



Webinar Talk on From Smart Buildings to Intelligent Assets: How AI, IoT and Digital Engineering Are Transforming Asset Performance

Date : 20 November 2026
Time : 10.00am - 12.00pm
Platform : Zoom Platform
Speaker : Ts. Azrul Asmadi Mokhtar

BEM Approved CPD Hours: 2

Ref. No.: IEM26/HQ/478/T(w)

Registration Fees:

- Student Member : FOC
- IEM Member : RM 15.00
- Non-Member : RM 70.00

SYNOPSIS

Buildings and infrastructure are increasingly becoming complex, technology-enabled assets, yet their long-term performance is still largely dependent on how well they are designed, operated, maintained and renewed throughout their lifecycle. This presentation explores how engineers can move beyond conventional asset management approaches towards intelligent asset management, where engineering knowledge, digital technologies and operational data are integrated to deliver better lifecycle performance.

The session begins by examining the importance of Design for Maintainability, highlighting how decisions made during the design and construction stages can significantly influence future maintenance accessibility, reliability, energy performance, operational cost and asset lifecycle. Rather than designing assets primarily for completion and handover, engineers need to consider how assets will perform over 20, 30 or even 50 years of operation.

The presentation then explores the evolution from conventional Building Management Systems (BMS) and Building Automation Systems (BAS) towards IoT-enabled smart buildings, cloud platforms, advanced analytics and Artificial Intelligence (AI). It will demonstrate how operational data from building systems and equipment can be transformed from simple monitoring information into actionable engineering intelligence.

Key applications including condition-based maintenance, predictive maintenance, fault detection, energy optimisation, asset criticality assessment and lifecycle renewal planning will be discussed. Particular attention will be given to the engineering decision-making process.

Through practical examples and industry experience, the presentation will illustrate how digital technologies can help engineers reduce unplanned downtime, optimise energy consumption, improve maintenance productivity, extend asset life and make better capital investment decisions.

The session will also discuss the emerging role of Digital Twins and AI-driven asset management, and how these technologies can support the transition from reactive and preventive maintenance towards predictive and increasingly prescriptive asset management.

Ultimately, the presentation aims to demonstrate that smart technology real value lies in enabling engineers and asset owners to achieve higher reliability, better energy performance, lower lifecycle costs, greater resilience and improved long-term asset value.

The session concludes by considering how engineers can prepare for this transformation and remain central to decision-making in an increasingly digital and intelligent built environment.

Speaker: Ts. Azrul Asmadi Mokhtar



Ts. Azrul Asmadi Mokhtar is a seasoned Mechanical Engineering professional with close to 28 years of experience in engineering, construction, project management, sustainability, energy management, and smart facilities solutions. He holds a Bachelor of Mechanical Engineering from University of Manchester Institute of Science and Technology (UMIST).

He began his career in 1998 as a Project Engineer with Technic & Trading Sdn. Bhd., where he was involved in the design, construction, and maintenance of several landmark developments including Putra Mosque, Taman Putra Perdana, and the Deputy Prime Minister's Residence in Putrajaya.

From 2001 to 2003, he served as an M&E Engineer with Ahmad Zaki Sdn. Bhd., overseeing mechanical and electrical engineering works encompassing tendering, procurement, implementation, and construction management. During this period, he contributed to major projects such as Universiti Teknologi PETRONAS, Terengganu Specialist Hospital Centre, and the Putrajaya Waterfront development packages.

He subsequently joined KLCC Projek Berhad as Senior M&E Engineer, where he managed projects including the Perbadanan Putrajaya Complex, Putrajaya Precinct 2 Art Gallery, and Putrajaya Precinct 5 Sports Complex. In 2004, he was appointed Manager at KLCC Urusharta Sdn. Bhd., leading the Common Facilities Department at the iconic Petronas Twin Towers.

In 2005, Ts. Azrul rejoined Ahmad Zaki Resources Berhad as Senior Manager and later advanced to Assistant General Manager. He led multidisciplinary MEP teams across numerous large-scale developments including MRT projects, Kompleks Kerja Raya 2, Kuala Terengganu Maternity Hospital, International Islamic University Malaysia (IIUM) Hospital Kuantan, Universiti Darul Iman Kuala Terengganu, and PPR Chabang 3. He also gained international project exposure by leading the MEP team for the construction of Al-Faisal University in Riyadh under the consultancy of Buro Happold.

In 2014, he joined Edgenta Greentech Sdn. Bhd. as Head of Engineering for the Energy Division, focusing on sustainable engineering and energy performance solutions. He later earned several professional certifications, including:

- Certified Measurement & Verification Professional (CMVP/IPMVP) by Greentech Malaysia
- Green Building Index (GBI) Facilitator certification
- Registered Energy Manager (REM) by the Energy Commission Malaysia
- Project Management Professional (PMP) certification by Project Management Institute (PMI)
- Registered Profesional Technologist by MBOT
- Completion of Train The Trainer (TTT) program under HRD Corporation by Master Trainer

Currently, Ts. Azrul serves as Head of Smart Sustainable Solutions under the Asset Management Division at UEM Edgenta Berhad. His portfolio focuses on Smart Building Solutions, sustainability initiatives, energy optimisation, and performance-based facility management services, supporting the transformation towards smarter and more sustainable built environments.