CONSEC24

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Organized by IIT MADRAS

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

BTCM Building Technology, Construction Materials & Management

TLC2 *Centre of Excellence on* Technologies for Low-Carbon & Lean Construction

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aci

ICI Indian Concrete Institute

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
Inaugural address on
'What impacts did the CONSEC concept give on concrete technologies until today?'

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 components - documentation of properties

Prof. Koshy VARGHESE
IIT Madras, India
Digital technologies for accelerating and improving quality in construction

Prof. Surendra P. SHAH
Northwestern Univ., USA & IIT Madras, India
Future of Science and Technology of Construction Materials

Prof. Paolo GARDONI
Univ. of Illinois Urbana-Champaign, US
An overview of regional risk (and resilience) analysis

Prof. David TREJO
Oregon State Univ., USA
Service life of concrete structures and standardization

Prof. Ippei MARUYAMA
Univ. of Tokyo, Japan
Performance evaluation of concrete under specific conditions for nuclear reactor buildings

Prof. Alexandra BERTRON
INSA Toulouse, France
Behaviour of SCM and low-CO_2 binders and systems in sewer networks

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 'whither'ing

Prof. Jose Ivan ESCALANTE-GARCIA
CINVESTAV Saltillo, Mexico
Alkali activated binders based on precursors of limestone and recycled pulverized concrete

Keynote Speakers

Dr. Asit BAXI
Baxi Engineering, Inc. Houston, USA
Post-tensioned concrete structures for excessive loading conditions

Prof. Shashank BISHNOI
IIT Delhi, India
Carbonation of low clinker concretes: when it is a concern and when it is not

Prof. Pedro CASTRO BORGES
Avanzados del IPN Unidad Mérida, Mexico
Concrete durability in vulnerable coastal communities. The role of the participatory action research (PAR) for social appropriation.

Dr. Gino EBELL
BAM - Berlin, Germany
Stress corrosion cracking in prestressed concrete bridge - A case study

Prof. Yang EN-HUA
Nanyang Technological University, Singapore
Characterization & tailoring of mechanical properties of engineered cementitious composites under dynamic loading condition

Prof. Liberato FERRARA
Politecnico di Milano, Italy
Material and process design in 3D Concrete Printing via AI driven experiments and modelling

Prof. Burkan ISGOR
Oregon State University, USA
Dual Purpose Titanium Alloy Anodes for Near-surface Mounded Retrofit and Impressed Current Cathodic Protection

Prof. Laurie LACARRIÈRE
INSA Toulouse, France
Modeling the durability of structures under multiphysical loads

Prof. Sriramya D. NAIR
Cornell University, USA
Viability of Utilizing Supplementary Cementitious Materials for Subsurface Infrastructure

Prof. Sreejith NANUKUTTAN
Queen's University of Belfast, UK
Calcium focused design for longevity of concrete structures in silage environment

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. Suriya Prakash S.
Indian Institute of Technology Hyderabad, India
Use of GFRP rebars in construction: Recent research on short and long term performance

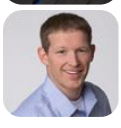
Prof. Enrico SASSONI
University of Bologna, Italy
Phosphate treatments to enhance the durability of cementitious substrates

Prof. Marijana SERDAR
University of Zagreb, Croatia
Does carbon footprint reduction impair mechanical properties and service life of concrete?

Dr. Lok Pratap SINGH
National Council for Cement & Building Materials, India
Enhancing the performance and durability of cementitious materials through nanotechnology

Dr. Surender SINGH
IIT Madras, India
Technologies and Strategies to Meet Future Needs of Aggregates

Dr. Ali Akbar SOHANGHPURWALA
CONCORR, Inc., USA
Application of Service Life Modeling to Reinforced Concrete Structures



Mr. David TEPKE
SKA Consulting Engineers, USA
At the intersection of safety, environmental responsibility, & durability: seeking a sustainable approach to existing concrete structures

Prof. Bernardo TUTIKIAN
Univ. of Vale do Rio dos Sinos Campus São Leopoldo, Brazil
Accidents of concrete structures under fire

Prof. Anya VOLLPRACHT
RWTH Aachen University, Germany
Carbonation in concretes with SCMs

Bridging structural and materials technologies

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 Fee

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.

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.

Scan this 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; 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)	Day 1 (Wednesday)	Day 2 (Thursday)	Day 3 (Friday)
	Sep 24, 2024	Sep 25, 2024	Sep 26, 2024	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** 1) Corrosion Control of Concrete Structures (**C3S**) 2) Construction Technologies for Sustainable Infrastructure (**CTSI**) Venue: Halls A and B in Royal Ball Room	**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		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		Tea/coffee break	Tea/coffee break	Tea/coffee break
16:00 – 17:00		**Session 4E** - Posters (1-50 posters)	**Session 8E** - Posters (50 onwards)	**Session 12** - Plenary & 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 7 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

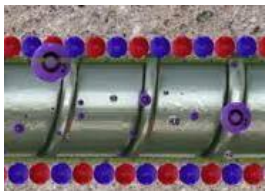
9 to 5 pm, September 24, 2024 (Tuesday)
Hotel Radisson BLU GRT Chennai (near airport), India

Organized by
IIT MADRAS

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 pm	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
or scan this QR code →

Coordinators

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

BTCM Building Technology, Construction Materials & Management

TLC2 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.

Registration Fee (including taxes)

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

Register at
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Coordinators

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TLC2 Centre of Excellence on Technologies for Low-Carbon & Lean Construction

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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 (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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Media Partners

Local Organizing Committee & Contact Information

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&

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

Conference Venue and Event Manager

Event Held at
Radisson BLU Hotel GRT Chennai
531, Grand Southern Trunk Rd, St. Thomas Mt.
Chennai, Tamil Nadu – 600 016, India
https://www.radissonhotels.com/

Event Management by
Fulcrum Tours and Travels (P) Ltd.
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