CES 2020

12 — 15 OCTOBER 2021
COIMBRA | PORTUGAL

INTERNATIONAL CONFERENCE
CONSTRUCTION, ENERGY ENVIRONMENT & SUSTAINABILITY

General Programme

TOPICS

GT1: Construction materials and technologies
GT2: Building physics
GT3: Energy
GT4: Environment
GT5: Construction and industry 4.0
GT6: Community challenges and policies
TS01: Advanced materials for energy retrofitting of buildings
TS02: Bamboo architecture and construction
TS03: Climate change impacts on inspection, diagnosis, maintenance and rehabilitation of buildings
TS04: Energy efficient room air distribution systems
TS05: Green Infrastructures towards sponge cities
TS07: New trends on construction sustainability
TS08: Numerical simulation of physical phenomena in buildings and structures
TS09: Performance and durability of tall building cladding systems
TS10: Renewable energy (RES) technologies in buildings and built environment
TS12: Sustainable design in acoustics
TS13: Climate change impacts on building performance and global energy demand
TS14: Thermal energy storage in buildings
TS15: Responsible biotechnologies and biodesign for the built environment
TS16: Timber based envelopes for a sustainable and efficient renovation of existing buildings

Tuesday 12th OCTOBER

8:30 - 9:00	**REGISTRATION**			
9:00 - 09:30	**OPENING CEREMONY** Room: Antiga Igreja			
09:30 - 10:10	**KEYNOTE** Room: Antiga Igreja **Advances towards understanding the effects of climate change on the durability of the built environment** *by Michael A. Lacasse, PhD PEng (Construction Research Centre of the National Research Council Canada)*			
10:10- 10:40	**INVITED SPEAKER** Room: Antiga Igreja **Energy and Water Efficiency in Portuguese Buildings** *Eng. Paulo Santos (ADENE – Portuguese Energy Agency)*			
10:40 - 11:00	Coffee-break			
11:00 - 13:00	SESSION 1 **GT1** | Room C1B	SESSION 2 **TS12** | Room C1C	SESSION 3 **TS15** | Room C1E	SESSION 4 **TS07** | Room C1F
13:00 - 14:20	Lunch			
14:20 - 16:20	SESSION 5 **GT1** | Room C1B	SESSION 6 **TS12** | Room C1C	SESSION 7 **TS15** | Room C1E	SESSION 8 **TS05** | Room C1F
16:20 - 16:40	Coffee-break			
16:40 - 18:20	SESSION 9 **GT1** | Room C1B	SESSION 10 **TS16** | Room C1C	SESSION 11 **TS13/14** | Room C1E	SESSION 12 **TS02** | Room C1F
19:00	**WELCOME RECEPTION**			

Wednesday 13th OCTOBER

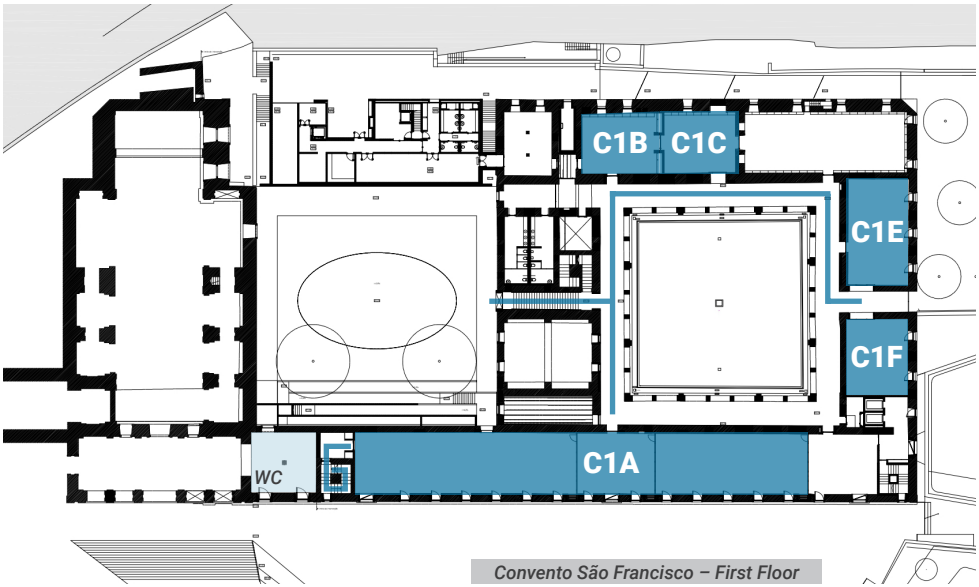
9:00 - 10:40	SESSION 13 **GT1** | Room C1B	SESSION 14 **TS08** | Room C1C	SESSION 15 **TS10** | Room C1E	SESSION 16 **GT5** | Room C1F
10:40 - 11:00	Coffee-break			
11:00 - 13:20	SESSION 17 **GT1** | Room C1B	SESSION 18 **TS08** | Room C1C	SESSION 19 **TS03** | Room C1E	SESSION 20 **GT5** | Room C1F
13:00 - 14:20	Lunch			
20:00	**CONFERENCE DINNER** Loggia Restaurant			

Thursday 14th OCTOBER

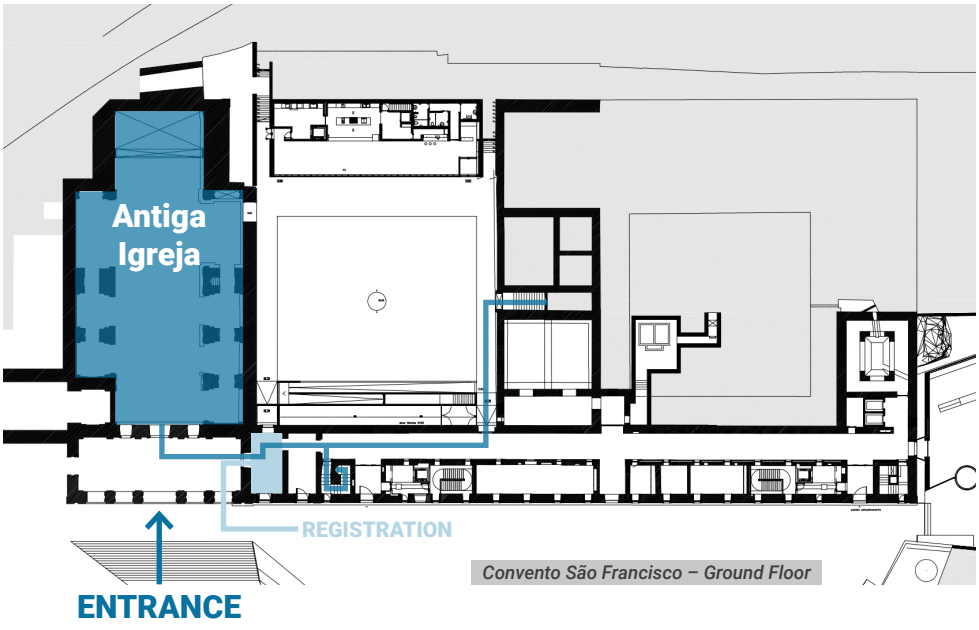
9:00 - 9:40	**KEYNOTE** Room: Antiga Igreja **Climate neutral Buildings, right here, right now!** *by Guillaume Habert, PhD (Department of Civil environmental and geomatic engineering at the Swiss Federal institute of technology, ETH Zurich)*			
9:40 - 10:40	**TECHNICAL SESSION** Room: Antiga Igreja			
10:40 - 11:00	Coffee-break			
11:00 - 13:00	SESSION 21 **GT1** | Room C1B	SESSION 22 **TS01** | Room C1C	SESSION 23 **GT3** | Room C1E	SESSION 24 **GT2** | Room C1F
13:00 - 14:20	Lunch			
14:20 - 16:20	SESSION 25 **GT1** | Room C1B	SESSION 26 **TS01** | Room C1C	SESSION 27 **GT3** | Room C1E	SESSION 28 **GT4** | Room C1F
16:20 - 16:40	Coffee-break			
16:40 - 18:40	SESSION 29 **GT1** | Room C1B	SESSION 30 **TS09** | Room C1C	SESSION 31 **GT3/TS04** |Room C1E	SESSION 32 **GT4** | Room C1F

Friday 15th OCTOBER

9:00 - 9:40	**KEYNOTE** Room: Antiga Igreja **Digital Worlds for Analogue Lives - Building Performance Simulation in Support of Urban Development** *by Christoph Reinhart, PhD Arch (Department of Architecture at the Massachusetts Institute of Technology)*			
9:40 - 10:40	**TECHNICAL SESSION** Room: Antiga Igreja			
10:40 - 11:00	Coffee-break			
11:00 - 12:40	SESSION 33 **GT2** | Room C1B	SESSION 34 **GT6** | Room C1C	SESSION 35 **GT5** | Room C1E	
13:00	**CLOSING CEREMONY** Room: Antiga Igreja			



