SEMINAR ON BUILDING FAÇADE INSPECTION 2023

27 June 2023 (Tuesday)
9.00am – 5.00pm

Atrium Ballroom, Level 4
Holiday Inn Singapore Atrium

CPD (Pending)

STU (Safety)
STU (Structural)
CPD (FSM)
CPD (BOA-SIA)
PDU (PE, CEng)

SPEAKERS

Er. Chin Leong Siong
Building and Construction Authority

Mr Harris Sun
RaSpect AI, Hong Kong

Er. David Ng
One Smart Engineering

Er. Ivan Phuah
WCT Consult LLP

Mr Mathieu Meur
DP Facade

Mr Kabi Subramaniam
Arup Singapore

Mr Justin Chan
Avetics Global

Mr Eric Lim
WaveScan Technologies

FEES

IES Members: $248.40
RE/RTO, CIJC Members: $291.60
Non-Members: $324.00

*Fees are inclusive of 8% GST

**10% off* *for group registrations of 5 or more participants*

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Organiser:

THE SINGAPORE ENGINEER

THE INSTITUTION OF ENGINEERS SINGAPORE

In support of:

BuildSG

For enquiries, please contact Desmond (desmond@iesnet.org.sg) or Nuraini (nuraini@iesnet.org.sg).

ABOUT THE SEMINAR

The **'SEMINAR ON BUILDING FAÇADE INSPECTION 2023'** follows on from the success of last year's event.

This year's seminar will provide an update on the benefits realised and the challenges encountered, since the introduction of the new Periodic Façade Inspection (PFI) regime. The aim of the new PFI regime, which came into effect on 1 January 2022, is to help detect and address façade deterioration in a timely manner.

The Building and Construction Authority (BCA) has been encouraging the use of available technologies to increase productivity and efficiency in the Built Environment sector.

When conducting façade inspections, Unmanned Aircraft Systems (UAS), or drones, can be used to assist the Competent Person (CP) in performing visual inspections. The use of drones makes façade inspections safer, more efficient and less labour-intensive.

The seminar will address the effectiveness of PFIs, best practices in conducting PFIs and preparing reports, façade inspection schemes in Hong Kong and Singapore, the application of drone technology and Artificial Intelligence, practical considerations when conducting PFIs, case studies and specific façade inspection solutions.

PROGRAMME

0900	Opening Brief
0905	**Ensuring Façade Safety via Implementation of Periodic Façade Inspection** by Er. Chin Leong Siong, Principal Engineer, Façade Engineering and Technology Department, *Building and Construction Authority (BCA)*
0945	**Comparison between Hong Kong's Mandatory Building Inspection Scheme (MBIS) and Singapore's Periodic Façade Inspection (PFI)** by Mr Harris Sun, CEO**,** *RaSpect AI, Hong Kong*
1025	Tea Break 1
1045	**Benefits in using Drones and AI for Periodic Façade Inspection** by Er. David Ng, Co-Founder, *One Smart Engineering Pte Ltd*
1125	**Façade Inspection of High-Rise Buildings in Downtown Singapore** by Er. Ivan Phuah, Co-Founder, *WCT Consult LLP Pte Ltd*
1205	**Q&A 1**
1230	Lunch
1330	**Periodic Façade Inspections: Practical Considerations** by Mathieu Meur, Director, *DP Facade*
1410	**Considerations in the Successful Application of Digital Tools for Façade Inspections** by Kabi Subramaniam, Associate Principal, *Arup Singapore*
1450	Tea Break 2
1510	**Advances in Robotics Technologies for Façade Inspections** by Justin Chan, *Avetics Global Pte Ltd*
1550	**Non-Destructive Testing of Complex Engineering Façades using 3D Microwave Holographic Imaging** by Eric Lim, Operation Director, *WaveScan Technologies Pte Ltd*
1630	**Q&A 2**
1655	Closing Brief
1700	End of Seminar

Er. Chin Leong Siong

Building and Construction Authority (BCA)

Ensuring Façade Safety via Implementation of Periodic Façade Inspection

by Er. Chin Leong Siong, Principal Engineer, Façade Engineering and Technology Department, Building and Construction Authority

With increasing numbers of ageing buildings in our densely built environment, it is prudent for building owners to detect and address any façade deterioration in a timely manner, in order to prevent exterior elements and features of buildings from falling down, and thus ensure public safety.

