Technical Visit to UBCT Industrial Solutions Sdn. Bhd.

By

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On Friday, 20 June 2025, the Electronic Engineering Technical Division (eETD) of The Institution of Engineers, Malaysia (IEM) successfully organised a technical visit to UBCT Industrial Solutions Sdn. Bhd., located at Taman Perindustrian Batu Kawan, Penang. Twelve participants from various engineering backgrounds registered for the visit, with the objective of enhancing their understanding of advanced automation, smart manufacturing technologies, and Industry 4.0 implementations within a real industrial environment.

The visit commenced with a warm welcome from the UBCT team, followed by a comprehensive and visually engaging technical presentation. Led by one of UBCT's senior engineers, the session provided an in-depth overview of UBCT's operational capabilities and its two-decade legacy in industrial automation. Participants were introduced to UBCT's strategic direction, which focuses on advancing smart manufacturing `~solutions, deploying IoT-enabled systems, and leveraging big data analytics to improve production efficiency and quality assurance.

UBCT also presented its Autonomous Service Robot (ASR) technology, designed for intelligent material handling and intra-logistics automation. These autonomous mobile robots (AMRs) are capable of navigating complex industrial layouts using real-time sensors, AI-driven pathfinding, and smart mapping systems. The robots autonomously transport components and products between workstations, reducing reliance on manual labour, improving turnaround times, and significantly increasing overall factory throughput.

This application demonstrated how UBCT enables end-to-end smart factory ecosystems by combining mobility, adaptability, and digital intelligence. The presentation also drew parallels with the “lights-off factory” concept, pioneered in advanced manufacturing facilities in China, where entire production floors operate with minimal or no human intervention. Through the integration of ASRs, collaborative robots, and intelligent monitoring systems, UBCT is paving the way for similarly high levels of automation in Malaysia—bringing the vision of fully autonomous, energy-efficient, and continuous operations closer to reality.

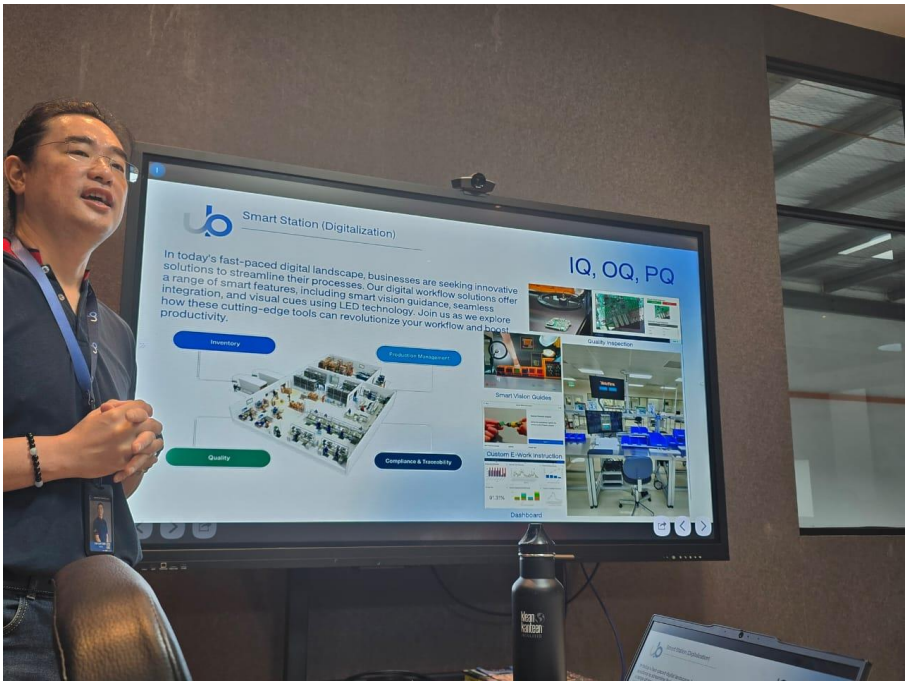
The session further highlighted robotic arm applications, showcasing the use of flexible collaborative robotic arms equipped with human-like dexterity and AI-powered motion control. These robotic arms are designed for fast, accurate, and safe operations across a wide range of production tasks, from precision assembly to repetitive handling. Participants were introduced to advanced features such as gesture-based teaching, low-speed contact detection for enhanced human safety, and direct process control through rule-based programming, collectively lowering the barrier to deployment in dynamic manufacturing environments.

Technical presentation by Mr. Sam Tan, UBCT account manager

A standout feature of the presentation was the Smart Station (Digitalisation) concept. This solution integrates intelligent workflow tools such as LED-based visual cues, smart vision guidance, and IoT-driven dashboards, enabling manufacturers to optimise productivity across key operations including inventory management, production monitoring, quality control, and

compliance. UBCT emphasised how these innovations support data-driven decision-making and real-time performance visibility, essential to Industry 4.0 adoption.

