



LABORATÓRIO NACIONAL
DE ENGENHARIA CIVIL

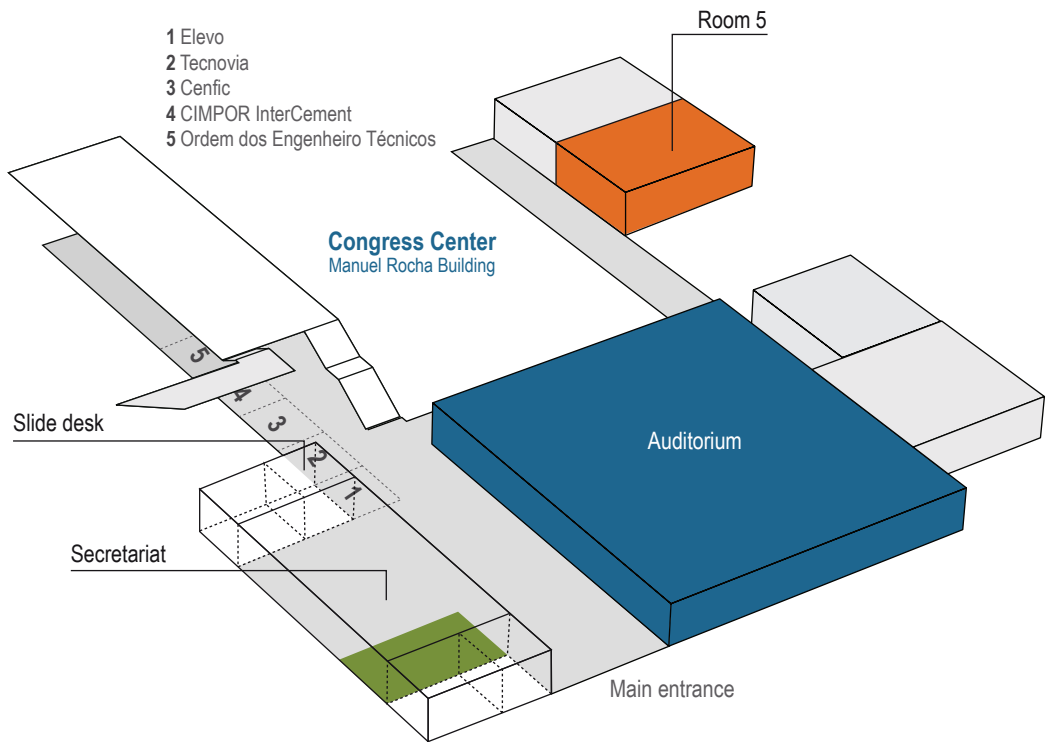


Fourth International Conference Progress of Recycling in the Built Environment

www.recycle18.lnec.pt/

PORTUGAL • LISBON • LNEC • 11-12 October 2018

PROGRAMME



11 October 2018

8.30	Participants registration	
9.00	Opening Session/RILEM dissemination	
9.30	Keynote Lecturer: Anette Muller	
10.00	Session A - Processing techniques	Session B - Standards, policy legislation
11.10	Coffee-break	
11.40	Session C - Quality and confidence	Session D - Performance of alternative materials
13:00	Lunch	
14.00	Keynote Lecturer: Vanderley John	
14.30	Session E - Life Cycle Analysis and Life Cycle Costs	Session F - CDW resources - Opportunities
15.40	Coffee-break	
16.00	Session G - Life Cycle Analysis and Life Cycle Costs	Session H - CDW resources - Opportunities
17.00	Poster presentation	
17.30	Honorary chair	
18.00	Conference cocktail	

12 October 2018

9.00	Keynote Lecturer: Chi-sun Poon	
9.30	Session I - Efficient CDW use - Concrete	
11.00	Coffee-break	
11.30	Session J - Fine CDW resources - Challenges	
13:00	Lunch	
14.00	Keynote Lecturer: Jorge de Brito	
14.30	Working groups	
15.30	Coffee-break	
16.00	Roundtable with the Keynote Speakers	
17.00	Conference closing	

11 October 2018

8:30 PARTICIPANTS REGISTRATION

9:00 OPENING SESSION - RILEM DISSEMINATION

Auditorium

9:30 KEYNOTE LECTURE

Auditorium

30 Years Recycling as a RILEM Topic – what did we learn, what did we forget, what must we do?

Dr.-Ing. habil. **Anette Müller**

IAB - Institut für Angewandte Bauforschung Weimar gGmbH

PARALLEL SESSIONS

Session A - Processing Techniques

Auditorium

10:00 Recycling of ultra-high performance fiber-reinforced concrete with a high-voltage electric-pulse fragmentation process