Since January 2022, Singapore has implemented the Periodic Façade Inspection (PFI) regime. The presentation will share how PFI has been effective in identifying potential hazards, such as cracks, corrosion and other issues, that could compromise public safety. The presentation will also share best practices and examples of good façade inspection reporting. Façade inspection reports are important as they will enable building owners to obtain a clear understanding of the current condition of their building facades and to address the issues before they become major problems.

A good report should provide a detailed assessment of the building façade and should include the defects or damages found, the severity of the defects, and recommendations for repair or maintenance.

Er. Chin Leong Siong is a Principal Engineer in the Façade Engineering and Technology Department of Building Resilience Group, Building and Construction Authority. Prior to joining BCA, he was involved in major infrastructure and building projects. He has participated in technical committees and working groups to review and develop design codes, standards and technical references. He is a registered Professional Engineer with the Professional Engineers Board and a Chartered Engineer with the Institution of Structural Engineers, UK.

Mr Harris Sun

RaSpect AI, Hong Kong

Comparison between Hong Kong's Mandatory Building Inspection Scheme (MBIS) and Singapore's Periodic Facade Inspection (PFI) scheme

by Harris Sun, CEO & Founder, RaSpect AI, Hong Kong

The presentation will focus on AI drone inspection technology implemented in Hong Kong by RaSpect AI under the Mandatory Building Inspection Scheme (MBIS) for building facade inspection. A comparison will be made with Singapore's Periodic Facade Inspection (PFI) scheme. The differences and similarities between the two inspection schemes will be highlighted. The discussion will also delve into Hong Kong's industry practice related to facade inspection, with an emphasis on the use of technology to improve efficiency and accuracy. Interesting case studies will be presented to showcase how technology is being utilised in facade inspection.

A post-graduate degree holder in Computer Science, Harris is a serial entrepreneur with over 18 years of start-up experience. In 2017, he founded RaSpect AI, a technology company that uses predictive AI technology to promote sustainability. The company specialises in developing smart city solutions to improve city management. RaSpect's technological innovations significantly improve the safety and reliability of infrastructure while lowering costs and increasing efficiency, by providing actionable data insights to simplify processes.

With RaSpect AI, Harris has brought drone inspection to the building sector, combined with cutting-edge technologies such as AI for automated defect detection, cloud computing for big data storage and processing, predictive analytics, BIM and GIS integration. The pioneering idea of AI-powered drone inspection of buildings has been recognised locally, regionally and globally, with several awards and honours.

Er. David Ng
One Smart Engineering Pte Ltd

Benefits in using Drones and AI for Periodic Façade Inspection

by Er. David Ng, Co-Founder, One Smart Engineering Pte Ltd

Under the Building Maintenance and Strata Management Act (BMSMA), responsible parties have a duty to ensure that building exteriors are properly maintained. BCA has introduced a new Periodic Façade Inspection (PFI) regime to facilitate the early detection of façade deterioration and allow defects to be rectified in a timely manner.

Instead of carrying out a 100% visual inspection, Drone and Artificial Intelligence (AI) technologies will be deployed to carry out the PFI in a more efficient and practical way, to improve productivity and enhance the safety of the Competent Person (CP) and the Façade Inspector (FI). Analysing drone photos to identify defects can save a lot of time and avoid potential human errors.

This presentation will elaborate on the benefits of using advanced technologies, such as the use of drones and AI, for PFI.