Convento São Francisco – First Floor



Convento São Francisco – Ground Floor

Detailed Scientific Programme

Tuesday 12th OCTOBER

9:00 - 09:30		**OPENING CEREMONY** Room: Antiga Igreja *Ana Abrunhosa (Minister for Territorial Cohesion)* *Amílcar Falcão (Rector of the University of Coimbra)* *Isabel Damasceno (President of CCDRC)* *António Tadeu (President of Itecons / Full Professor at the University of Coimbra)* *Jorge de Brito (Full Professor at the University of Lisbon)*
9:30 - 10:10		**KEYNOTE** Room: Antiga Igreja **Advances towards understanding the effects of climate change on the durability of the built environment** *Michael A. Lacasse, PhD PEng (Construction Research Centre of the National Research Council Canada)* *Chaired by Julieta António (Itecons, University of Coimbra, Portugal)*
10:10 - 10:40		**INVITED SPEAKER** Room: Antiga Igreja **Energy and Water Efficiency in Portuguese Buildings** *Eng. Paulo Santos (ADENE – Portuguese Energy Agency)* *Chaired by Julieta António (Itecons, University of Coimbra, Portugal)*
10:40 - 11:00		Coffee-break
11:00 - 13:00		SESSION 1
Room CIB		**GT1: Construction materials and technologies** *Chaired by: Jorge de Brito (IST, University of Lisbon, Portugal)*
11:00-11:20	ID 39	MONITORING DEGRADATION PATTERNS OF SANDSTONE MONUMENTS AFTER CONSOLIDATION TREATMENTS - Marco A. Ludovico-Marques
11:20-11:40	ID 195	RHEOLOGICAL BEHAVIOUR AND SETTING TIME OF LIME-METAKAOLIN PASTES - Leane P. B. Sales, Edna da S. Almeida, Solange H. dos Santos, Iranilza C. da Silva, Aline F. N. de Azerêdo, Arnaldo M. P. Carneiro
11:40-12:00	ID 3	STUDY OF THE GEOPOLYMERIC MATERIAL RESULTING FROM THE SLAG FROM THE BURNING OF RESIDUES WITH MICROALGAE HIDROGEL IN THE CREATION OF TILES THAT ABSORB ATMOSPHERIC CO2 - Catarina Rocha, Bárbara Rangel, Jorge Lino
12:00-12:20	ID 121	EFFECT OF IMMERSION TIME ON THE ALKALINE TREATMENT OF RICE HUSK-BASED CEMENTITIOUS COMPOSITES - Ana Raimundo, Afonso Esteves, Rita Nogueira, Ines Flores-Colen, Jorge de Brito
12:20-12:40	ID 146	IMPROVED MORTAR PERFORMANCE THROUGH THE USE OF RECYCLED MATERIALS - Ana Lourenço, Luis Silva, Vera Fernandes, Pedro Sequeira
11:00 - 13:00		SESSION 2
Room C1C		**TS12: Sustainable design in acoustics** *Chaired by: Patrizio Fausti (University of Ferrara, Italy) and Julieta António (Itecons / University of Coimbra, Portugal)*
11:00-11:20	ID 21	SUSTAINABLE ACOUSTIC DESIGN IN CONSTRUCTION – A HOLISTIC APPROACH - Philip Dunbavin
11:20-11:40	ID 54	DIDACTIC AND SUSTAINABLE PROGRAM FOR THE RESOLUTION OF ACOUSTICS PROBLEMS IN SCHOOLS - Vitor Rosão, Zéelia Ramos

11:40-12:00	ID 84	ACOUSTIC REQUIREMENTS FOR A SUSTAINABLE FUTURE - Klas G. Hagberg, Delphine Bard
12:00-12:20	ID 91	"ISOVER & PLACO® HOUSEHOLD BAREMETER". SITUATION OF SPANISH HOUSES, COMFORT CONDITIONS DURING THE PANDEMIC. - Penelope Gonzalez, Paloma Moreno, Lydia Arranz
12:20-12:40	ID 105	AN INTEGRATED APPROACH TO SUSTAINABLE ACOUSTIC DESIGN OF ENVIRONMENT AND BUILDINGS - EXAMPLES OF CONSULTANCY PROJECTS - Selma Kurra
12:40-13:00	ID 214	MOTIVATING ENGINEERING STUDENTS ON USING CIRCULAR ECONOMY FOR THE DEVELOPMENT OF LOW-COST ACOUSTIC MATERIALS - Alice Elizabeth González, Lady Carolina Ramírez, Pablo Gianoli Kovar
11:00 - 13:00		SESSION 3
Room C1E		**TS15: Responsible biotechnologies and biodesign for the built environment** *Chaired by: Magdalini Theodoridou and Ruth Morrow (Newcastle University, UK)*
11:00-11:20	ID 126	CYCLIC HEALING OF LATER-AGED CRACKS IN BACTERIA-BASED SELF-HEALING CEMENTITIOUS COMPOSITES - Ismael Justo-Reinoso, Bianca Reeksting, Andrew Heath, Susanne Gebhard, Kevin Paine
11:20-11:40	ID 139	ENHANCING LIVING/NON-LIVING RELATIONSHIP THROUGH DESIGNED MATERIALS - Barbara Pollini, Valentina Rognoli
11:40-12:00	ID 140	BIOKNIT BUILDING: STRATEGIES FOR LIVING TEXTILE ARCHITECTURES - Jane Scott, Dilan Ozkan, Aileen Hoenerloh, Emily Birch, Romy Kaiser, Armand Agraviador, Ben Bridgens, Elise Elsacker
12:00-12:20	ID 161	OPPORTUNITIES AND CHALLENGES OF BACTERIAL CELLULOSE AS A FAÇADE MATERIAL - Ruth Morrow, Karolina Bloch, Meng Zhang, Yunhong Jiang, Joshua Loh, Ben Bridgens
12:20-12:40	ID 164	MICROBE-MATERIAL INTERACTIONS IN THE BUILT ENVIRONMENT - Angela Sherry, Beatriz Delgado-Corrales, Romy Kaiser, Paula Nerlich, Armand Agraviador
12:40-13:00	ID 166	MICROBIAL INDUCED CARBONATION ON BIORECEPTIVE CONCRETE - Ruth Morrow, Elizabeth Gilligan, Rory Doherty, Sree Nanukuttan, Angela Sherry, Ben Bridgens
11:00 - 13:00		SESSION 4
Room C1F		**TS07: New trends on construction sustainability** *Chaired by: João Lanzinha (UBI, Portugal)*
11:00-11:20	ID 46	SUSTAINABLE BUILDINGS AS EFFECT OF COOPERATION BETWEEN ARCHITECTS AND ENGINEERS - Adriana Matei
11:20-11:40	ID 65	ECONOMIC ASSESSMENT OF WINDOWS APPLIED IN PORTUGUESE BUILDINGS - Nuno B. Saraiva, Ana C. Rebelo, António M. Raimundo
11:40-12:00	ID 133	INNOVATIVE DESIGN PROGRAMS POOLING SPACES AND REDUCING ENERGY CONSUMPTION - Paola Tosolini, Ricardo Lima, Denis Clement, Romain Brodbeck
12:00-12:20	ID 138	PRE-DEMOLITION AUDITS IN BUILDING DEMOLITION AND REHABILITATION: CLOSER PROJECT EXPERIENCE TOWARDS CONSTRUCTION SUSTAINABILITY - Seyed M. H. S. Rezvani, Isabel M. Martins, Maria J. F. Silva, Filipa Salvado, Mafalda Mota, Ivone Nobre
12:20-12:40	ID 196	SUSTAINABILITY IN THE CONSTRUCTION SUPPLIER INDUSTRY: A COMPARISON OF DEMAND AND IMPLEMENTATION IN FOUR EUROPEAN COUNTRIES - Marcel Dresse
13:00 - 14:20		Lunch