Kathy Bru, Solène Touzé, Pascal Auger and Daniel Parvaz

10:10 Automated sorting of construction and demolition waste by advanced spectral imaging

Frank Hollstein, Iñigo Cacho, Markus Wohllebe and Sixto Amaiz

10:20 New possibilities for reducing deposited construction and demolition gypsum waste

Pernilla Johansson, Linus Brander and Gunilla Bok

10:30 Liberation of cement paste in recycled aggregates by different comminution methods

Paula Figueiredo, Carina Ulsen, Rafael Macedo, Guilherme Nery and Maurício Bergerman

10:40 Microwave-Induced Interfacial Failure to Enable Debonding of Composite Materials

Steffen Liebezeit, Anette Mueller and Ulrich Palzer

10:50 Questions/discussion

Session B – Standards, Policy and legislation

Room 5

10:00 The catalogue of the construction products and materials from secondary raw materials from construction and demolition waste

Tereza Pavlu and Kristina Fortova

10:10 Specification for structural recycled aggregate concrete

Rui Vasco Silva and Jorge de Brito

- 10:20 Guidelines to design structural concrete made with recycled coarse aggregates. from material properties to structural performance
Sindy Seara-Paz, Belén González-Fonteboa, Fernando Martínez-Abella and Iris González-Taboada
- 10:30 How to combine CDW-recovery with groundwater protection
Peter Dihlmann
- 10:40 Long-term leaching tests on construction and demolition recycled materials: 5-years lysimeters results
António José Roque, Isabel Milagre Martins, Ana Cristina Freire, José Neves and Maria de Lurdes Antunes
- 10:50 Questions/discussion
- 11:10 **Coffee-break**

PARALLEL SESSIONS

Session C – Quality and Confidence

Auditorium

- 11:40 Use of rheographs to analyse fresh state behavior of self-compacting recycled concrete
Iris González-Taboada, Belén González-Fonteboa, Fernando Martínez-Abella and Sindy Seara-Paz
- 11:50 Minucious characterization of the granulometric fractions of two fine recycled aggregates
Cássia Corrêa, João Henrique Rêgo and Cláudio Feitosa
- 12:00 Porosity of recycled sand by powder pycnometry
Ana Jacomo, Rafael Macedo, Guilherme Nery, Paula Figueiredo and Carina Ulsen
- 12:10 Multi-recycled aggregate attached mortar volume analysed by X-ray microtomography
Carlos Thomas, Jorge de Brito, José Sainz-Aja and Ana Cimenada
- 12:20 Calcium dissolution by deionized water for cement paste quantification
Rafael Macedo, Ana Jacomo, Lais Cazelato and Carina Ulsen
- 12:30 A Novel Machine Learning Method to Detect Different Phases of Concrete Using X-ray microtomographic Images
Sanat Kumar Saha, Subhasis Pradhan and Sudhirkumar V Barai
- 12:40 Questions/discussion

Session D – Performance of Alternative Materials

Room 5

- 11:40 An environmental study of the use of steel slag aggregate in gabion cages
Karmele Otegi, Tanya Richter, Diego Fernando Aponte Hernández and Marilda Barra

- 11:50 Industrial by-products as supplementary cementing materials in the manufacture of cement mortars
Julia Rosales, Manuel Cabrera and Francisco Agrela
- 12:00 Textile fibres reinforcement in sanitary ware mortars
Catarina Brazão Farinha, Jorge de Brito and Rosário Veiga
- 12:10 Biomass bottom ash. A sustainable alternative for the manufacture of cement-based materials
Manuel Cabrera, Julia Rosales and Francisco Agrela
- 12:20 Recycled fine aggregate to design indoor furniture. concrete sinks
Sindy Seara-Paz, Javier Eiras-López, Fernando Martínez-Abella, Belén González-Fonteboa, César Amil and José Millán-Pérez
- 12:30 Questions/discussion

13:00 Lunch

14:00 KEYNOTE LECTURE

Auditorium

Circular economy & Resource use efficiency and recycling on the built environment.
Prof. Dr. Vanderley M John
Escola Politécnica, Universidade de São Paulo