Participants were also particularly intrigued by UBCT's approach to IQ (Installation Qualification), OQ (Operational Qualification), and PQ (Performance Qualification), which reflects the company's commitment to precision and regulatory compliance. The showcase also included examples of smart visitor guides, custom E-work instructions, and quality inspection stations, all backed by data-driven dashboards for transparent performance tracking.



Sharing on Smart Station (Digitalisation)

Facility Tour and Robotic Showcase

Following the presentation, participants were brought on a guided tour of UBCT's facility, where they had the opportunity to witness live demonstrations of advanced robotic automation systems in action. The robotic showcase proved to be a major highlight of the visit, offering tangible insights into how UBCT's technologies are applied within a real production environment.

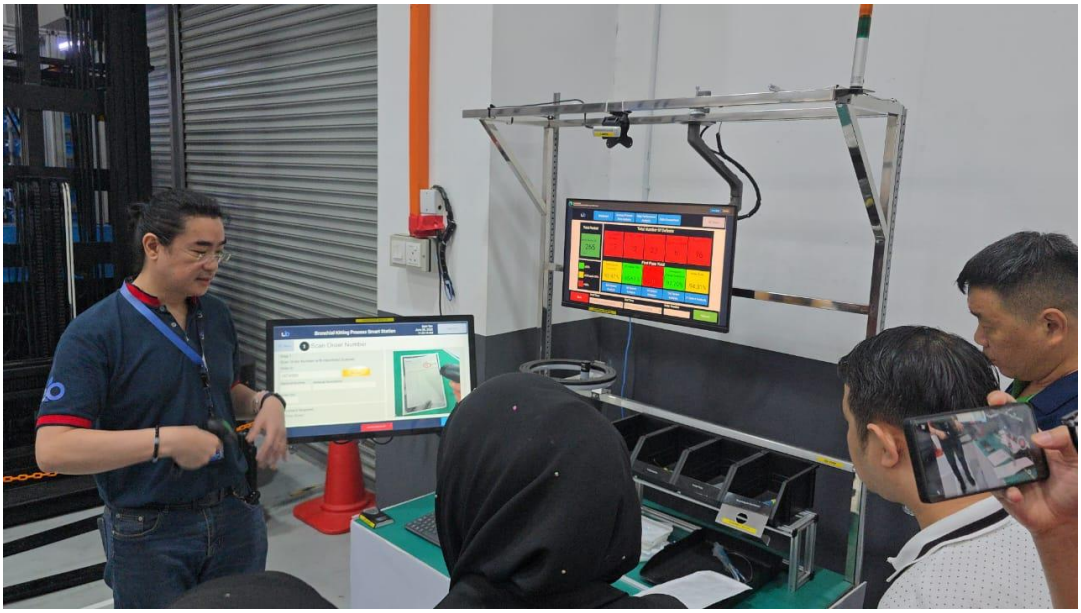
Key demonstrations included the Autonomous Service Robot, which manoeuvre seamlessly through office and industrial spaces, highlighting its capability in supporting logistics, delivery, and support functions in smart facilities. The Autonomous Robotic Storage system also caught the attention of participants, showcasing intelligent storage and retrieval capabilities that optimise space utilisation, reduce human error, and enable 24/7 automated inventory handling.

The Smart Station (Digitalisation) area allowed participants to interact with digital workflow platforms, where smart visual guidance systems, LED indicators, and real-time dashboards

streamlined processes across inventory, quality, and compliance tracking. Meanwhile, the Robotic Arm Application segment demonstrated human-collaborative functions including pick-and-place tasks, precision assembly, and intuitive teaching modes that allow quick deployment and adaptation to new tasks.

Demonstration of Autonomous Service Robot

Demonstration of Autonomous Robotic Storage



Demonstration of Smart Station (Digitalisation)

Robotic Arm application for handling delicate products

Throughout the tour, UBCT engineers provided detailed technical insights and responded to participants' questions, showcasing how their integrated solutions improve operational precision, reduce downtime, and enhance system-wide efficiency. The combined use of IoT, automation, and data-driven decision-making exemplified UBCT's leadership in enabling agile, scalable, and intelligent manufacturing ecosystems.

The visit concluded with a presentation of a token of appreciation from IEM to the UBCT management team, reflecting the spirit of collaboration between professional engineering bodies and industry. A group photo was taken to commemorate the event, and informal networking followed among participants and the UBCT personnel.

Group photo of the participants

The technical visit to UBCT Industrial Solutions Sdn. Bhd. proved to be highly insightful and beneficial for all attendees. It provided a first-hand view of advanced industrial automation, robotic technologies, and the practical deployment of Industry 4.0 principles within a Malaysian context. The experience enriched participants' technical knowledge and reinforced IEM's mission to promote professional development through active engagement with industry leaders and innovation-driven organisations.