14:20 - 16:20		SESSION 5
Room CIB		**GT1: Construction materials and technologies** *Chaired by: Borja Frutos Vazquez (Institute of Construction Science Eduardo Torroja - CSIC, Spain)*
14:20-14:40	ID 50	STUDY OF POROUS LAYERS FOR THE STABLISHMENT OF DESIGN PARAMETERS APPLIED TO DEPRESSURIZATION TECHNIQUES FOR RADON MITIGATION - Isabel Sicilia, Borja Frutos, Carlos Sáinz, Luis Quindós, Carmen Alonso, Fernando Martín-Consuegra, Fernando de Frutos, Gloria Pérez, Ignacio Oteiza
14:40-15:00	ID 210	ASSESSING THE PERFORMANCE OF RADIANT FLOOR SYSTEMS: EXPERIMENTAL SET-UP AND NUMERICAL SIMULATION - Ricardo M. S .F. Almeida, Romeu Vicente, António Ventura-Gouveia, Victor M. Ferreira
15:00-15:20	ID 125	DESIGN AND CHARACTERIZATION OF A CONSTRUCTIVE SOLUTION WITH A THERMALLY ACTIVE CORE TOWARDS BUILDINGS ENERGY EFFICIENCY - António Figueiredo, Filipe Rebelo, António Samagaio, Romeu Vicente, Jorge Lira
15:20-15:40	ID 285	INFLUENCE OF A MOVABLE SKYLIGHT WINDOW ON THE THERMAL BEHAVIOUR OF A BUILDING - CASE STUDY IN REAL ENVIRONMENT - Inês Simões, Katya Coelho, Nuno Simões, Gustavo Botte, Hélder Silva
15:40-16:00	ID 283	PHYSICAL BEHAVIOUR OF FIBREGLASS WINDOWS - Nuno Simões, Nuno Vieira, Joana Prata, António Vieira, Rosário Fino
16:00-16:20	ID 284	ASSESSMENT OF THE HYGROTHERMAL PERFORMANCE OF AN INNOVATIVE LSF PROFILE ASSEMBLY - Rui Jerónimo, Nuno Simões, Eduardo Roque, Cláudia Pires, Kevin Rodrigues, Fernando Ferreira
14:20 - 16:20		SESSION 6
Room C1C		**TS12: Sustainable design in acoustics** *Chaired by: Julieta António (Itecons / University of Coimbra, Portugal) and Sean Smith (University of Edinburgh, UK)*
14:20-14:40	ID 244	BUREL FABRIC USED AS A SUSTAINABLE MATERIAL FOR ACOUSTIC APPLICATIONS - Julieta António, Ana Neves, Daniela Ferreira, Isabel Costa, Rita Marques
14:40-15:00	ID 248	VARIOUS APPROACHES TO SUSTAINABLE DESIGN IN BUILDING ACOUSTICS - Tonnes A. Ognedal, Anders Løvstad, Eli Toftemo, Tore Moen
15:00-15:20	ID 266	THE ACOUSTIC AND DAYLIGHTING EFFECTS OF EXTERNAL FAÇADE SUN SHADING SYSTEMS - Simone Secchi, Patrizio Fausti, Gianfranco Cellai, Martina Parente, Andrea Santoni, Nicolò Z. Martello
15:20-15:40	ID 267	THE ACOUSTIC PROPERTIES OF GREEN WALLS - Patrizio Fausti, Andrea Santoni, Ana M. Rizzo La Malfa, Ariel G. Velis, Carlos M. Posse, Gustavo Basso
15:40-16:00	ID 272	ENHANCING SUSTAINABILITY OF ACOUSTIC ARCHITECTURAL SPECIFICATIONS WHILST ALSO IMPROVING BUILDING PERFORMANCE - Sean Smith, Chiara Scrosati, Mohit Arora
16:00-16:20	ID 229	COMPARATIVE ANALYSIS OF THE ACOUSTIC PERFORMANCE OF DIFFERENT RECYCLED TYRE RUBBER WASTE PRODUCTS USED WITHIN TIMBER LIGHTWEIGHT PANEL SYSTEMS - Milagros Casado, Jose Antonio Balmori, Maria Machimbarrena, Luis Acuña, Roberto Mostaza, Susana Quirós
14:20 - 16:20		SESSION 7
Room C1E		**TS15: Responsible biotechnologies and biodesign for the built environment** *Chaired by: Jane Scott and Ben Bridgens (Newcastle University, UK)*
14:20-14:40	ID 169	DESIGNED SUBSTRATES FOR LIVING ARCHITECTURE PERFORMANCE - IMPRIMER LA LUMIÈRE - Mette Ramsgaard Thomsen, Martin Tamke, Aurélie Mosse , Guro Tyse

14:40-15:00	ID 170	LARGE-SCALE BIO-BASED THERMAL RETROFIT – OPPORTUNITIES OF USING INSULATION CORK BOARD IN PORTUGAL - Verena Göswein, Francesco Pittau, José D. Silvestre, Fausto Freire, Guillaume Habert
15:00-15:20	ID 188	TRANSCALAR DESIGN: AN APPROACH TO BIODESIGN IN THE BUILT ENVIRONMENT - Ana Goidea, Dimitrios Floudas, David Andréen
15:20-15:40	ID 197	HEALING MASONRY PROTOTYPES; DEMONSTRATING THE IMMUNE RESPONSE OF MASONRY MATERIALS IN THE HBBE'S EXPERIMENTAL HOUSE - THE OME - Magdalini Theodoridou, Armand Agraviador, Martyn Dade-Robertson, Derrick Mwebaza, Jennifer Wright, Meng Zhang, Paul James, Angela Sherry, Ruth Morrow, Ben Bridgens, Carmen McLeod
15:40-16:00	ID 236	MICROBIALLY INDUCED HEALING OF BUILDING STONES: A STRATEGY FOR THE CONSERVATION OF CULTURE IN WAR RAVAGED REGIONS - Derrick Mwebaza, Magdalini Theodoridou, Lisa Mol, Michael Harbottle
16:00-16:20	ID 226	ENERGY FROM DOMESTIC WASTE: URINE-POWERED MICROBIAL FUEL CELLS AND SUSTAINABLE ENERGY STORAGE - Shafeer Kalathil, Rajesh Bommareddy, Warispreet Singh, Paul James, Gary Black
14:20 - 16:20		SESSION 8
Room C1F		**TS05: Green infrastructures towards sponge cities** ***Chaired by: Zuzana Vranayova and Martina Zelenakov (Technical University of Kosice, Slovakia)***
14:20-14:40	ID 15	GREEN ROOFS WITH RAINWATER HARVESTING. A CASE STUDY - Carla Pimentel-Rodrigues, Fernanda Rodrigues, Armando Silva-Afonso, Dener Silva
14:40-15:00	ID 20	CORK GREEN ROOFS CHARACTERIZATION - João Almeida, Leopold Škerget, António Tadeu, Nuno Simões
15:00-15:20	ID 34	EXPERIMENTAL VEGETATION ROOF WITH NOT ONLY BIODIVERSITY POTENTIAL - Zuzana Vranayová, Frantisek Vranay, Marian Vertal, Alena Vargova, Katarina Cakyova
15:20-15:40	ID 89	GREEN ROOFS: ENVIRONMENTAL, ECONOMIC, AND SOCIAL SUSTAINABILITY EVALUATION - Rosane Rocha, Rosane A. G. Battistelle
15:40-16:00	ID 232	GREEN BLUE MEASURES PROPOSAL AT UNIVERSITY CAMPUS - Martina Zeleňáková, Kristián Fečík, Miriam Hološová, Mária Šugareková
16:00-16:20	ID 243	IMPROVING THE PARAMETERS OF THE INDOOR ENVIRONMENT BY ADAPTING THE GREEN WALL TO THE CLASSROOM - Mária Šugareková, Miriam Hološová, Martina Zeleňáková, Ivana Halászová, Silvia Vilčeková
16:20 - 16:40		Coffee-break
16:40 - 18:40		SESSION 9
Room CIB		**GT1: Construction materials and technologies** ***Chaired by: Pedro Humbert (Itecons, Portugal)***
16:40-17:00	ID 198	FRESH AND HARDENED PROPERTIES OF MORTARS CONTAINING VERMICULITE, CERAMIC BRICK WASTE AND METAKAOLIM - Iranilza C. da Silva, Aline F. N. de Azerêdo , Henrique M. C. de Melo, Edna da S. Almeida , Solange H. dos Santos, Leane P. B. Salles
17:00-17:20	ID 245	LIGHTWEIGHT CEMENT COMPOSITES INCORPORATING CHARCOAL AND LIMESTONE DUST - Julieta António, Guillermo Bastos, João Almeida, António Tadeu, Beatriz Marques, Arlindo Marques, Julia Armesto, Faustino Patiño-Barbeito

17:20-17:40	ID 1	TECHNICAL, ENVIRONMENTAL AND AESTHETIC BENEFITS OF UTILISING RECOVERED PRINTER TONER IN CONSTRUCTION - Laszlo J. Csetenyi, Moray D. Newlands
17:40-18:00	ID 43	UTILIZATION OF BASIC OXYGEN FURNACE SLAG IN GEOPOLYMER CONCRETE - Nihat Kabay, Hakan Ozkan, Nausad Miyan
18:00-18:20	ID 26	PRELIMINARY ASSESSMENT OF USING INCINERATED ASH OF PAPER SLUDGE AS A SUPPLEMENTARY CEMENTITIOUS MATERIAL - Pedro Humbert, Bruna Santos, João Almeida
16:40 - 18:40		SESSION 10
Room C1C		**TS16: Timber based envelopes for a sustainable and efficient renovation of existing buildings** *Chaired by: Jorge Branco and Carlos Maia (University of Minho, Portugal)*
16:40-17:00	ID 177	TIMBER-BASED INTEGRATED SOLUTIONS FOR THE SEISMIC RETROFIT OF URM WALLS - Davide Cassol, Matteo Busselli, Alessandro Prada, Ivan Giongo
17:00-17:20	ID 231	SEISMIC STRENGTHENING AND ENERGY RETROFIT WITH POST-TENSIONED TIMBER STRUCTURES AND BUILDING ENVELOPE COMPONENTS - Stephan Ott, Lorenzo Badini, Anastasia Fotopoulou, Annarita Ferrante
17:20-17:40	ID 242	CURRENT PRACTICE AND POTENTIAL ASSOCIATED WITH INNOVATIVE NATURAL BASED MATERIALS FOR BUILDINGS RETROFITTING - Claudio Meireis, Carlos Maia, André Fontes, Jorge M. Branco
17:40-18:00	ID 247	"IMPROVING THERMAL AND VISUAL PERFORMANCE OF BUILDINGS BY USING TIMBER ENVELOPES; LEARNING FROM TRADITIONAL ARCHITECTURE" - Gülru Koca
18:00-18:20	ID 250	VERTICAL GREEN A AN ENVIRONMENTAL SOLUTION TO IMPROVE THERMAL BEHAVIOR OF TIMBER BUILDINGS - Ozge Ogut, Nerantzia Tzortzi, Chiara Bertolin
16:40 - 18:40		SESSION 11
Room C1E		**TS13: Climate change impacts on building performance and global energy demand / TS14: Thermal energy storage in buildings** *Chaired by: Umberto Berardi (Ryerson University, Canada)*
16:40-17:00	ID 51	TESTING AND EXPERIMENTATION ON BUILDING ENVELOPE UNDER CLIMATE CHANGE - Martino Milardi, Mariateresa Mandaglio, Evelyn Grillo, Caterina C. Musarella, Sara Sansotta, Nadia Tramonti, Corrado Trombetta
17:00-17:20	ID 132	INDOOR SUMMER THERMAL COMFORT IN A CHANGING CLIMATE: THE CASE OF A NEARLY ZERO ENERGY HOUSE IN WALLONIA (BELGIUM). - Olivier Dartevelle, Sergio Altomonte, Gabrielle Masy, Erwin Mlecnik, Geoffrey van Moeseke
17:20-17:40	ID 203	THE USE OF ENVI-MET FOR THE ASSESSMENT OF NATURE BASED SOLUTIONS' POTENTIAL BENEFITS IN INDUSTRIAL PARKS – CASE STUDY FROM ARGALES INDUSTRIAL PARK (VALLADOLID – SPAIN) - Felipe M. Alves, Artur Gonçalves, António C. Ribeiro, Manuel Feliciano, Rosário del Caz
17:40-18:00	ID 217	DISCUSSION OF PERFORMANCE CRITERIA FOR THERMAL INSULATING SOLUTIONS FOR BUILDINGS FACADES UNDER DIFFERENT CLIMATE CHANGE PROJECTIONS - Maria P. Mendes, Inês Flores-Colen, Chiara Bertolin
18:00-18:20	ID 96	THERMO-OPTICAL CHALLENGES OF BUILDING ENVELOPE SYSTEMS WITH PHASE CHANGE MATERIALS: PATHWAYS TO RELIABLE PERFORMANCE CHARACTERIZATION - Terézia Cabanová, Michal Kuruc, Jakub Čurpek, Miroslav Čekon

