

CONFERENCE PROGRAM – Final version

25.1.2023 - Wednesday

08:15 Registration

08:45 Opening ceremony (Edgar Bohner – VTT, Vice President, Smart Energy and Built Environment)

09:00 Keynote Lecture 1 – Dr. ERNST NIEDERLEITINGER (BAM)
Nuclear Concrete, and how to live with it more easy using NDE

Session: NDE for quality control and quality assurance (Chair: Sylvia Kessler – Helmut Schmidt University)

09:45 Multi-sensory monitoring and ultrasound for quality assurance at underground sealing structures – Vera Lay, Frank Mielentz, Prathik Prabhakara, Franziska Baensch, Sergej Johann, Detlef Hofmann, Patrick Sturm, Michael Stamm and Ernst Niederleithinger

10:05 Monitoring of durability parameters of the reinforced concrete structure for the disposal of low and intermediate level radioactive waste – Nuria Rebolledo, Julio E. Torres, Servando Chinchón, Javier Sánchez, Sylvia de Gregorio, Inmaculada López and Manuel Ordóñez

10:25 Coffee break

10:40 Electrochemical techniques for non-destructive evaluation of corrosion damage on steel liners in concrete – Miha Hren, Nina Gartner, Tadeja Kosec and Andraž Legat

11:00 Calibration process of a capacitive probe for monitoring of reinforced concrete nuclear structures – Houssein Ibrahim, Géraldine Villain, Narintsoa Ranaivomanana, Xavier Dérobert, Sérgio Palma Lopes, Cyrille Fauchard, Vincent Guihard and Jean-Paul Balayssac

11:20 Comparison of simulations and measurements of radar and ultrasound inspections of concrete structures – Jean-Marie Henault, Denis Vautrin, Adrian Luca, Frédéric Taillade, Alexandre Boule and Salvador Villalobos

11:40 Evaluation of anisotropic material parameters in damaged concrete using ultrasound velocity measurements – Kim Colonius, Alexis Fedoroff and Antti Forsström

12:00 Where can durability analysis benefit from NDT? – Arto Köliö and Jaakko Koskinen

12:20 Lunch break

Session: NDE reliability, standardization and robotics (Chair: Javier Sánchez – ICCET-CSIC)

13:20 DIN 4871: Qualification of NDT Personnel in Civil Engineering (NDT-CE) – Sascha Feistkorn, Daniel Algernon, Ralf W. Arndt, Gino Ebell, Martin Frieze, Christian U. Grosse, Ralf Holstein, Ernst Niederleithinger, Martin Schickert, Sebastian Schulze, Alexander Taffe, Andrei Walther, Julia Wolf, Andreas Zoëga, Michael Zwanzig

13:40 Reliability Assessment of NDT in Civil Engineering – the German Approach for Standardization (normPOD) – Sylvia Keßler, Vamsi Krishna Rentala, Fabian Dethof and Daniel Kanzler

14:00 ACES: A Teleoperated Robotic Solution to Pipe Inspection from the Inside – Eric Lucet and Farès Kfoury

14:20 Improvement of numerical tools for the ultrasonic NDE of concrete: the fundamental role of the Interfacial Transition Zone – Manda Ramaniraka, C. Payan, S. Rakotonarivo, J-F. Chaix and V. Garnier

14:40 Muography for structural integrity monitoring of reinforced concrete infrastructure – Guangliang Yang, Anthony Clarkson, Ute Effner, Simon Gardner, Marcel Grunwald, Ralf Kaiser, Thomas Kind, Christian Köpp, David Mahon, Frank Mielentz, Ernst Niederleithinger, Bernhard Redmer, Matthew Ryan, Anja Waske and Dan Wright

International Conference on Non-destructive Evaluation of Concrete in Nuclear Applications

