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NTU Singapore and Hyundai Motor Group to develop advanced solutions for electric vehicle manufacturing

Nanyang Technological University, Singapore (NTU Singapore) and Hyundai Motor Group (the Group) have entered into an agreement to conduct a series of joint research projects focusing on advanced solutions for the manufacturing of electric vehicles (EVs) and to develop future mobility solutions.

Focusing on Industry 4.0 technologies, these projects aim to develop solutions that can transform conventional car manufacturing facilities into state-of-the-art factories of the future.

Four pilot projects on artificial intelligence (AI) and additive manufacturing (3D printing) will be explored in the initial stage which starts this month.

To ensure the quality of Battery Electric Vehicles (vehicles powered entirely by batteries), one of the projects aims to develop machine learning algorithms for vehicle image processing. The application of an AI-based image processing sensor in the plant will help detect defects and anomalies during the manufacturing process, ensuring high levels of safety and reliability of the final product.

Another project will look at integrating 3D printing in EV manufacturing. Researchers will explore how 3D printers can be effectively used in the customisation of automotive components, and how they may be implemented in a smart factory operation. This will support the smart manufacturing vision, where customers can order and customise a car model to their taste.

NTU Senior Vice President (Research) Professor Lam Khin Yong and Hyundai Motor Group Senior Vice President Hong Bum Jung signed the collaboration agreement at a ceremony held at NTU on Wednesday (1 Sep). It was witnessed by NTU President Professor Subra Suresh and President & Chief Innovation Officer of Hyundai Motor Group, Youngcho Chi.

NTU President Professor Subra Suresh said, "The partnership between NTU and Hyundai Motor Group provides one more example of how our close collaboration with industry plays an important role in developing relevant solutions to address real world

issues. This is in line with the NTU 2025 strategic plan, which aims to address some of the grand challenges facing humanity. This collaboration with Hyundai Motor Group will build on NTU's core strengths, in areas such as additive manufacturing, AI, autonomous and electric vehicles, and big data to bring about benefits to the automotive industry, Singapore and the global society."

The signing ceremony follows an earlier announcement made in October 2020 during the virtual groundbreaking ceremony for Hyundai Motor Group Innovation Centre in Singapore (HMGICS). During the ceremony, NTU was announced as the first academic research partner for the Group's HMGICS initiative.

President & Chief Innovation Officer of Hyundai Motor Group, Youngcho Chi said, "HMGICS aims to build an ecosystem for the future mobility industry based on open innovation. We are going to strengthen collaboration with NTU and develop advanced solutions to revolutionise future mobility value chain going forward."

The HMGICS is an open research facility for the Group's future mobility research and development. Located at Singapore's Jurong Innovation District, the construction of HMGICS is expected to be completed at the end of 2022. The facility will only be five-minute drive from the NTU Smart Campus, which is a living testbed of innovative digital and tech-enabled solutions.

Future initiatives to nurture talent

Aside from research and development projects, the latest agreement between NTU and Hyundai Motor Group also paves the way for future collaborations aimed at nurturing talent in the automotive sector.

For example, the partners will launch 3D printing competitions, focusing on the innovative use of the technology in automotive engineering. The aim is to drive interest in EV manufacturing and to encourage undergraduates to imagine what future mobility could look like. At the same time, the competition will be an opportunity for people to gain insights into the benefits of 3D printing technology in EVs.

NTU students and researchers will also benefit from joint educational seminars, which will provide a platform for industrial experts from the Group and NTU academics to exchange ideas and build their skills.

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About Nanyang Technological University, Singapore

A research-intensive public university, Nanyang Technological University, Singapore (NTU Singapore) has 33,000 undergraduate and postgraduate students in the Engineering, Business, Science, Humanities, Arts, & Social Sciences, and Graduate colleges. It also has a medical school, the Lee Kong Chian School of Medicine, set up jointly with Imperial College London.

NTU is also home to world-class autonomous institutes – the National Institute of Education, S Rajaratnam School of International Studies, Earth Observatory of Singapore, and Singapore Centre for Environmental Life Sciences Engineering – and various leading research centres such as the Nanyang Environment & Water Research Institute (NEWRI) and Energy Research Institute @ NTU (ERI@N).

Ranked amongst the world's top universities by QS, NTU has also been named the world's top young university for the past seven years. The University's main campus is frequently listed among the Top 15 most beautiful university campuses in the world, and it has 57 Green Mark-certified (equivalent to LEED-certified) building projects, of which 95% are certified Green Mark Platinum. Apart from its main campus, NTU also has a campus in Singapore's healthcare district.

Under the NTU Smart Campus vision, the University harnesses the power of digital technology and tech-enabled solutions to support better learning and living experiences, the discovery of new knowledge, and the sustainability of resources.

For more information, visit www.ntu.edu.sg