16:40 - 18:40		SESSION 12
Room C1F		**TS02: Bamboo architecture and construction** ***Chaired by: Normando Barbosa and Germana Rocha (Federal University of Paraíba, Brazil)***
16:40-17:00	ID 32	PARAMETRIC APPROACH TO SIMPLIFIED LIFE CYCLE ASSESSMENT OF BAMBOO FRAME BUILDINGS - Eleni Eleftheriou, Edwin Zea, Guillaume Habert, Luis F. Lopez
17:00-17:20	ID 108	REINTERPRETATION OF A COSTA RICAN PROJECT OF A BAMBOO SMALL HOUSE IN THE ITALIAN CONTEXT - Giovanni Donini, Silvia Greco, Luisa Molari, Anna Zanetti
17:20-17:40	ID 143	BAMBOO AND BIPV IN INTEGRATED ARCHITECTURE AND ENGINEERING DESIGN WITH A VIEW TO ECO-EFFICIENCY - Germana Rocha, Normando Barbosa, Kleber Oliveira, João Marcelo Ferreira, Claudia Torres, Camilla Rocha, João Victor Santos, Wênia Santos
17:40-18:00	ID 165	BAMBOO HITCHHICKING POINT PROJECT FOR THE FEDERAL UNIVERSITY OF LAVRAS-BRAZIL - Tamara Gomes, Lucca A. Campos, Pedro A. R. Carvalho, Maria Luiza C. Monteiro, Luís Otávio T. Lara, Andréa A. R. Corrêa
18:00-18:20	ID 110	COMPRESSION STRENGTH OF CRACKED BAMBOO - José A. Gomes Neto, Normando Barbosa, Germana Rocha, Antônio Braga

Wednesday 13th OCTOBER

9:00 - 10:40		SESSION 13
Room CIB		**GT1: Construction materials and technologies** *Chaired by: Rita Nogueira (IST, University of Lisbon, Portugal)*
9:00-9:20	ID 31	ALKALI ACTIVATION OF ELECTRIC ARC FURNACE SLAG: OPTIMUM CONCENTRATION OF THE ALKALI ACTIVATOR AND MECHANICAL PERFORMANCE OF MORTARS - Dany Kassim, Rui Vasco Silva, Jorge de Brito
9:20-9:40	ID 29	OPTIMIZATION OF THE ALKALINE ACTIVATION OF PRE-TREATED MUNICIPAL SOLID WASTE INCINERATOR BOTTOM ASHES - Yoleimy Avila, Rui Vasco Silva, Jorge de Brito
9:40-10:00	ID 52	CARBON CAPTURE AND UTILIZATION TECHNOLOGIES FOR CEMENT-BASED MATERIALS - André Silva, Inês Flores-Colen, Rita Nogueira, José A. Bogas
10:00-10:20	ID 277	DYNAMIC THERMAL BEHAVIOUR OF THERMAL BREAK ALTERNATIVES FOR ALUMINIUM FRAMES - Joana Prata, Nuno Simões, Eliana Silva, Jorge Sanches, Ricardo Delca, Susana Silva, Cláudia Peixoto
9:00 - 10:40		SESSION 14
Room C1C		**T08: Numerical simulation of physical phenomena in buildings and structures** *Chaired by: Antonio Romero (University of Seville, Spain) and António Tadeu (Itecons / University of Coimbra, Portugal)*
9:00-9:20	ID 17	THEORETICAL AND EXPERIMENTAL ANALYSIS OF THE WORLD'S LONGEST SUSPENDED FOOTBRIDGE IN 2020 - António Tadeu, Bahareh Ramezani, Antonio Romero, Filipe Bandeira, Filipe Pedro, Sara Dias, Miguel Serra, Michael Brett, Leopold Škerget, Pedro Galvín
9:20-9:40	ID 59	GBT POST-BUCKLING ELASTO-PLASTIC ANALYSIS OF SLENDER STEEL COLUMNS IN FIRE: INFLUENCE OF THE BOUNDARY CONDITIONS AND OF THE TEMPERATURE'S LONGITUDINAL GRADIENTS - Pedro D. Simão, João Paulo C. Rodrigues
9:40-10:00	ID 111	A FAST METHODOLOGY TO STUDY THE DYNAMIC PERFORMANCE OF RAILWAY BRIDGES ACCOUNTING FOR SOIL-STRUCTURE INTERACTION - Pedro Galvín, Antonio Romero, Emma Moliner, David P. Connolly, María D. Martínez-Rodrigo
10:00-10:20	ID 174	ANALYZING ELECTROMAGNETIC SHIELDING PROPERTIES OF CONCRETE WALLS - Tony Almeida, António P. Coimbra, Iurii Medvedev, Lars Ole Fichte, João D. Carrilho
10:20-10:40	ID 71	ELECTROMAGNETIC FIELD DISTRIBUTION INSIDE A CONCRETE ROOM – COMPARISON OF SIMULATION AND MEASUREMENTS IN DOWNSCALED MODEL AND REAL SCALE CONTAINER - Lars Ole Fichte, Tony Almeida, António P. Coimbra, Martin Schaarschmidt, João D. Carrilho
9:00 - 10:40		SESSION 15
Room C1E		**TS10: Renewable energy (RES) technologies in buildings and built environment** *Chaired by: Apostolos Michopoulos (University of Cyprus, Cyprus) and Vasiliki Skoulou (University of Hull, UK)*
9:00-9:20	ID 33	THE EFFECT OF BUILDING SLENDERNESS AND FLOOR GEOMETRY IN FACADE PHOTOVOLTAIC GENERATION OF HIGH RISE BUILDINGS WITHIN A BLOCK IN THE CITY CENTER OF CHAPECO - BRAZIL - Isadora Z. Zardo, Miguel T. G. Pacheco, Greissi K. Z. Gheno

