

10th International Conference on

September 25 - 27, 2024

CONcrete under SEvere Conditions - Environment & Loading

Two Pre-consec24 workshops

September 24, 2024

1) Corrosion and its Control in Concrete Structures (C3S)

2) Construction Technologies for Sustainable Infrastructure (CTSI)

All at Radisson BLU Hotel GRT Chennai (near airport), Chennai, INDIA

CONSEC conferences focus on the advancements in the areas related to the design, construction, testing, and preservation of various construction materials and systems exposed to severe environmental and loading conditions. Earlier CONSECs were held in Japan (1995), Norway (1998), Canada (2001), South Korea (2004), France (2007), Mexico (2010), China (2013), Italy (2016), and Brazil (2019). Now, the *Centre of Excellence on Technologies for Low-Carbon and Lean Construction (TLC2)* at the Indian Institute of Technology Madras feels proud and privileged to organize the 10th CONSEC in Chennai, India (named as CONSEC24). We have also planned pre- and post-conference workshops on allied topics. CONSEC24 will provide a single platform for exchanging ideas in both focussed and holistic manner for the design, construction and conservation of reinforced concrete structures experiencing severe conditions. We invite students, researchers, faculty members, and practitioners working in the relevant areas of structural engineering and construction materials to attend CONSEC24 and make it a huge success.

Bridging structural and materials technologies



Conference themes and subthemes

T1: Advanced materials for severe conditions

- Cements and binders (SCMs)
- Chemical admixtures
- Hydration and microstructure
- Metallic and non-metallic reinforcement (fibres, mesh, bars, strands)
- Alternative aggregates

T2: Lab/field testing and characterisation

- Material characterisation tests
- Accelerated tests and long-term performance
- Non-destructive testing
- Forensics and condition assessment
- Naturally deteriorated systems

T3: Repair and strengthening materials and methods

- Preventive maintenance
- Electrochemical repair
- Waterproofing & coating
- Grouts and grouting methods
- Repair mortar and concrete
- Residual capacity assessment
- Strengthening techniques

T4: Damage, deterioration and transport properties

- ASR, sulphate or acid attack
- Chloride ingress
- Carbonation and leaching
- Corrosion of reinforcement
- Creep and shrinkage
- Fatigue and fracture













T5: Service life, reliability, sustainability and resilience

- Simulation of residual capacity
- Service life and durability
- Reliability and resilience
- Sustainability and life cycle assessment (LCA)
- Standardization and codes

T6: Special concretes and construction techniques

- FRC, TRC, HPC, UHPC, SHC
- Precast concrete
- 3D-concrete printing
- Underwater construction
- Cold-weather construction
- High-rise concrete pumping

Plenary Speakers

	Prof. Koji SAKAI Founder, CONSEC series, Japan Sustainability Institute <i>Inaugural address on 'What impacts did the CONSEC concept give on concrete technologies until today?'</i>		Prof. Alexandra BERTRON INSA Toulouse, France Behaviour of SCM and low-CO ₂ binders and systems in sewer networks		Prof. Jose Ivan ESCALANTE-GARCIA CINVESTAV Saltillo, Mexico Novel alkali activated binders using precursors of limestone and recycled pulverized concrete
	Prof. Paolo GARDONI Univ. of Illinois Urbana-Champaign, US Reuse of structural concrete components in new buildings		Prof. Ippei MARUYAMA Univ. of Tokyo, Japan Performance evaluation of concrete under specific conditions for nuclear reactor buildings		Prof. Robert MELCHERS Univ. of Newcastle, Australia Resilience of reinforced concrete structures in corrosive conditions
	Prof. Lisbeth M. OTTOSEN Technical Univ. of Denmark, Denmark Reuse of structural concrete components in new buildings		Prof. Stefano PAMPANIN Sapienza Univ. of Rome, Italy Designing precast concrete structures for earthquake resistance		Prof. Giovanni PLIZZARI University of Brescia, Italy Design Considerations, Experimental Testing, and Field Applications of HPFRc Reinforcement in Bridge Piers
	Prof. Manu SANTHANAM IIT Madras, India Sulphate Attack: After 20 years of 'whithering'		Prof. David TREJO Oregon State Univ., USA Service life of concrete structures and standardization		Prof. Koshy VARGHESE IIT Madras, India Digital technologies for accelerating and improving quality in construction