PARALLEL SESSIONS

Session E – Life Cycle Analysis and Life Cycle Costs

Auditorium

- 14:30 Application of LCA to construction and demolition waste management in Lombardy Region (Italy)
Giulia Borghi, Sara Pantini and Lucia Rigamonti
- 14:40 A proposal of multi-criteria decision analysis (MCDA) in construction and demolition waste (CDW) management: technology, environment and costs as input data
Régis Pereira Waskow, Ana Carolina Passuello and Rejane Maria Candiota Tubino
- 14:50 Quantification of construction and demolition waste in the life cycle of residential buildings. economic and environmental analysis in case of study in Spain
Cristina Rivero Camacho, Jaime Solís and Madelyn Marrero
- 15:00 A LCA study to identify best effective strategies for recycling post-consumer gypsum-based waste in Lombardy Region (italy)
Sara Pantini, Giulia Borghi and Lucia Rigamonti
- 15:10 Questions/discussion

Session F – CDW Resources – Opportunities

Room 5

- 14:30 Laboratory and practical experience with alternative binders in asphalt pavement cold recycling
Jan Valentin, Zuzana Čížková and Jan Suda
- 14:40 Resistance to moisture damage of bituminous mixtures with recycled concrete aggregates
José Neves and Ana Cristina Freire
- 14:50 Comparison of performance characteristics for asphalt concrete mixtures with 30-40 % reclaimed asphalt and different binder solutions
Jan Valentin, Pavla Vacková and Majda Belhadj
- 15:00 Corrosion durability and mechanical performance of green hybrid fiber reinforced concrete utilizing recycled concrete aggregates and high volume fly ash
Jacob Duncan, Wilson Nguyen, Daniela Martinez, Gabriel Jen and Claudia Ostertag
- 15:10 Questions/discussion
- 15:30 **Coffee-break**

PARALLEL SESSIONS

Session G – Life Cycle Analysis and Life Cycle Costs

Auditorium

- 16:00 Life cycle analysis of recycled materials from construction and demolition waste (CDW) provided by transport infrastructures
Ana Cristina Freire, José Neves, Isabel Milagre Martins, António José Roque, Eugénia Correia, Claudia Ferreira, Castorina Silva Vieira, Isabel Pinto and Jorge Rodrigues Gonçalves
- 16:10 Promoting the circular economy through economic databases for the end-of-life stage of buildings
Filipa Salvado, Nuno Almeida and Álvaro Vale e Azevedo
- 16:20 Advantages of recycling gypsum plaster boards
Karin Weimann and Christian Adam
- 16:30 A BIM-compatible tool for demolition waste prediction and management
David Garcia, Iñigo Vegas and Jaime Moreno
- 16:40 Questions/discussion

Session H – CDW Resources - Opportunities

Room 5

- 16:00 **Influence of the nature of fraction unbound natural aggregates on the durability of recycled aggregates stabilized with cement**
Marilda Barra, Susanna Valls, Diego Aponte and Enric Vazquez
- 16:10 **Durability assessment of geopolymer façade panels based on CDW**
Vilma Ducman, Ana Frankovic, Sabina Kramar, Sergio Tamburini, Marco Natali and Adriana Bernardi
- 16:20 **Upgrading of Mixed Masonry Construction and Demolition Waste to Expanded Lightweight Aggregates**
Anette Mueller, Steffen Liebezeit and Ulrich Palzer
- 16:30 **Lightweight concrete with recycling aggregates made from masonry rubble and rubble-clay mixtures**
Katrin Rübner, Alexander Schnell, Toni Ihlenfeldt and Manuel Vöge
- 16:40 **Questions/discussion**

17:00 Poster presentations

- Innovative admixture for concrete produced with re-cycled aggregates**
Ivana Torresan, Riccardo Chinosi and Luigi Coppola
- Test for geometrical properties of recycled aggregates: comparisons of EN 933-3:2003 and NBR 7809:2008**
Regis Waskow, Viviane Lopes Gschwenter Dos Santos and Rejane Maria Candiota Tubino
- Study of the addition of different fly ash types in cement mortar tile adhesive**
Ana Lourenço, Pedro Sequeira, Luis Silva and Victor Ferreira
- Performance of waste glass powder as supplementary cementitious material**
Tahsin Alper Yikici, Yigitcan Demir, Meryem Bilen, Mehmet Bagdu, Muhammed Huseyin Yasar and Omer Enes Velioglu
- Study for the use of CDW in Santiago of Cali as an aggregate in construction materials**
Nilson Trochez, Leydi Jimenez, Diego Aponte and Jessica Diaz
- Using war demolition bulk materials in rural houses construction in Syria**
Salah Haj Ismail, Carlos Thomas and Jesus Setién
- Electrical Impedance Spectroscopy in the mortars produced with recycled concrete aggregate and contaminated with lead**
Caroline Venâncio, Lidiane Fernanda Jochem and Janaide Cavalcante Rocha
- Reaction to fire properties of CDW-based geopolymer panels**
Nataša Knez, Friderik Knez, Vilma Ducman, Sergio Tamburini, Marco Stefano Natali and Adriana Bernardi