9:20-9:40	ID 81	FACADE PHOTOVOLTAIC GENERATION POTENTIAL TO POWER HIGH RISE OFFICE BUILDINGS TO NET-ZERO ENERGY UNDER CURRENT AND EXPECTED FUTURE MODULE EFFICIENCIES WITHIN A BLOCK IN THE CITY CENTER OF CHAPECÓ - BRAZIL UNDER TWO DIFFERENT BUILDING SLENDERNESS IN FOUR CITIES IN BRAZIL - Miguel T. G. Pacheco, Isadora Z. Zardo, Greissi K. Z. Gheno
9:40-10:00	ID 158	LATITUDE IN INFLUENCE ON FACADE PHOTOVOLTAIC GENERATION WITHIN A CITY BLOCK UNDER TWO DIFFERENT BUILDING SLENDERNESS IN FOUR CITIES IN BRAZIL - Laura B. Zambarda, Isadora Z. Zardo, Miguel T. G. Pacheco
10:00-10:20	ID 172	HYBRID NATURAL VENTILATION & PERSONAL COMFORT SYSTEM APPROACH TO IMPROVE THE ENERGY EFFICIENCY OF COOLING-DOMINATED OFFICE BUILDINGS - Nuno R. Martins, Peter Bourne-Webb
10:20-10:40	ID 223	MODELLING OF THERMALLY-ACTIVATED BORED MICROPILES FOR PROVISION OF RENEWABLE HEATING & COOLING IN BUILDINGS - Dimitris Skordas, Teresa M. Bodas Freitas, Peter Bourne-Webb, Konstantinos Georgiadis
9:00 - 10:40		SESSION 16
Room C1F		**GT5: Construction and industry 4.0** *Chaired by: Maria João Falcão (LNEC, Portugal)*
9:00-9:20	ID 12	BIM METHODOLOGY TOWARDS ENERGY EFFICIENCY IMPROVEMENT FOR SUSTAINABLE COMMERCIAL BUILDINGS - Rodrigo C. Betim, Maria J. F. Silva, Fernando F. S. Pinho
9:20-9:40	ID 94	SUSTAINABLE FACES OF PRODUCT DESIGN - Andreea Motu
9:40-10:00	ID 104	OPTIMIZATION OF REINFORCED CONCRETE FRAMES CONSIDERING COST AND ENVIRONMENTAL IMPACT MINIMIZATION - Alberto M. B. Martins, Luís M. C. Simões, João H. J. O. Negrão, Adelino V. Lopes
10:00-10:20	ID 163	HIGHLY AUTOMATED PRODUCTION OF PREFABRICATED WOOD-BASED BUILDING ENVELOPES: POTENTIAL FOR A SIGNIFICANT REDUCTION OF CARBON FOOTPRINT OF RESIDENTIAL DEVELOPMENT - Antonín Lupíšek, Jakub Diviš, Libor Beránek, Jakub Veselka, Petr Šenfeldr
10:20-10:40	ID 131	BIM EXECUTION PLAN, MATURITY AND DIFFUSION POLICIES APPLIED TO THE SUSTAINABLE DESIGN OF STRUCTURES - Maria J. F. Silva, Paula Couto
10:40 - 11:00		Coffee-break
11:00 - 13:20		SESSION 17
Room CIB		**GT1: Construction materials and technologies** *Chaired by: Antonín Lupíšek (UCEEB, Czechia)*
11:00-11:20	ID 117	THE DESIGN OF FIBROUS WOVEN SCAFFOLDS FOR ARCHITECTURAL MYCELIUM ELEMENTS - Dilara Özlü, Paul Nicholas
11:20-11:40	ID 156	CHARACTERISATION OF NATURAL MATERIALS FOR USE IN LOW-CARBON FOOTPRINT BUILDINGS - Santiago Cuéllar-Borrego, Raquel García-Mateos, J. Alberto Sandía-Manchado, Rocío Núñez-Pardo, Almudena Botet-Jiménez, Belén Godoy-Cancho, Ana Parralejo-Alcobendas, M. José Trinidad-Lonazo
11:40-12:00	ID 60	MECHANICAL PERFORMANCE OF NON-STABILIZED COMPRESSED EARTH BLOCK UNITS AND WALLETTES WITH OPTIMIZED GRANULAR COMPOSITION - Marios A. Kyriakides, Rafail Panagiotou, Rogiros Illampas, Ioannis Ioannou
12:00-12:20	ID 19	LAND USE STRUCTURES IN THE SERRA DE AIRE E CANDEEIROS NATURAL PARK - DRY STONE WALLS - Susana Marques, Jorge Mascarenhas, Lurdes Belgas

11:00 - 13:20		SESSION 18
Room C1C		**T08: Numerical simulation of physical phenomena in buildings and structures** *Chaired by: António Tadeu (Itecons / University of Coimbra, Portugal)*
11:00-11:20	ID 109	ENERGY HARVESTING PERFORMANCE IN RAILWAY BRIDGES FOR THE DEVELOPMENT OF AUTONOMOUS MONITORING SYSTEMS - Antonio Romero, Javier Cámara-Molina, Emmanuela Moliner, Pedro Galvín, María D. Martínez-Rodrigo
11:20-11:40	ID 184	COMPUTATIONAL MODELING FOR EVALUATE THE MECHANICAL PERFORMANCE OF A TRANSMISSION LINE'S RECAPACITATION - Leonardo W. Felchak, Alexandre T. dos Santos, João M. Fernandes, Marcos J. Mannalá, Aline L. Andre, Luiz F. R. B. Toledo, Amanda Jarek
11:40-12:00	ID 185	SUPPORT CABLE AND ACCESSORIES FOR A 500 KV TRANSMISSION LINE DETERMINING DYNAMIC BEHAVIOR INCLUDING CLIMATE AND MECHANICAL INFLUENCES - Rodrigo Quadros, Marcos J. Mannalá, Lucas G. Fonçatti, Gabriel de S. Barbieri, Claiton da S. Mattos, Nilson Barbieri, Aline L. André
12:00-12:20	ID 149	A HYBRID COMPUTATIONAL SCHEME FOR ACOUSTIC RADIATION PHENOMENA INDUCED BY UNDERWATER STRUCTURE - Qiang Xi, Zhuojia Fu
11:00 - 13:20		SESSION 19
Room C1E		**TS03: Climate change impacts on inspection, diagnosis, maintenance and rehabilitation of buildings** *Chaired by: Anabela Paiva (UTAD, Portugal) and João Lanzinha (UBI, Portugal)*
11:00-11:20	ID 4	CLIMATE CHANGE IMPACT FOR REQUIREMENTS TO CONCRETE PROPERTIES - Rytis Skominas, Vincas Gurskis, Raimondas Šadzevičius, Raimundas Baublys
11:20-11:40	ID 11	BUILDING ENVELOPE VS THERMAL REGULATION REQUIREMENTS – A CASE STUDY IN SOCIAL HOUSING BUILDINGS IN BEIRA INTERIOR, PORTUGAL - Pedro I. Brandão, João C. G. Lanzinha, Fernando J. Silva
11:40-12:00	ID 16	INDUSTRIAL BUILDING REHABILITATION ASSESSMENT USING BARYCENTRIC DISCRIMINATION - Maria L. Duarte, Jorge T. Ribeiro, Júlio L. Baptista
12:00-12:20	ID 27	STUDY OF THE PERCEPTION OF QUALITY AND THERMAL CONFORT IN SOCIAL HOUSING: A CASE STUDY IN BEIRA INTERIOR, PORTUGAL - Fernando José da Silva, Pedro I. Brandão, João C. G. Lanzinha
12:20-12:40	ID 61	ENERGY-EFFICIENT TECHNIQUES APPLIED IN REHABILITATION - Marina A. Batista, Anabela Paiva, Tiago Pinto
12:40-13:00	ID 127	HOW TO TURN ANTIQUE BUILDINGS INTO NEARLY ZERO ENERGY BUILDINGS? - CASE STUDY - Diogo Almeida, Anabela Paiva
13:00-13:20	ID 228	DEVELOPMENT OF A TEST BENCH TO DETERMINE THE THERMAL RESISTANCE OF BUILDING WALLS BY ACTIVE METHOD - Alain Koenen, Veronique Le Sant, Y. Garcia, Jean Pierre Monchau
11:00 - 13:20		SESSION 20
Room C1F		**GT5: Construction and industry 4.0** *Chaired by: Ana Brandão de Vasconcelos (LNEC, Portugal)*
11:00-11:20	ID 5	OPPORTUNITIES FOR CIVIL CONSTRUCTION GROWTH THROUGH INDUSTRY 4.0 - Jacqueline A. B. Franco, Ana Mariele Domingues, Nelson A. Africano, Rosane A. G. Battistelle, Rafael M. Deus
11:20-11:40	ID 14	COST ESTIMATING AND ELEMENTAL COST PLANNING IN PRELIMINARY DESIGN STAGES - António Cabaço, Ana B. Vasconcelos

11:40-12:00	ID 58	ENERGY DIGITAL TWIN OF BUILDINGS FOR ENERGY PERFORMANCE'S MANAGEMENT - Mario Montagud, Pilar Calatayud, Alejandro Belinchón, Marta Garcia, Alfredo Quijano
12:00-12:20	ID 64	FORM FOLLOWS SURVIVAL. TOWARDS A GEOARCHITECTURE - Pedro Resende, Eduardo Godinho
12:20-12:40	ID 68	INTEGRATING THE ANALYTIC HIERARCHY PROCESS (AHP) IN PROCESS ENGINEERING FOR INFRASTRUCTURE MODELLING AND SIMULATION (M&S) - Otto Newhouse, Hoon Han, Gloria Pignatta
12:40-13:00	ID 10	CONSTRUCTION INFORMATION CLASSIFICATION SYSTEMS ADAPTED TO SUSTAINABILITY: INTERNATIONAL EXPERIENCE - Rodrigo Lima, Maria J. F. Silva, Ana F. Salvado, Paula Couto
13:00 - 14:20		Lunch