Keynote Speakers

	Dr. Asit BAXI Baxi Engineering, Inc. Houston, USA Post-tensioned concrete structures for excessive loading conditions		Prof. Sreejith NANUKUTTAN Queen's University of Belfast, UK Calcium focused design for longevity of concrete structures in silage environment
	Prof. Shashank BISHNOI IIT Delhi, India Carbonation of low clinker concretes: when it is a concern and when it is not		Prof. Sze Dai PANG National Univ. of Singapore, Singapore Achieving ease of assembly and robustness in structural systems made with Prefabricated Prefinished Volumetric Construction (PPVC)
	Prof. Pedro CASTRO BORGES Avanzados del IPN Unidad Mérida, Mexico Social appropriation of knowledge about concrete durability in vulnerable coastal communities. The role of the participatory action research (PAR)		Prof. Suriya Prakash S. Indian Institute of Technology Hyderabad, India Use of GFRP rebars in construction: Recent research on short and long term performance
	Dr. Gino EBELL BAM - Berlin, Germany Stress corrosion cracking in prestressed concrete bridge - A case study		Prof. Enrico SASSONI University of Bologna, Italy Phosphate treatments to enhance the durability of cementitious materials
	Prof. Yang EN-HUA Nanyang Technological University, Singapore Characterization & tailoring of mechanical properties of engineered cementitious composites under dynamic loading condition		Dr. Lok Pratap SINGH National Council for Cement & Building Materials, India Enhancing the performance and durability of cementitious materials through nanotechnology
	Prof. Liberato FERRARA Politecnico di Milano, Italy Material and process design in 3D Concrete Printing via AI driven experiments and modelling		Prof. Marijana SERDAR University of Zagreb, Croatia Does carbon footprint reduction impair mechanical properties and service life of concrete?
	Prof. Burkan ISGOR Oregon State University, USA Innovative approaches to mitigate reinforcement corrosion in concrete		Dr. Ali Akbar SOHANGHPURWALA CONCORR, Inc., USA Application of service life modeling and selecting appropriate technologies for extending service life of RC structures
	Dr. Fragkoulis KANAVARIS ARUP, UK New perspectives for sustainable and durable concrete materials and structures		Mr. David TEPKE SKA Consulting Engineers, USA At the intersection of structural performance, durability and sustainability of concrete in severe environments for a safe, responsible future
	Prof. Laurie LACARRIÈRE INSA Toulouse, France Modeling the durability of structures under multiphysical loads		Prof. Bernardo TUTIKIAN Univ. of Vale do Rio dos Sinos Campus São Leopoldo, Brazil Accidents of concrete structures under fire
	Prof. Sriramya D. NAIR Cornell University, USA Viability of Utilizing Supplementary Cementitious Materials for Subsurface Infrastructure		Prof. Anya VOLLPRACHT RWTH Aachen University, Germany Carbonation in concretes with SCMs

Important Dates

Last Date of Registration & Payment (Spot registration & Payment is not allowed)	August 15, 2024
Abstract submission (Closed)	June 30, 2024
Submission of 4-page Extended Abstract (preferred) or 8-page Full Paper (optional)	July 26, 2024

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Registration Category	Conference Registration fee (including tax)	
	On or Before August 15, 2024 (Spot registration is not allowed)	
	Indian (INR)	Foreign (USD)
Student Author	18,000	550
Student Author (subsidized**)	-	350
Individual	30,000	900
Individual (Discounted) (RILEM/ACI/ICI members)	27,000	800
Individual (Subsidized**)	-	550
Accompanying family members***	8000	150
Pre-conference workshop attendee only	4000	50

Registration Fee entitles the delegates to attend all technical sessions of the conference, exhibition, lunch, welcome reception, banquet and receive the proceedings, except that banquet is not included for Indian student authors who have paid reduced fees of INR 8000 .

A maximum of one oral presentation is allowed for one registrant. Remaining accepted abstracts, if any, will be considered for poster presentation. Students without an abstract for oral/poster presentations will be considered under 'Individual' category.