Closing the loop - Innovative solutions for converting C&DW into new prefabricated elements.

Jaime Moreno, Iñigo Vegas and Eunáte Goiti

Methodology of life cycle cost analysis as a tool to support the management of physical assets - application to public research institutions

Catarina Simões, Maria João Silva and Paula Couto

Tools for the valorization of secondary materials in the Flemish region

Liesbet Van Cauwenberghe

A practical method to increase the construction waste valorisation rate

Marco Viviani and Antonella Adduci

17:15 Honorary Chair

18:00 Conference cocktail (Museu de Lisboa)

9:00 KEYNOTE LECTURE

Auditorium

Carbon dioxide sequestration: Relevance for recovering CDW

Prof. Dr. Chi-Sun Poon

Hong Kong Polytechnic University

PLENARY SESSIONS

Session I – Efficient CDW Use – Concrete

Auditorium

9:30 Dry concrete with recycled aggregates: volume control during compaction

Danilo Niza, Sergio Angulo and Rafael Pileggi

9:40 High temperature behaviour of recycled aggregate concretes

Susanna Romagnosi, Prosper Pliya, Anne-Lise Beaucour, Albert Noumowe and Danilo di Coste

9:50 Water migration during mixing of recycled aggregate concrete

Eliane Khoury, Bogdan Cazacliu and Sébastien Remond

10:00 Durability of recycled aggregate concrete coated in the fraction of 5-9 mm

Sandra Lichtblau, Fernando Martirena and Stefan Linsel

10:10 High quality recycled concrete aggregates in UHPC: a preliminary study

Zeger Sierens, Miquel Joseph, Brecht Vandevyvere and Jiabin Li

10:20 Effects of the use of recycled concrete aggregates on the drying shrinkage of normal and high strength concrete

Mayara Amario, Caroline Santana Rangel, Marco Pepe and Romildo Dias Toledo Filho

10:30 Questions/discussion

11:00 Coffee-break

Session J – Fine CDW Resources – Challenges

Auditorium

11:30 Influence of potential and effective water-cement ratio on the compressive strength of concretes made with fine recycled concrete aggregates

Maria Eva Sosa, Yury Andres Villagrán Zaccardi and Claudio Javier Zega

11:40 Importance of fineness of CDW as cement replacement

Sabina Rocha and Joana Sousa Coutinho

11:50 Effect of saturation state of fines recycled concrete aggregates on the properties of mortars

Zengfeng Zhao, Sébastien Remond, Denis Damidot and Luc Courard

- 12:00 **Water absorption vs paste content as indicators of the quality of fine recycled concrete aggregates**
María Eva Sosa, Leandro Carrizo, Yury Andres Villagrán Zaccardi and Claudio Javier Zega
- 12:10 **Using recycled concrete sands in new structural concrete: a practical approach**
Jeroen Vrijders, Bram Doods, Luc Boehme, Gerdi Goderis, Filip Profs and Jean-Pierre Andries
- 12:20 **Water absorption kinetic of recycled sand during mortar mixing**
Assia Djerbi, Aiman Yacoub and Teddy Fen-Chong
- 12:30 **The experimental verification of utilization of fine fraction of recycled aggregate**
Kristina Fortova and Tereza Pavlu
- 12:40 **Questions/discussion**
- 13:00 **Lunch**
- 14:00 **KEYNOTE LECTURE** **Auditorium**
Construction and demolition waste: How to close the loop?
Prof. Dr. Jorge de Brito
Instituto Superior Técnico, Universidade de Lisboa
- 14:30 **WORKING GROUPS** **Auditorium**
- 15:30 **Coffee-break**
- 16:00 **ROUNDTABLE WITH KEYNOTE SPEAKERS** **Auditorium**
- 17:00 **CLOSING SESSION** **Auditorium**

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