Er. David Ng is a Co-Founder of One Smart Engineering Pte Ltd which has offices and operations in Singapore, Malaysia and India. He is a Professional Engineer (Civil), Specialist Professional Engineer (Geotechnical), Qualified Erosion Control Professional (QECP), ABC Water Professional and Competent Person (CP) for Periodic Façade Inspection (PFI) in Singapore. Er. Ng has been involved in the publication of more than 70 technical papers in the field of geotechnical and environmental engineering. He has more than 20 years of experience in management, planning, design and construction of major infrastructure and transportation projects in Singapore, Malaysia, and India.

Er. Ivan Phuah
WCT Consult LLP

Façade Inspection of High-Rise Buildings in Downtown Singapore

by Er. Ivan Phuah, Co-Founder, WCT Consult LLP

Carrying out façade inspections for high-rise buildings in downtown Singapore can be a challenging task, due to various factors such as accessibility, safety and efficiency.

One solution is the use of drone services equipped with high-resolution cameras to capture images of the building façade and deploying artificial intelligence (AI) algorithms to detect defects, cracks and anomalies in the building façade.

The Competent Person then uses the drone inspection findings to formulate the close-range inspection.

Overall, the use of drones and AI analysis for façade inspections in downtown Singapore offers a promising solution to the challenges of traditional inspection methods, but it requires careful planning, execution, and ongoing evaluation to ensure success.

Er. Ivan Phuah is a Co-Founder of WCT Consult LLP, a Singapore-based engineering consultancy firm providing general civil, structural & geotechnical engineering services. He has more than 17 years of experience in the design and construction of residential, commercial, institutional and industrial developments in Singapore. He is a Professional Engineer (Civil) in Singapore, a registered ASEAN Chartered Professional Engineer and Qualified Erosion Control Professional (QECP), and Competent Person (CP) for Façade Inspection.

Mr Mathieu Meur
DP Facade

Periodic Façade Inspections: Practical Considerations

by Mathieu Meur, Director, DP Facade

The Periodic Façade Inspection framework was launched several years ago. Since then, façade inspections for hundreds of buildings have been completed. The presenter will share practical considerations when conducting such inspections, including the choice of appropriate inspection methodologies, the tools required, the reporting process, etc.

Mathieu Meur provides strategic and technical leadership, as the Director of DP Façade. Through his training as a multi-disciplinary engineer and subsequent years of experience heading the largest façade consultancy practice in the world, he has developed extensive knowledge of all types of building envelope systems, their design, engineering and related codes of practice. He has worked on numerous major construction projects on six continents. He is a frequent speaker at conferences, writes for technical publications and has been a Lecturer at BCA Academy, since 2016. He is also a Fellow of the Society of Façade Engineering from the United Kingdom, since 2010, and the Chairman of the Façade Engineering Committee at the Institution of Engineers, Singapore (IES), since 2016.

Mr Kabi Subramaniam
Arup Singapore

Considerations in the Successful Application of Digital Tools for Façade Inspections

by Kabi Subramaniam, Associate Principal, Arup Singapore

In recent years, commercial drones have been increasingly used in the Built Environment industry, for façade inspections. The use of drones can significantly reduce time and cost, and improve safety. However, this requires trained personnel and expertise in the post-processing of images using computing power.

The presentation will cover how the use of drones has significantly improved the inspection process and identified potential risks, with the help of case studies on completed PFIs.

Kabi is a Chartered Engineer with close to 20 years as a specialist in existing assets. As the leader of the Asset Services Team in the Singapore office of Arup, he is responsible for steering the team's business direction and projects in Singapore, where he has managed a range of building retrofit projects.

Kabi's Project Management skills have enabled him to deliver major work from concept through to the construction of new build façades in Singapore and internationally. He is a strong advocate of a risk-based approach to the assessment and maintenance of existing building façades.

With a keen interest in digital technology, Kabi has spearheaded initiatives aimed at the use of digital tools to automate processes including the use of drones for remote asset and façade inspections, and digital reporting, allowing data to be centralised and analysed remotely.