Thursday 14th OCTOBER

9:00 - 9:40		**KEYNOTE** Room: Antiga Igreja **Climate neutral Buildings, right here, right now!** *Guillaume Habert, PhD (Department of Civil environmental and geomatic engineering at the Swiss Federal institute of technology, ETH Zurich)* *Chaired by Jorge de Brito (IST, University of Lisbon)*
9:40 - 10:40		**TECHNICAL SESSION** Room: Antiga Igreja **SECILTEK | SECILTEK solutions – sustainable construction** *Luís Duarte* **SAINT GOBAIN | Contribution of mortars to energy efficiency in radiant floors systems** *Nuno Vieira* **ITECONS | Did you know... that Innovative products can also be CE marked?** *Andreia Gil* *Chaired by Inês Simões (Itecons, Portugal)*
10:40 - 11:00		Coffee-break
11:00 - 13:00		SESSION 21
Room CIB		**GT1: Construction materials and technologies** *Chaired by: Hakan Ozkan (Cimpor Serviços SA, Portugal)*
11:00-11:20	ID 130	PHYSICAL CHARACTERIZATION OF CEMENTITIOUS PASTES PRODUCED WITH META-KAOLIN AND PACKING GLASS POWDERS AS SUPPLEMENTARY MATERIALS - André Patriota, Filipe B. de Barros, Arnaldo M. P. Carneiro, Pedro L. Guzzo
11:20-11:40	ID 233	ADOBE: THE INFLUENCE OF ADDITION OF PET (POLYETHYLENE TEREPHTHALATE) BOTTLE FIBERS ON PHYSICAL AND MECHANICAL PROPERTIES - Bruno Humberto da Silva, Luttgards de Oliveira Neto, Rosane A. G. Battistelle
11:40-12:00	ID 40	CHARACTERIZATION OF AGRO-WASTES TO BE USED AS AGGREGATES FOR ECO-EFFICIENT INSULATION BOARDS - Eleonora Cintura, Lina Nunes, Paulina Faria
12:00-12:20	ID 276	SUSTAINABLE CEMENTS WITH SUGARCANE BAGASSE ASH AND LIMESTONE: EFFECTS ON COMPRESSIVE STRENGTH AND ACID ATTACK OF MORTAR - Andréia A. de Siqueira, Guilherme C. Cordeiro
12:20-12:40	ID 44	UTILIZATION OF WASHING AGGREGATE SLUDGE IN MANUFACTURING ARTIFICIAL AGGREGATE - Hakan Ozkan, Nihat Kabay, Nausad Miyan
12:40-13:00	ID 201	PROPERTIES OF STABILZED MORTARS CONTAINING METAKAOLIN AS POZZOLAN - Henrique M. C. de Melo, Luciana Tamires da Silva Xavier, Luana Alves dos Santos, Iranilza C. da Silva, Aline F. N. de Azerêdo
11:00 - 13:00		SESSION 22
Room C1C		**TS01: Advanced materials for energy retrofitting of buildings** *Chaired by: Nuno Simões (Itecons / University of Coimbra, Portugal) and Stefano Fantucci (Politecnico di Torino, Italy)*
11:00-11:20	ID 38	MOULD GROWTH ON ETICS: THEORETICAL INDICES VS IN SITU OBSERVATIONS - João Parracha, Lina Nunes, Francisco Gonçalves, Júlia Pereira, Giovanni Borsoi, Inês Flores-Colen, Maria G. Gomes, Ricardo Deus, Rosário Veiga

11:20-11:40	ID 56	STUDY OF THERMAL CONDUCTIVITY OF INDUSTRIAL AEROGEL-BASED RENDERS - Inês Flores-Colen, Samuel Brunner, Jannis Wernery
11:40-12:00	ID 73	INNOVATIVE AND ECO-COMPATIBLE MATERIALS FOR THE REGENERATION OF THE HISTORICAL BUILDINGS LOCATED IN THE MED AREA - Rosa Romano, Valerio Alecci, Alessandra Donato, Elisabetta Palumbo, Costanza Pisciotta, Dora Pugliese, Antonino M. Marra, Gianfranco Stipo
12:00-12:20	ID 83	RESEARCH CHALLENGES AND OPPORTUNITIES IN LIGHTWEIGHT CONCRETE FOR THERMAL ENERGY STORAGE SYSTEMS OF BUILDINGS - Michal Kuruc, Muhammad F. Junaid, Zia ur Rehman, Jakub Čurpek, Miroslav Čekon
12:20-12:40	ID 93	NUMERICAL SIMULATION OF THE ENERGY PERFORMANCE OF STATIC VS THERMOCHROMIC DOUBLE-GLAZING UNITS IN AN OFFICE ROOM - Henriqueta Teixeira, Maria G. Gomes, António M. Rodrigues, Daniel Aelenei
12:40-13:00	ID 102	CHALLENGES OF THE OPTIMIZATION OF OPTICAL PROPERTIES OF COATINGS OF EXTERNAL THERMAL INSULATION SOLUTIONS - Andréa Souza, Nuno Ramos, Inês Flores-Colen
11:00 - 13:00		SESSION 23
Room C1E		**GT3: Energy** *Chaired by: Miguel Oliveira (University of Algarve, Portugal)*
11:00-11:20	ID 25	CLIMATE-ADAPTIVE BUILDING SKINS FOR BUILDING ENERGY CONSERVATION AND UHI MITIGATION: TRANSIENT BUILDING ENERGY SIMULATION WITH THERMOCHROMIC COATINGS - Naga V. S. K. Manapragada, Gloria Pignatta
11:20-11:40	ID 36	NEARLY ZERO WINERIES IN NORTHERN OF SPAIN, INFLUENCE OF CONSTRUCTION TYPES INTO ENERGY EFFICIENCY AND COST - María del Mar Barbero-Barrera, María Teresa Gómez-Villarino , Fernando Ruíz-Mazarrón , Ignacio Cañas-Guerrero
11:40-12:00	ID 42	CHARACTERIZATION OF THERMAL ENERGY DYNAMICS OF MULTI-ZONE RESIDENTIAL BUILDINGS AFTER PRE-COOLING - Shayan Naderi, Gloria Pignatta, Iain MacGill, Simon Heslop, Dong Chen
12:00-12:20	ID 175	BUILDING-STOCK ENERGY MODELS: TOWARDS A STOCHASTIC APPROACH - Marta J. N. O. Panão, André J. S. Penas
12:20-12:40	ID 222	ECOPOOL +++ PROJECT – INNOVATIVE HEATED OUTDOOR SWIMMING POOLS - Fátima Farinha, Miguel J. Oliveira, Armando Inverno, Maria C. Segura, Francisco do Carmo, Adelino Venturinha, Pedro V. Antunes
12:40-13:00	ID 265	THERMALLY ENHANCED MORTARS TOWARDS ENERGY EFFICIENCY IN LIGHTWEIGHT BUILDINGS - Filipe Rebelo, António Figueiredo, Romeu Vicente, Victor M. Ferreira
11:00 - 13:00		SESSION 24
Room C1F		**GT2: Building physics** *Chaired by: Romeu Vicente (University of Aveiro, Portugal)*
11:00-11:20	ID 35	A STUDY ON HYGROTHERMAL CONDITIONS IN INTERMITTENTLY HEATED OR UNHEATED BEDROOMS IN SOUTHERN EUROPE - Alessandra Ranesi, Magda Posani, Rosário Veiga, Paulina Faria
11:20-11:40	ID 80	EXPERIMENTAL ANALYSIS OF THE OPTICAL RESPONSE OF OPAQUE SURFACE FINISHES IN CITIES. THE CASE OF MADRID - Gloria Pérez, Fernando Martín-Consuegra, Fernando de Frutos, Guadalupe Gómez, Ignacio Oteiza, Borja Frutos, Carmen Alonso
11:40-12:00	ID 87	CONSTRUCTIVE AND FUNCTIONAL CHARACTERISATION OF KINDERGARTENS AND ELEMENTARY SCHOOLS OF THE MUNICIPALITY OF LISBON, PORTUGAL - Ana B. Vasconcelos, António Vilhena, António B. Coelho, Marta Vicente, Sónia Raposo

12:00-12:20	ID 120	UPCOMING CHALLENGES ON THE APPLICATION OF THERMAL INSULATION IN 3D PRINTED BUILDING ELEMENTS - Sofia Pessoa, Manuel Jesus, Ana S. Guimarães, Sandra S. Lucas, Nuno Simões
12:20-12:40	ID 128	LIGHT STEEL FRAMING CONSTRUCTION IN THE SOUTHERN EUROPEAN CLIMATE: THE IMPORTANCE OF THERMAL INERTIA AND INDOOR THERMAL ENVIRONMENT ASSESSMENT - Eduardo J. Roque, Romeu Vicente, Ricardo M.S.F. Almeida, Victor M. Ferreira
12:40-13:00	ID 142	GREEN ROOFS INFLUENCE IN ENERGY USE AND THERMAL COMFORT OF RESIDENTIAL BUILDINGS IN MEDITERRANEAN CLIMATE - Victor A. Lohmann, Raquel M. Apolônio
13:00 - 14:20		Lunch
14:20 - 16:20		SESSION 25
Room CIB		**GT1: Construction materials and technologies** *Chaired by: Vanessa Tavares (University of Coimbra, ADAI, Portugal)*
14:20-14:40	ID 189	EXPERIMENTAL EVALUATION OF A SOLAR PASSIVE RETROFIT SOLUTION NAMED SOLAR BRIDGE RETROFIT SYSTEM - Sara Brito-Coimbra, Daniel Aelenei, Maria G. Gomes, António M. Rodrigues
14:40-15:00	ID 180	SUSTAINABILITY OF NANO-ENABLED CONCRETE APLICATIONS: A REVIEW - Helena Monteiro, Bruna Moura, Nelson Soares
15:00-15:20	ID 79	COMPARISON OF CONVENTIONAL REINFORCED CONCRETE HOUSES WITH PREFABRICATED LIGHTWEIGHT STEEL FRAMED (LSF) HOUSES: COSTS AND ENVIRONMENTAL LIFE-CYCLE IMPACTS - Vanessa Tavares, Nelson Soares, Nuno Raposo, Pedro Marques, Fausto Freire
15:20-15:40	ID 122	A BRIEF FRAMEWORK OF CONSTRUCTION AND DEMOLITION WASTE COMPOSITION IN PORTUGAL WITHIN THE EUROPEAN CONTEXT - Charles S. Cenci, António Tadeu, Jorge de Brito, Rosário Veiga
15:40-16:00	ID 8	FITNESS OF A HIGH-CALCIUM SLAG FOR THE PRODUCTION OF ALKALI ACTIVATED MATERIALS - Omar Alelweet, Sara Pavia
14:20 - 16:20		SESSION 26
Room C1C		**TS01: Advanced materials for energy retrofitting of buildings** *Chaired by: Inês Flores-Colen (IST, University of Lisbon, Portugal)*
14:20-14:40	ID 153	BIO-BASED MATERIALS AS A ROBUST AND OPTIMAL SOLUTION FOR BUILDING RENOVATION - Alina Galimshina, Maliki Moustapha, Alexander Hollberg, Sébastien Lasvaux, Bruno Sudret, Guillaume Habert
14:40-15:00	ID 155	NOVEL CIRCULAR ECONOMY OF HIGH-ADDED VALUE PRODUCTS FOR ENERGY EFFICIENCY: FROM C&DW TO AEROGELS PRODUCTS. - Francisco Ruiz-González, K. Philippe, E. Goiti, M. Ocejo, I. Vegas
15:00-15:20	ID 159	ANALYSIS OF THE ENERGY PERFORMANCE OF A NEW OPAQUE SLIM MULTIFUNCTIONAL FAÇADE MODULE - Stefano Fantucci, Rita Adamo, Giorgia Autretto, Elisa Fenoglio, Fabio Favoino, Valentina Serra, Marco Perino
15:20-15:40	ID 160	SUPERINSULATION MATERIALS FOR ENERGY-EFFICIENT TRAIN ENVELOPES - Jannis Wernery, Samuel Brunner, Matthias M. Koebel
15:40-16:00	ID 238	EXPERIMENTAL CHARACTERIZATION OF A VACUUM INSULATION PANEL PRODUCT FOR ETICS - Márcio Gonçalves, Nuno Simões, Catarina Serra, Inês Flores-Colen, Saúl Martins
16:00-16:20	ID 246	ONSITE EVALUATION OF THE THERMAL PERFORMANCE OF ETICS WALLS WITH VACUUM INSULATION PANELS - Catarina Serra, Márcio Gonçalves, Nuno Simões, Inês Flores-Colen, Carolin Kokolsky, Christoph Sprengard