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****Countries eligible for subsidized fee:** Albania; Algeria; Angola; Argentina; Bangladesh; Bosnia and Herzegovina; Botswana; Brazil; Bulgaria; Burkina Faso; Cambodia; Cameroon; Chile; Colombia; Congo; Costa Rica; Croatia; Cuba; Dominican Republic; Ecuador; Egypt; Estonia; Ethiopia; Federal Republic of Nigeria; Georgia; Ghana; Guatemala; Hungary; Indonesia; Iran; Iraq; Ivory Coast; Jordan; Kazakhstan; Kenya; Latvia; Lebanon; Lesotho; Libya; Lithuania; Macedonia; Malawi; Malaysia; Mauritius; Mexico; Montenegro; Morocco; Mozambique; Myanmar; Nepal; Pakistan; Paraguay; Peru; Poland; Philippines; Republic of Moldova; Romania; Russian Federation; Senegal; Serbia; South Africa; Sri Lanka; Syrian Arab Republic; Tanzania; Thailand; Togo; Tunisia; Turkey; Ukraine; United Republic of Tanzania; Uruguay; Venezuela; Vietnam; Yemen; Zimbabwe, and [other countries with similar or lower GDP](#).

******* Fee includes lunches, banquet and local sightseeing trips on conference days.

Tentative Programme Schedule

CONSEC24 - Tentative programme schedule				
Organized by IIT Madras; to be held at Radisson BLU Hotel GRT Chennai (near airport)				
10 Plenary (P), 20 Session Keynote (K), and 96 Contributory (C) oral presentations and 100+ poster presentations				
Time	Day 0 (Tuesday) Sep 24, 2024	Day 1 (Wednesday) Sep 25, 2024	Day 2 (Thursday) Sep 26, 2024	Day 3 (Friday) Sep 27, 2024
8:00 – 9:00	All registrations in Hall E	CONSEC Registration in Hall E	CONSEC Registration in Hall E	CONSEC Registration in Hall E
9:00 – 11:00	Two parallel pre-conference workshops	Session 1 - Plenary (Inaugural & 3 Ps)	Session 5 - Plenary (3 Ps)	Session 9 - Plenary (4 Ps)
11:00 – 11:30		Tea/coffee break	Tea/coffee break	Tea/coffee break
11:30 – 13:00		Sessions 2A, 2B, 2C, 2D (each with 1 K and 4 Cs)	Sessions 6A, 6B, 6C, 6D (each with 1 K and 4 Cs)	Sessions 10A, 10B, 10C, 10D (each with 4 Cs)
13:00 – 14:00	2) Construction Technologies for Sustainable Infrastructure (CTSI)	Lunch	Lunch	Lunch
14:00 – 15:30		Sessions 3A, 3B, 3C, 3D (each with 1 K and 4 Cs)	Sessions 7A, 7B, 7C, 7D (each with 1 K and 4 Cs)	Sessions 11A, 11B, 11C, 11D (each with 1 K and 4 Cs)
15:30 – 16:00	Venue:	Tea/coffee break	Tea/coffee break	Tea/coffee break
16:00 – 17:00	Halls A and B in Royal Ball Room	Session 4E - Posters (1-50 posters)	Session 8E - Posters (50 onwards)	Closing
17:00 – 18:00		Shuttle buses will leave to IIT Madras campus by 5 pm onwards	Relax	To respect even the last presenter, please consider booking your return flight after 6 pm.
18:00 – 20:30		Welcome Reception & Dinner at Open Air Theatre, IIT Madras (shuttle buses will be provided)	Banquet and Gala Dinner Radisson BLU Hotel (Conference Venue)	

Pre-CONSEC24 Workshop

9 to 5 pm, September 24, 2024 (Tuesday)

Hotel Radisson BLU GRT Chennai (near airport), India

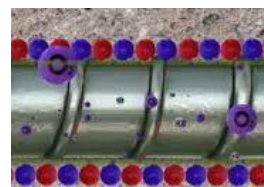
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7th One-day workshop on

Corrosion and its Control in Concrete Structures (C3S)



About the C3S workshop series

Nowadays, many major concrete structures are designed for a service life of 100+ years. However, many are corroding prematurely and not able to meet the design/service life requirements due to chloride-attack and carbonation. These can be avoided by appropriate use of material systems. Moreover, most repairs are excessively focused on structural strengthening aspects and neglect the durability of repairs. This leads to short-lived and frequent repairs, creating huge economic burden (about 2 % or more of GDP in managing the corrosion in concrete infrastructure). If we do not take adequate measures in this regard, then we will have to face expensive repair works on the large number of concrete structures that are being built now. To create awareness about this, the Dept. of Civil Engg. at IIT Madras has been organizing the C3S workshops since 2016. This is the 7th C3S workshop, which is formulated to educate engineers about corrosion mechanisms and how to design for durability or service life and combat corrosion of steel in concrete structures with a blend of both theoretical and practical aspects.