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- 15:20 A general review of the history of nuclear robotics – *Philippe Garrec*
- 15:40 Coffee break
- 16:00 Inspection of a cask storage system – *Salvador Villalobos*
- 16:20 How to conduct numerical Impact Echo simulations for non-destructive testing at concrete structures for the nuclear industry – *Fabian Dethof, Daniel Algernon, Claudia Thurnherr and Sylvia Keßler*
- 16:40 Assessment procedure of determining properties of hardened reinforced concrete structures – *Antti Wallenius, Fahim Al-Neshawy and Jouni Punkki*
- 17:00 Adjourning for the day
- 18:30 Conference dinner (Dipoli)**

26.1.2023 – Thursday

- 08:50 Formalities about the conference
- 09:00 Keynote Lecture 2 – Dr. SALVADOR VILLALOBOS (EPRI)**
Advancements for Inspections of Nuclear Power Plants
- Session: NDE for concrete characterization (Chair: Vera Lay - BAM)
- 09:45 Towards a harmonization of permeability measurements under pressure and in vacuum – *Hugo Cagnon, J. Verdier, A. Nehme and S. Multon*
- 10:05 Non-destructive testing of mock-up of reactor pressure vessel cavity – *Jan Patera, Jiri Zdarek, Edita Zarybnicka, Vaclav Svoboda, Vlastimil Habrcetl, Marek Postler and Zbyněk Hlaváč*
- 10:25 Coffee break
- 10:40 Assessing the concrete of Nuclear Power Plants containment by NDT (Vincent Garnier) – *Vincent Garnier, J. Verdier, M. Sbartai, J.F. Chaix, O. Abraham, C. Payan, E. Larose, B. Piwakowski, J.M. Henault, J.P. Balayssac, G. Villain, X. Derobert, F. Dufour and J. Eiras*
- 11:00 Effect of carbonation on non-destructive strength and durability assessment of limestone-based concrete – *Bart Craeye, Neel Renne and Patricija Kara-De Maeijer*
- 11:20 Detecting capability of NDE methods in steel-concrete (SC) structures – *Ludovic Fülöp, Miguel Ferreira and Guy Rapaport*
- 11:40 NDE to detect concrete flaws behind steel plates – *Larry D. Olson, Dennis A. Sack and Julia Tchnerer*
- 12:00 Non-destructive testing of reactor containment mock-up – *Zbyněk Hlaváč, Petr Brabec, Jakub Stainbruch, David Svoboda, Andrzej Garbacz, Ondrej Anton, Josef Cervenka and Marek Postler*
- 12:20 Lunch break
- Session: Existing and emerging NDE technologies for concrete (Chair: Vincent Garnier – LMA)
- 13:20 ONDULYS: a new portable surface wave probe with dry contact transducers applied on the VerCoRs Mock-up – *Odile Abraham, Bastien Chapuis, Jean-Marie Hénault, Vincent Le Cam, Julien Albertini, Thibaud Devie, Arthur Bouche, Olivier Durand and Vincent Garnier*
- 13:40 On the multi-frequency resistivity measurement of concrete – *Adel Benidir, Mohamed Amara, Said Debbakh and Samir Bensaid*

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- 14:00 Advanced tomographic imaging techniques for quality assessment of concrete structures by means of ultrasound – Andrey Bulavinov, Roman Pinchuk, Andrey Samokrutov, Viktor Shevaldykin
- 14:20 Towards corrosion assessment in steel cylinder concrete pipes using the Pulsed Eddy Current Technique – Sokratis N. Iliopoulos and Wouter Van Eesbeeck
- 14:40 Diagnostic of corrosion in liner embedded into concrete – Frédéric Taillade, Fabrice Deby and Benoit Masson (presented by Denis Vautrin)
- 15:20 Monitoring of electrical properties of slag concrete during the hydration phase by embedded resistivity sensors – Marie-Ange Eid, Jack Atallah, Géraldine Villain, Stéphanie Bonnet, Harifidy Ranaivomanana, Sérgio Palma Lopes and François Bignonnet
- 15:40 Coffee break
- 16:00 Inspection of corroded concrete/steel/concrete pipes by ultrasonic methods – Thilakson Raveendran, Arnaud Recoquillay, Jean-Marie Henault, Jean- François Chaix, Guy D’Urso, Denis Vautrin, Vincent Garnier, Jean Mailhe and Philippe Bisarah
- 16:20 Towards passive ultrasonic sounding of a steel-concrete-steel containment structure using embedded optical fibers – Maximilien Lehujeur, T. Druet, C. Lefeuvre, J. Quelene, O. Abraham, G. Laffont, O. Durand, T. Devie, G. Gugole, B. Chapuis and N. Roussel
- 16:40 Studies Into the Use of Non-linear Ultrasound to Detect Corroded Steel Plates Embedded in Concrete – Markus Nilsson, Peter Ulriksen and Nils Rydén
- 17:00 Adjourning for the day