Mr Justin Chan
Avetics Global Pte Ltd

Advances in Robotic Technologies for Façade Inspections

by Justin Chan, Business Development Lead, Avetics Global Pte Ltd

With much of the attention being on the usage of drones for expediting the 100% visual inspection component of façade inspections, the 10% hands-on component becomes the new bottleneck for inspections.

Advances in robotic technologies and payloads allow for other inspection methodologies to be used by drones to perform a variety of tasks that otherwise would require humans on ropes. UAVs with variable angle of approach payloads can already assist in performing non-destructive testing of metal surfaces for corrosion, and further developments in these technologies mean that other surfaces can be tested for common defects as well.

Justin Chan is the Business Development Lead for Avetics Global Pte Ltd, a full section robotics and digital technology service provider and developer with an extensive track record in providing UAV services for a variety of commercial purposes. The applications include, but are not limited to, façade inspections, integrated ground-air 3D modelling and specialist hardware development.

Justin has been involved in the UAV space for six years, managing over 600 commercial projects, ranging from building façade inspections to construction progress monitoring to maritime information collection.

As part of Avetics, Justin was the Principal Developer for the Avetics-NTU CEE team for the BCA-HDB Govpact for Building Façade Inspections using drones, and was a member of the working group that developed the Technical Reference 78 part 1 and part 2 which provides guidelines on the usage of UAVs for conducting building façade inspections.

Mr Eric Lim
WaveScan Technologies

Non-Destructive Testing of Complex Engineering Façades using 3D Microwave Holographic Imaging

by Eric Lim, Operation Director, WaveScan Technologies Pte Ltd

*A spin-off from A*STAR, Singapore-based WaveScan specialises in R&D and product development, in the area of electromagnetics-based 3D imaging scanner systems and advanced AI algorithms.*

WaveScan's proprietary technology builds upon nearly a decade-long R&D on microwave and millimetre-wave radar sensors, and is capable of high-resolution, see-through structural imaging for non-destructive testing (NDT) applications.

The company's scanners integrate into robotic platforms that form part of fully automated asset inspection solutions addressing the specific inspection & maintenance needs of the built environment sector.

WaveScan has developed a successful non-destructive inspection solution for engineering façades, that effectively addresses key challenges, such as accessibility, safety, data quality and cost. The cost-effective solution optimises the use of robotic platforms to maximise access and safety, while also providing multi-layered imaging with clear data interpretation.

Mr Eric Lim has over 25 years of experience managing business development and manufacturing operations in US MNCs. In his current role, he is responsible for overseeing operations and managing global marketing, sales and operational activities.

TERMS & CONDITIONS

Registration
Registration will be on a first-come-first-served basis and will only be confirmed upon receipt of full payment, unless otherwise invoiced. All registrations must be submitted with the completed online Registration Form.

Closing Date & Payment
The closing date for registering for the seminar shall be **Friday, 23 June 2023**. Payment via credit card, PayPal and invoice should be settled at least 2 business days before the event.

Confirmation of Registration
Confirmation of registration will be given at least 2 business days prior to the seminar, or earlier where possible, via email. We reserve the right to allow only confirmed registrants to attend the event.

Refunds
No refunds will be made for withdrawals. Replacements will be allowed only if written notice is received by us at least 3 business days before the seminar. However, when an IES member is replaced by a non-member, the participant shall pay the difference in the relevant fees at least 3 business days before the seminar.

Cancellation/Postponement
Changes in venue, date, time and speakers for the events can occur due to unforeseen circumstances. The organiser reserves the full right to cancel or postpone the event under such circumstances without prior reasons. Every effort, however, will be made to inform the participants or contact person of any cancellation or postponement.

Fees will be refunded in FULL if the Event is cancelled by the organiser.

Entry to event venue
Registered participants who have made payment will be allowed into the event venue. No walk-in registrations will be allowed.

Enquiries
For group registration and more information, please email: **desmond@iesnet.org.sg** or **nuraini@iesnet.org.sg**