14:20 - 16:20		SESSION 27
Room C1E		**GT3: Energy** ***Chaired by: Pedro Antunes (Itecons, Portugal)***
14:20-14:40	ID 82	PHOTOVOLTAIC SOLAR ENERGY INVESTMENT PROPOSAL FOR BRAZIL ACHIEVE THE 2030 PARIS AGREEMENT TARGET - Ronaldo R. Saccardo, Rosane A. G. Battistelle, Regiane M. Siqueira, Luttgards de Oliveira Neto
14:40-15:00	ID 92	GENERATION AND COGENERATION TECHNOLOGIES FOR RESIDENTIAL APPLICATIONS – A STATE OF THE ART REVIEW AND CURRENT CHALLENGES - João S. Pereira, João B. Pereira, José B. Ribeiro
15:00-15:20	ID 119	EXPERIMENTAL STUDY OF A BIOMASS-FIRED MICRO-ORC SYSTEM FOR COGENERATION IN INDOOR SWIMMING POOLS - Márcio Santos, Jorge André, Ricardo Mendes, José B. Ribeiro
15:20-15:40	ID 281	ENERGY BEHAVIOUR OF A ROOM WITH A SKYLIGHT WINDOW - Rosário Fino, Nuno Simões, Inês Simões, Katya Coelho, Hélder Silva
15:40-16:00	ID 37	ASSESSMENT OF HYBRID VEHICLES USING PORTABLE EMISSION MEASUREMENT SYSTEM (PEMS) AS A TRANSITION FOR FULL E-MOBILITY ACHIEVEMENT IN POSITIVE ENERGY DISTRICTS - Gloria Pignatta, Navid Balazadeh
16:00-16:20	ID 118	PRELIMINARY ASSESSMENT OF CARNOT BATTERIES AS AN INNOVATIVE ELECTRICAL ENERGY STORAGE - Márcio Santos, Jorge André, Ricardo Mendes, José B. Ribeiro
14:20 - 16:20		SESSION 28
Room C1F		**GT4: Environment** ***Chaired by: Rytis Skominas (Vytautas Magnus University, Lithuania)***
14:20-14:40	ID 48	ANALYSIS OF COMFORT AND INDOOR AIR QUALITY, IN SOCIAL HOUSING BUILT DURING DIFFERENT PERIODS (1918-2018) IN BOGOTÁ (COLOMBIA) - Fernando Martín-Consuegra, Robinson Osorio, Fernando de Frutos, Lina Guerra, Carmen Alonso, Olga P. Garzón, Ignacio Oteiza, Luis G. Duquino, Olavo Escorcia, Borja Frutos
14:40-15:00	ID 53	MUNICIPALITY HUMAN DEVELOPMENT AND SANITATION: A DATA ENVELOPMENT ANALYSIS STUDY IN THE BRAZILIAN SÃO PAULO STATE - Pedro A. B. Lima, Gilberto D. Paião Junior, Thalita L. dos Santos, Marcelo Alves, Rosane A. G. Battistelle, Gustavo H. R. da Silva, Enzo B. Mariano
15:00-15:20	ID 67	HYDRAULIC RAMS: A BIBLIOMETRIC ANALYSIS AND COMPREHENSIVE REVIEW (1966-2019) - Bruna Logatti, Erich Kellner
15:20-15:40	ID 137	THE ENVIRONMENTAL IMPACT OF AN HVAC SYSTEM OF A BELGIAN OFFICE BUILDING - Delphine Ramon, Karen Allacker
15:40-16:00	ID 179	IMPROVING SUSTAINABILITY AND WELLBEING IN RAILWAY STATIONS: A METHODOLOGY TO ASSIST DECISION-MAKING - Maria-Ana Benoliel, Patrícia Ferreira, Cristina M. Silva
16:00-16:20	ID 157	A CARBON NEUTRAL COMPACT HOUSE CONCEPT SUPPORTED WITH LCA, LCC AND DYNAMIC ENERGY SIMULATION - Péter Medgyasszay, Dóra Szagri, Ádám Bihari, Benedek Kiss, Balázs Nagy, Miklós Horváth, José D. Silvestre, Zsuzsa Szalay
16:20 - 16:40		Coffee-break

16:40 - 18:40		SESSION 29
Room CIB		**GT1: Construction materials and technologies** *Chaired by: Rui Póvoas (University of Porto, Portugal)*
16:40-17:00	ID 7	REFLECTIONS ON HERITAGE PRESERVATION AND ENERGY SUSTAINABILITY THROUGH THE ANALYSIS OF CURRENT INTERVENTIONS IN STATE-SUBSIDISED HOUSING FROM THE MID-20TH CENTURY: THE EXAMPLE OF THE IMPROVEMENT PLAN (PORTO) - Luciana Rocha, Rui Fernandes Póvoas
17:00-17:20	ID 176	PERFORMANCE OF HYDRAULIC LIME MORTARS APPLIED ON A TRADITIONAL SUBSTRATE - Dora Silveira, Kátia Soares, Isabel Torres, Inês Flores-Colen, Rafael Travincas
17:20-17:40	ID 90	INFLUENCE OF SUPPLEMENTARY CEMENTITIOUS MATERIALS ON FRESH PROPERTIES OF 3D PRINTABLE MATERIALS - João Teixeira, Cecília O. Schaefer, Lino Maia, Bárbara Rangel, Rui Neto, Jorge L. Alves
17:40-18:00	ID 278	STATE AND CHALLENGES OF LOW CARBON CONSTRUCTION LABELLING - Pedro V. Antunes, Inês Santos, Nuno Simões, Catarina Serra
16:40 - 18:40		SESSION 30
Room C1C		**TS09: Performance and durability of tall building cladding systems** *Chaired by: Isabel Torres (Itecons / University of Coimbra, Portugal) and Arnaldo Carneiro (Pernambuco Federal University, Brazil)*
16:40-17:00	ID 57	INFLUENCE OF THE BUILDINGS' HEIGHT ON THE DEGRADATION AND MAINTENANCE CONDITIONS OF NATURAL STONE CLADDINGS - Cláudia Ferreira, Ana Silva, Jorge de Brito
17:00-17:20	ID 69	REVIEW OF THE MAIN CONTRIBUTIONS ABOUT LC³ CEMENT BETWEEN 2011 AND 2020 TO ENCOURAGE ITS USE IN MORTARS - Silvandro F. S. Júnior, Arnaldo M. P. Carneiro
17:20-17:40	ID 115	THE INFLUENCE OF CERAMIC BRICK SUPPORT ON WATER RESISTANCE IN APPLIED INDUSTRIAL MORTAR - Isabel Torres, Rafael Travincas, Inês Flores-Colen, Poliana Bellei
17:40-18:00	ID 135	MACHINE LEARNING APPLIED TO MORTARS: A DISCUSSION ON POSSIBLE APPLICATIONS - Rafael Travincas, Isabel Torres, Ines Flores-Colen, Maria P. Mendes, Dora Silveira
18:00-18:20	ID 181	STUDY OF CEMENT MORTARS WITH DIFFERENT PARTICLE SIZE SANDS AFTER APPLICATION TO CERAMIC BRICK SUBSTRATE - Poliana Bellei, Isabel Torres, Inês Flores-Colen, Rafael Travincas, Dora Silveira
18:20-18:40	ID 257	INFLUENCE OF THE SUBSTRATE IN THE POROSIMETRY OF HARDENED MORTARS - Gina Matias, Isabel Torres, Poliana Bellei, Inês Flores-Colen, Dora Silveira, Rafael Travincas
16:40 - 18:40		SESSION 31
Room C1E		**GT03: Energy / TS04: Energy efficient room air distribution systems** *Chaired by: Rogério Duarte (IPS, Portugal)*
16:40-17:00	ID 192	HEAT AND CONTAMINANT REMOVAL EFFICIENCIES IN AIR DISTRIBUTION SYSTEMS IN CLASSROOMS - Eusébio Z. E. Conceição, João M. M. Gomes, Maria M. J. R. Lúcio, Hazim B. Awbi
17:00-17:20	ID 258	LARGE DIAMETER EARTH-AIR HEAT EXCHANGER FOR SPACE COOLING AND HEATING: PRELIMINARY POST-OCCUPANCY FINDINGS - Rogério Duarte, Maria da Glória Gomes, António M. Rodrigues