Tentative Programme Schedule

09:00 – 09:30 am	Workshop overview & Corrosion in concrete structures	Dr. Deepak Kamde, INSA Toulouse, France
09:30 – 10:00 am	Performance specifications for concrete structures	Prof. Piyush Chaunsali, IIT Madras, India
10:00 – 10:30 am	Duracrete model & parameters for service life design	Prof. Carmen Andrade, CIMNE/UPC, Spain
10:30 – 11:00 am	Tea/coffee break	
11:00 – 11:30 am	Importance of concrete quality and placement on minimizing corrosion of steel	Prof. Robert Melchers, Univ. of Newcastle, Australia
11:30 – 12:00 pm	Evolution and performance of organic corrosion inhibitors	Prof. Shwetha Goyal, Thapar Inst., Patiala, India
12:00 – 12:30 pm	Practical corrosion control: Influence of exposure conditions, material selection, and surface treatments	Prof. Mark Alexander, Univ. of Cape Town, South Africa & IIT Madras, India
12:30 – 01:00 pm	Discussion	
01:00 – 02:00 pm	Lunch break	
02:00 – 02:30 pm	Performance & failure mechanisms of galvanic anodes	Dr. Gino Ebell, BAM, Berlin, Germany
02:30 – 03:00 pm	Technologies for field corrosion measurements with and without connection to steel	Prof. Burkan Isgor, Oregon State Univ., USA
03:00 – 03:30 pm	Optimizing strategies for corrosion condition assessment and durable repairs	Prof. Radhakrishna G. Pillai, IIT Madras, India
03:30 – 04:00 pm	Discussion followed by Tea/coffee	

Registration Fee (including taxes)

On or before August 15, 2024 Spot registration is not allowed	Indian	Foreigner
	INR 4000	USD 50

Register at

www.consec24.com

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Centre of Excellence on
Technologies for
Low-Carbon & Lean
Construction

Pre-CONSEC24 Workshop

9 to 5 pm, September 24, 2024 (Tuesday)

Hotel Radisson BLU GRT Chennai (near airport), India

Organized by

**IIT
MADRAS**



One-day workshop on Construction Technologies for Sustainable Infrastructure (CTSI)

About the workshop: While the construction industry contributes significantly to economic growth, it faces some of the greatest challenges. Here, academic research can contribute to overcoming those challenges through innovative solutions incorporating modern technology. For this to happen, the industry must be convinced of the practicality and the cost-effectiveness of deploying academic contributions; in other words, translating research outcomes to project site applications. In this workshop, we intend to focus on the practical applications of certain technologies and processes and how they can improve project performance.

We will have **interactive/game sessions** on the following three topics.



Topic 1 (9 to 10:30 am): Systems Thinking Approach for Technology

Implementation; Dr. Nikhil Bugalia, IIT Madras

Given the complex nature of construction projects, translating technology into practice is challenging. A system-thinking approach would help stakeholders implement innovation in intricate and interconnected activities such as design, safety, and quality management. The instructor will take you through interesting games and activities to keep you engaged in translating research to implementation.



Topic 2 (11 to 12:30 pm): Contract Specifications to Implement Technological Innovations in Project Sites; Dr. Murali Jagannathan, IIT Madras

Construction specifications are crucial in making technology implementable in construction project sites. Specifications are techno-legal documents that must be carefully drafted, balancing legal compliance and technological requirements. The key elements of a good specification will be discussed, and subsequently, the participants will be asked to develop their custom specifications for an item of their choice, the only caveat being that the technology should be new and contractual specifications should not be readily available in the public domain.



Topic 3 (2 to 3:30 pm): Implementing Lean Construction in Project Sites – Demonstration through Games; Prof. Ashwin Mahalingam, IIT Madras

Lean construction refers to using processes, tools, and techniques that aim to reduce non-value-adding activities (like waiting, unnecessary motion, excess inventory, etc.) and thereby help improve overall project productivity. While it appears simple and straightforward, actual implementation at the site is challenging as lean implementation requires a tectonic shift in mindset – from a traditional silo working style to collaborative working involving all stakeholders. To help understand the practical benefits, the instructor will introduce team activities to appreciate the benefits of lean implementation.

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Brief talk during...	Inaugural	Dinner	No	No	No
Proposal of one technical speaker	Yes	No	No	No	No
Exhibition stall	Yes (Large)	Yes (Medium)	Yes (Small)	No	No
Number of free delegates	20	10	5	2	1
Distribution of publicity material	Yes	Yes	Yes	Yes	Yes
Mention in banners & all conference literature	Yes	Yes	Yes	Yes	Yes

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