

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 IIT Madras Research Park, 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



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



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

 <p>Prof. Koji SAKAI Founder, CONSEC series, Japan Sustainability Institute <i>Inaugural address on</i> 'What impacts did the CONSEC concept give on concrete technologies until today?'</p>	 <p>Prof. Paolo GARDONI Univ. of Illinois Urbana-Champaign, US An overview of regional risk (and resilience) analysis</p>	 <p>Prof. Stefano PAMPANIN Sapienza Univ. of Rome, Italy Next Generation of Integrated Low-Damage Precast Building Systems to Enhance Community Resilience and Sustainability</p>
 <p>Prof. Robert MELCHERS Univ. of Newcastle, Australia Resilience of reinforced concrete structures in corrosive conditions</p>	 <p>Prof. David TREJO Oregon State Univ., USA Holistic Advances for Corrosion Durability in Reinforced Concrete Systems</p>	 <p>Prof. Giovanni PLIZZARI University of Brescia, Italy Design Considerations, Experimental Testing, and Field Applications of HPFRCC Reinforcement in Bridge Piers</p>
 <p>Prof. Lisbeth M. OTTOSEN Technical Univ. of Denmark, Denmark The need for structured documentation to scale reuse of concrete components</p>	 <p>Prof. Ippei MARUYAMA Univ. of Tokyo, Japan Performance evaluation of concrete under specific conditions for nuclear reactor buildings</p>	 <p>Prof. Manu SANTHANAM IIT Madras, India Sulphate Attack: After 20 years of 'whithering'</p>
 <p>Prof. Koshy VARGHESE IIT Madras, India Digital Technologies for Accelerating and Improving Quality in Construction</p>	 <p>Prof. Alexandra BERTRON INSA Toulouse, France Behaviour of SCM and low-CO₂ binders and systems in sewer networks</p>	 <p>Prof. Jose Ivan ESCALANTE-GARCIA CINVESTAV Saltillo, Mexico Alkali activated binders based on precursors of limestone and recycled pulverized concrete</p>
 <p>Prof. Surendra P. SHAH Northwestern Univ., USA & IIT Madras, India Future of Science and Technology of Construction Materials</p>		

Keynote Speakers

 <p>Dr. Asit BAXI Baxi Engineering, Inc. Houston, USA Post-tensioned Concrete Members under Severe/Heavy Loading Conditions</p>	 <p>Prof. Suriya Prakash S. Indian Institute of Technology Hyderabad, India Long-term Performance of GFRP rebars in Civil Infrastructure Applications</p>
 <p>Prof. Shashank BISHNOI IIT Delhi, India Carbonation of low clinker concretes: when it is a concern and when it is not</p>	 <p>Prof. Prasad RENGARAJU Clemson University, USA Shrinkage and bond Response of Ultra-High Performance Concrete (UHPC) as a Thin Overlay for Roadway Applications</p>
 <p>Prof. Pedro CASTRO BORGES Avanzados del IPN Unidad Mérida, Mexico Concrete durability in vulnerable coastal communities. Role of participatory action research (PAR) for social appropriation.</p>	 <p>Prof. Enrico SASSONI University of Bologna, Italy Phosphate treatments to enhance the durability of cementitious substrates</p>
 <p>Dr. Gino EBELL BAM - Berlin, Germany Stress corrosion cracking in prestressed concrete bridge - A case study</p>	 <p>Prof. Marijana SERDAR University of Zagreb, Croatia Does carbon footprint reduction impair mechanical properties and service life of concrete?</p>
 <p>Prof. Liberato FERRARA Politecnico di Milano, Italy Material and process design in 3D Concrete Printing via AI driven experiments and modelling</p>	 <p>Dr. Lok Pratap SINGH National Council for Cement & Building Materials, India Enhancing the performance and durability of cementitious materials through nanotechnology</p>
 <p>Prof. Burkan ISGOR Oregon State University, USA Dual Purpose Titanium Alloy Anodes for Near-surface Mounded Retrofit and Impressed Current Cathodic Protection</p>	 <p>Dr. Surender SINGH IIT Madras, India Technologies and Strategies to Meet Future Needs of Aggregates</p>
 <p>Prof. Laurie LACARRIÈRE INSA Toulouse, France Modeling the durability of structures under multiphysical loads</p>	 <p>Dr. Ali Akbar SOHANGHPURWALA CONCORR, Inc., USA Application of Service Life Modeling to Reinforced Concrete Structures</p>
 <p>Prof. Sriramya D. NAIR Cornell University, USA Viability of Utilizing Supplementary Cementitious Materials for Subsurface Infrastructure</p>	 <p>Mr. David TEPKE SKA Consulting Engineers, USA At the intersection of safety, environmental responsibility, & durability: seeking a sustainable approach to existing concrete structures</p>
 <p>Prof. Sreejith NANUKUTTAN Queen's University of Belfast, UK Calcium focused design for longevity of concrete structures in silage environment</p>	 <p>Prof. Bernardo TUTIKIAN Univ. of Vale do Rio dos Sinos Campus São Leopoldo, Brazil Accidents of concrete structures under fire</p>
 <p>Prof. Sze Dai PANG National Univ. of Singapore, Singapore Effect of Climate Change on Building Materials: Predictions from Accelerated Testing and Machine Learning</p>	 <p>Prof. Anya VOLLPRACHT RWTH Aachen University, Germany Carbonation in concretes with SCMs</p>

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Registration Deadline and Fee

Registration Category	Conference Registration fee (including tax)	
	On or Before September 10, 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.