17:20-17:40	ID 66	COMPUTATIONAL FLUID DYNAMIC MODELLING OF THE THERMODYNAMIC PERFORMANCE OF A CLIMATIC CHAMBER - Bahareh Ramezani, António Tadeu, Tiago Jesus, Michael Brett, Joel Mendes
17:40-18:00	ID 107	GLOBAL SENSITIVE ANALYSIS OF ANNUAL ENERGY CONSUMPTION AND INDOOR THERMAL COMFORT APPLIED TO THE SINGLE-FAMILY BUILDING DESIGNS IN INDIA'S WARM CLIMATE ZONES - Daniel Satola, Aoife Houlihan-Wiberg, Arild Gustavsen
18:00-18:20	ID 252	DEVELOPMENT OF A MINI FAN FILTER UNIT FOR AN "OFFICE POD" TYPE CABIN - João D. Carrilho, Tiago Jesus, Bruno Machini, Rui Pereira, João Almeida, António Tadeu, Rui Viegas
16:40 - 18:40		SESSION 32
Room C1F		**GT4: Environment** ***Chaired by: Artur Gonçalves (IPB, Portugal)***
16:40-17:00	ID 199	GROUND-LEVEL OZONE STUDY AT TWO URBAN INDUSTRIAL AREAS IN PORTUGAL - Leonardo Furst, Manuel Feliciano, Artur Gonçalves, Rosario del Caz
17:00-17:20	ID 202	CIRCULAR ECONOMY IN COMPANIES FROM THE NORTHWEST OF THE IBERIAN PENINSULA – SURVEY UNDER THE CIRCULAR LABS POCTEP PROJECT - Artur Gonçalves, Manuel Feliciano, Felipe Alves, Maria Manuel Sá, Carla Oliveira-Silva, Manuel Paulo Cunha, Ines Mendez Tovar, Eva Curto Izquierdo
17:20-17:40	ID 264	SPATIAL CONTRAST ASSESSMENT OF THE LEVELS OF PARTICULATE MATTER IN THE CITY OF BRAGANÇA, PORTUGAL - Yago Alonso Cipoli, Leonardo Furst, Artur Gonçalves, Manuel Feliciano
17:40-18:00	ID 255	RESILIENCE OF CONSTRUCTED ASSETS AGAINST NATURAL EXTREME EVENTS FROM THE ENGINEERING STANDPOINT - Marta Duarte, Nuno M. Almeida, Maria J. F. Silva, Filipa Salvado
18:00-18:20	ID 186	ENVIRONMENTAL DEPENDENT ENERGY PERFORMANCE OF THERMAL INSULATION FILLED MASONRY BLOCKS ON EUROPEAN CLIMATES - Balázs Nagy

Friday 15th OCTOBER

9:00 - 9:40		**KEYNOTE** Room: Antiga Igreja **Digital Worlds for Analogue Lives - Building Performance Simulation in Support of Urban Development** *Christoph Reinhart, PhD Arch (Department of Architecture at the Massachusetts Institute of Technology)* *Chaired by Nuno Simões (Itecons, University of Coimbra, Portugal)*
9:40 - 10:40		**TECHNICAL SESSION** Room: Antiga Igreja **TECHNAL | Sustainability in aluminium systems for construction** *Ricardo Delca* **AMORIM CORK INSULATION | Cork natural solution: for sustainable and efficient insulation** *Carlos Manuel Silva* **NEUCE | NEUCETHERM SYSTEMS – ETICS (External Thermal Insulation Composite System) Evolution – New finish** *José Leandro e Ângelo Salvador* **ARTEBEL | Innovative solutions for masonry** *Nuno Resende* *Chaired by Inês Simões (Itecons, Portugal)*
10:40 - 11:00		Coffee-break
11:00 - 13:00		SESSION 33
Room CIB		**GT2: Building physics** *Chaired by: Samuel Brunner (Empa, Switzerland)*
11:00-11:20	ID 173	A PROBABILISTIC MODEL TO QUANTIFY UNCERTAINTY IN BUILDING INSPECTION AND DIAGNOSIS - Clara Pereira, Ana Silva, Cláudia Ferreira, Jorge de Brito, Ines Flores-Colen, Jose D. Silvestre
11:20-11:40	ID 224	THE INFLUENCE OF MOISTURE ON THERMAL CONDUCTIVITY OF TYPICAL INSULATING MATERIALS FOR FLAT WARM-ROOFS - Christoph Sprengard, Sebastian Treml
11:40-12:00	ID 235	ONTHERMALHP PROJECT - MONITORING OF THIN RENDERING SOLUTIONS IN ETICS WITH SEVERAL INSULATION MATERIALS AND UNDER DIFFERENT EXPOSURE CONDITIONS - Nuno Simões, Márcio Gonçalves, João Almeida, Catarina Serra, Nuno Castro, Luís Duarte
12:00-12:20	ID 251	INDOOR RADIO-FREQUENCY ELECTROMAGNETIC FIELDS: A NEW PARADIGM IN INDOOR ENVIRONMENTAL QUALITY - João D. Carrilho, Lars Ole Fichte, Tony Almeida, Georgiana Roșu, António P. Coimbra
11:00 - 13:00		SESSION 34
Room C1C		**GT6: Community challenges and policies** *Chaired by: Ricardo Lima (HES-SO, Switzerland)*
11:00-11:20	ID 95	URBAN PLANNING BETWEEN PRINCIPLES, INTENTION AND COAGULATION OF INTEREST. A CASE STUDY BASED ON THE LOCAL CONTEXT OF CLUJ-NAPOCA, ROMANIA - Mihai Racu

11:20-11:40	ID 171	ECONOMIC DECISION MODEL FOR SUSTAINABLE RENOVATION OF THE - Els Van de moortel, Karen Allacker, Frank De Troyer, Luc Stijnen, Erik Schoofs
11:40-12:00	ID 237	MANAGING SUSTAINABLE COMPANIES THROUGH COOPERATION: AN EVIDENCE OF NEW BUSINESS MODELS IN THE LATINOAMERICAN REGION - Luis Manuel Cerdá Suárez, Susana Quirós y Alpera, Karen Núñez Valdés, Carmen Cristófol Rodríguez
12:00-12:20	ID 269	ENVIRONMENT AND CULTURAL MINORITY PROTECTION POLICIES: CONTRADICTIONS ON IMPLEMENTATION STRATEGIES IN SWITZERLAND - Monica Battaglini, Iulia Hasdeu, Romain Brodbeck , Ricardo Lima
12:20-12:40	ID 88	MAIN ACCESSIBILITY NEEDS IN KINDERGARTENS AND ELEMENTARY SCHOOLS FROM THE MUNICIPALITY OF LISBON - António Vilhena, Ana B. Vasconcelos, António B. Coelho, Marta Vicente, Sónia Raposo
11:00 - 13:00		SESSION 35
Room C1E		**GT5: Construction and industry 4.0** ***Chaired by: Enrico Zacchei (Itecons, Portugal)***
11:00-11:20	ID 18	DIRECT METHOD TO DESIGN SOLAR PHOTOVOLTAIC TO REDUCE ENERGY CONSUMPTIONS OF AERATION TANKS IN WASTEWATER TREATMENT PLANTS - Enrico Zacchei, Antonio Colacicco
11:20-11:40	ID 279	PREFABRICATED WOODEN BASED SYSTEM FOR COLLECTIVE BUILDINGS IN THE PORTUGUESE CONTEXT - Marina Tenório, Jorge M. Branco, Sandra M. Silva
11:40-12:00	ID 282	DEVELOPMENT OF A MODULAR SANDWICH PANEL WALL SYSTEM – EXPERIMENTAL STRUCTURAL TESTS - Susana Ferreira, German Vela, Miguel Morais, Vítor Costa
12:00-12:20	ID 22	SUSTAINABILITY AND RISK ASSESSMENT FOR THE DESIGN AND BUILDING OF DAMS - Enrico Zacchei, José-Luis Molina
12:20-12:40	ID 253	RELIABILITY ANALYSIS OF A BRIDGE PRECAST BEAM DESIGNED IN OF SERVICEABILITY LIMIT STATE BY BRAZILIAN STANDARD - Rodrigo Maciel, Cassia Assis, Pedro Lyra
13:00		**CLOSING CEREMONY** Room: Antiga Igreja

NOTES

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