27.1.2023 – Friday

08:50 Formalities about the conference

09:00 Keynote Lecture 3 –Prof. JARI PUTTONEN (Aalto University)
Aging management of reinforced concrete for the safety of nuclear power plants

Session: NDE for damage detection of reinforced concrete structures I (Chair: Fahim Al-Neshawy - Aalto)

09:45 Applying linear and non-linear resonant ultrasonic techniques to assess the formation of Alkali-aggregate reaction in concrete – Klayne Silva, Vincent Garnier, Cedric Payan, Benoit Durville, Laurent Cantrel and Lounès Lahlou

10:05 Smart Concrete Sensor for mechanical damage assessment – Shaban Shahzad, Ahmed Toumi, Jean-Paul Balayssac and Anaclet Turatsinze

10:25 Coffee break

10:40 In-situ corrosion rate measurements on reinforced concrete structures – Nuria Rebolledo, Julio E. Torres, Servando Chinchón and Javier Sánchez

11:00 Numerical modelling of ultrasonic wave propagation in concrete using embedded sensors – Rouba Hariri, Vincent Garnier, Jean-François Chaix, and Odile Abraham

11:20 Non-destructive method to detect the state of corrosion of a tie rod and to measure the tension in a strand – Benjamin Quentin-Froignant and Frédéric Taillade (by Jean Marie Hénault)

11:40 Non-destructive testing of coarse aggregates irradiated by neutron and gamma radiation for European project ACES – Zbyněk Hlaváč, Yuliia Khmurovska, Patricie Halodova, Claudia Aparicio, Leos Krivsky and Petr Stemberk

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12:00 Post-tension cables monitoring system – *Frederic Taillade, Sylvie Michel-Ponnelle, Benoit Masson, Manuel Corbin and Alexis Courtois (by Jean Marie Hénault)*

12:20 Lunch break

Session: NDE for damage detection of reinforced concrete structures II (Chair: Salvador Villalobos -EPRI)

13:20 Using GPR and cover meter for locating the steel reinforcement in reinforced concrete structures – *Fahim Al-Neshawy, Abobaker Ba Ragaa and Jari Puttonen*

13:40 SFCW GPR Array concrete inspection on nuclear sites – *Houssame El Ghanami, Manuela Kaufmann and Alexandre Novo*

14:00 Laser-induced breakdown spectroscopy to investigate the chemical composition of concrete – *Gerd Wilsch, Tobias Völker, Tim Klewe and Sabine Kruschwitz*

14:20 Fusion of NDE Scanning and Photogrammetric Data for Concrete Bridge Decks and Girders Condition Assessment – *Larry D. Olsen*

14:40 Ultrasonic parameters evolutions with concretes saturation states – *Jean-François Chaix, Jean Mailhé, Cécile Saïdi-Muret, Vincent Garnier, Thilakson Raveendran and J-Marie Henault*

15:00 Combined NDT methods to determine the variations in compressive strength throughout concrete structures – *Fahim Al-Neshawy, Miguel Ferreira and Jari Puttonen*

15:20 Closing Ceremony