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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to register



**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; Kazakh stan; 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

11 Plenary (P), 20 Session Keynote (K), and 104 Contributory (C) oral presentations and 100+ poster presentations

Time	Day 0	Day 1	Day 2	Day 3
	Sep 24, 2024 (Tuesday)	Sep 25, 2024 (Wednesday)	Sep 26, 2024 (Thursday)	Sep 27, 2024 (Friday)
8:00 – 9:00	All registrations in EG-06	CONSEC Registration (D7)	CONSEC Registration (D7)	CONSEC Registration (D7)
9:00 – 10:00	C3S - Mini Auditorium CTSI - Raman Hall	Session 1 - Plenary (D7) (Inaugural & 1 P)	Session 5 - Plenary (D7) (2 Ps)	Session 9 - Plenary (D7) (2 Ps)
10:00 – 10:30	Tea/coffee break (EG-06)	Tea/coffee break (D7)		
10:30 – 12:00	C3S - Mini Auditorium CTSI - Raman Hall	Session 2 - Plenary (D7) (2 Ps & Sponsors)	Session 6 - Plenary (D7) (2 Ps & Sponsors)	Session 10 - Plenary (D7) (2 Ps & Sponsors)
12:00 – 13:00	Lunch (EG-06)	LUNCH (D6 Dining Hall)		
13:00 – 14:30	C3S - Mini Auditorium CTSI - Raman Hall	Sessions 3A/B/C/D (EG) (1 K & 4 Cs each)	Sessions 7A/B/C/D (EG) (1 K & 4 Cs each)	Sessions 11A/B/C/D (EG) (1 K & 4 Cs each)
14:30 – 15:00	Tea/coffee/snacks (EG-06)	Tea/coffee/snacks (Block E new exhibition area EG-08,09)		
15:00 – 16:30	C3S - Mini Auditorium CTSI - Raman Hall	Sessions 4A/B/C/D (EG) (1 K & 4 Cs each)	Sessions 8A/B/C/D (EG) (1 K & 4 Cs each)	Sessions 12A/B/C/D (EG) (1 K & 4 Cs each)
16:30 – 18:00	Launch of TLC2 Consortium (EG, Mini Auditorium)	Poster session & Sponsor Exhibition (EG)		Closing & Awards (EG, Mini Auditorium)
18:00 – 21:00		Welcome Reception & Dinner (D7 & D6)	Banquet and Gala Dinner (D7 & D6)	

EG - Ground floor of Block-E; D6 - Dining Hall in Block-D; D7 - Auditorium in Block-D

Pre-CONSEC24 Workshop

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

IIT Madras Research Park, India

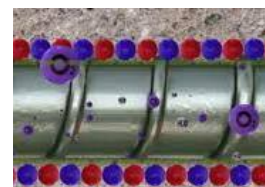
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7th One-day workshop on

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	Welcome address & Corrosion in concrete structures	Dr. Deepak Kamde, INSA Toulouse, France
09:30 – 10:00 am	Duracrete model & parameters for service life design	Prof. Carmen Andrade, CIMNE/UPC, Spain
10:00 – 10:30 am	Performance specifications for concrete structures	Prof. Piyush Chaunsali, IIT Madras, India
10:30 – 11:00 am	Importance of concrete quality and placement on minimizing corrosion of steel	Prof. Robert Melchers, Univ. of Newcastle, Australia
11:00 – 11:30 pm	Tea/coffee break	
11:30 – 12:00 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
12:00 – 12:20 pm	Evolution & performance of corrosion inhibitors	Prof. Shwetha Goyal, Thapar Inst., India
12:20 – 12:40 pm	Corrosion resistant steel bars for concrete structures	Mr. Biswajit Ghosh, Tata Steel, India
12:40 – 01:00 pm	Ferritic stainless steel bars for concrete structures	Mr. Vishal Seth, Jindal Stainless Limited, India
01:00 – 02:00 pm	Lunch break	
02:00 – 02:30 pm	Field corrosion measurements without connection to steel	Prof. Burkan Isgor, Oregon State Univ., USA
02:30 – 03:00 pm	Performance & failure mechanisms of galvanic anodes	Dr. Gino Ebell, BAM, Berlin, Germany
03:00 – 03:20 pm	Optimized condition assessment and durable repairs	Mr. Dhruvesh Shah, Vector Corrosion, India
03:20 – 03:40 pm	Discussion & Closing	Prof. Radhakrishna G. Pillai, IIT Madras, India

Registration Fee (including taxes)

On or before September 10, 2024 Spot registration is not allowed	Indian	Foreigner
	INR 4000	USD 50

Register at

www.consec24.com

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Coordinators

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For queries, please email to consec24@civil.iitm.ac.in



Pre-CONSEC24 Workshop

9 to 5 pm, September 24, 2024 (Tuesday)
IIT Madras Research Park, 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.

Registration Fee (including taxes)

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	INR 4000	USD 50

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Coordinators

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	INR 20 Lakhs	INR 10 Lakhs	INR 5 Lakhs	INR 2.5 Lakhs	INR 1 Lakh
Brief talk during...	Inaugural	Dinner	No	No	No
Proposal of one technical speaker	Yes	No	No	No	No
Exhibition stall	Yes (8 x 2 m)	Yes (4 x 2 m)	Yes (2 x 2 m)	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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Contact Information

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