Löfgren	SE	A simple screening test of alternative pozzolanic materials
Shunfeng Wang	SE	Preparation of green and non-sintered lightweight aggregates
Per Goltermann	DK	ZeroWaste: Turning waste into valuable raw materials

12.00-13.00 Lunch**13.00-14.50 Session A6: Structures & analysis**

Chair: Ingemar Löfgren (SE)

Jonas Enzell	SE	Implementation of endurance time analysis for seismic push-over analysis of a concrete gravity dam
Mikael Hallgren	SE	Shear Design of Reinforced Concrete Beams Subjected to Air Blast Loads
Jaime Gonzalez-Libreros	SE	Finite element modeling of a RC trough bridge
Mohammad Afaghi	NO	Prediction of Compressive Strength of Concrete as an Input for Fatigue Life Estimation Using Machine Learning Models
Filippo Sangiorgio	SE	Ductility and failure mode of HSC and HSFRC doubly reinforced beams
Lennart Elfgrén	SE	Uniaxial tensile test method for cylindrical concrete cores from existing structures

13.00-14.50 Session B6: Materials

Chair: Harald Justnes (NO)

Stefan Jacobsen	NO	Void ratio of manufactured sand - influence of test method, grain shape and size distribution
Claus Vestergaard Nielsen	DK	Concrete cured at different temperatures – new results to determine the activation energy for maturity modelling
Anders Hösthagen	SE	Effect of material parameters on thermal crack risk at early ages for environmental friendly concrete mixes
Antonia Menga	NO	Property development and volume changes in early age concrete
Antonia Menga	NO	Effect of cement type on autogenous deformation under isothermal and realistic curing conditions
Rolands Cepuritis	NO	New concrete mix-design tool for concrete micro-proportioning with manufactured sand

14.50-15.10 Coffee break

15.10-17.00 Concrete Café: Teaching

Chairs: Per Goltermann (DK) & Katja Fridh (SE)

Marianne Tange Hasholt	DK	Introduction of electronic textbook (E-book) in course 'Concrete Technology'
Per Goltermann	DK	Increasing student lab activities - at a low resource consumption
Miklos Mólnar	SE	Digital teaching during the Corona pandemic – Experiences from Lund University

Friday, August 19, 2022

8.30-10.20 Session A7: Moisture

Chair: Katarina Malaga (SE)

Oskar Linderöth	SE	Two methods to measure sorption isotherms of cement-based materials
Nicholas Trussell	NO	Water transport in cracks controlled by digital image correlation in sprayed concrete with accelerator and polymer
Pauli Sekki	FI	Moisture management of concrete floors: From drying time estimation to moisture risk estimation and quality control
Liming Huang	SE	The hydration and drying of concrete monitored by the array sensors
Alexander Oliva Rivera	SE	Accelerated carbonation of crushed and sieved binders

8.30-10.20 Session B7: 3DP concrete & miscellaneous

Chair: Larissa Strömberg (SE)

Wegdan El-Nadoury	EG	Geopolymers Composite Materials for Three Dimensional Concrete Printing
Helena Westerlind	SE	Mesostructures in 3D Concrete Printing
José Hernández Vargas	SE	Relating printing parameters and filament geometry in extrusion-based 3D concrete printing
Jonny Nilimaa	SE	Lateral form pressure induced by SCC
Björn Täljsten	SE	Corrosion-free concrete structures by the use of FRP
Kalle Kursula	FI	A comparative study on concrete wastes fines from different sources: Application on granulated artificial aggregates

10.20-10.40 Coffee break

10.40-11.30 Closing Session

Chair: Richard McCarthy (SE)

Johan Silfwerbrand	SE	Summary of the Symposium
Terje Rønning	NO	Welcome to the 25 th Nordic Concrete Research Symposium

11.30-12.00 Lunch

12.00-15.00 Technical Visit at Skurubron, Nacka

Organizing Committee

Johan Silfwerbrand, KTH & Svenska Betongföreningen (chair)
Richard McCarthy, Svenska Betongföreningen
Marie Brunnberg, Svenska Betongföreningen

Scientific Committee = The Research Committee of the Nordic Concrete Federation

Wolfgang Kunther / DK
Gitte Normann Munch-Petersen / DK
Marianne Tange Hasholt / DK
Jukka Lahdensivu /FI
Jouni Punkki / FI
Mirva Vuori /FI
Thorbjörg Holmgeirsdottir / ICE
Olafur H. Wallevik / ICE
Børge Johannes Wigum / ICE
Mette Geiker / NO
Terje F. Rønning / NO
Ola B. Skjølvold / NO
Mårten Janz/ SE
Johan Silfwerbrand / SE & NCR (chair)
Peter Utgenannt / SE