



GSMA 5G Case Studies

5G BRINGS AUTONOMOUS ROBOTS TO LIFE

AIS's private 5G network enables robots to transport goods across manufacturing plants



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AIS'S PRIVATE 5G NETWORK ENABLES ROBOTS TO TRANSPORT GOODS ACROSS MANUFACTURING PLANTS

Operator partner: AIS & Thai Automation and Robotics Association • **Technologies:** 5G • **Country:** Thailand

Industrial and logistics robots have generally been confined to one small patch of the factory floor. Not any more. In Thailand, mobile operator AIS is using 5G connectivity to give robots the freedom to roam around manufacturing plants. This technology is being applied first in an electrode manufacturing plant run by Yawata Electrode (Thailand) Co., Ltd. in Nakhon Ratchasima.

The complex production process for welding electrodes involves moving raw materials, semi-completed goods and finished products between production floors. Ideally, autonomous robots would transport these goods around the plant. That requires the robots to be supported by secure wireless connections that are stable, low latency, and capable of providing full coverage inside the factory.

To meet that need, AIS Business is working with the Thai Automation and Robotics Association¹ (TARA) and Thai Automation System Integrators (ASI) to develop 5G solutions and platforms to support autonomous robots within production plants.

Yawata Electrode has successfully deployed an autonomous robot solution developed by AIS in conjunction with Lertvilai and Sons Co., Ltd., a long-standing supplier of industrial robots. The plant, covered by a private 5G network supplied by AIS, is using two autonomous mobile robots to increase its goods transportation efficiency by 23.6%. In the near future, it plans to deploy more robots to further increase production capacity.

Autonomous mobile robots are one of several 5G solutions and platforms AIS is developing to enable manufacturers to harness digital technologies to transform their operations. Its factory-specific 5G private network offering can support network slicing to enable the customer to configure the connectivity to meet the needs of specific applications.

“The 5G private network platform gives the network the properties to support the specific needs of applications, such as speed and low latency,” explains Tanapong Ittisakulchai, Chief Enterprise Business Officer at AIS 5G Business. “This custom network design keeps data connections private, despite it being a wireless network. The result is flexible data transfers that are low latency and exceptionally high data security.”

AIS says its 5G private network meets all of the electrode plant's wireless connection requirements, while noting interoperable data connectivity could also be used to support other smart factory solutions, including other forms of robotics, and programmable logic controllers (PLCs) running over industrial IoT systems. An industrial IoT solution can enable individual PLCs to be better integrated with systems outside the factory, including servers in the cloud that process customer orders and requests in real time.

¹ TARA works with a range of government and private sector partners to support entrepreneurs with research and development as well as provide commercial cooperation. It promotes the industrial sector to adopt automation and robotic systems to boost capabilities and increase the productivity of manufacturing factories with new technologies.

COMBINING OPERATIONAL AND INFORMATION TECHNOLOGY



AIS is also working with operational technology (OT) specialists and systems integrators in the manufacturing sector to develop solutions that draw on its 5G platform. It plans to use 5G to provide seamless data connectivity between different components of smart factory solutions, such as robotics, PLCs and industrial IoT systems.

“5G is an enabler of a wide range of smart manufacturing solutions and allows for seamless data connectivity among OT, IT and the cloud, transforming the industrial sector to industry 4.0.” says Tanapong Ittisakulchai. “5G is the key technology driver of digital transformation. It creates more competitive advantage by overcoming technical limitations, such as bandwidth, latency, privacy and mobility.”

In Thailand, the government is providing financial backing to manufacturers that embrace advanced technologies. AIS says the Thailand Board of Investment has introduced a three-year 100% corporate income tax exemption for companies that upgrade their machinery with automation and robotic technology systems (such as the AIS 5G network platform) to help increase productivity, reduce costs and increase workers’ safety in the factory.

Research firm IDC has forecast that 5G technology could generate annual economic value of 2.6 billion Thai baht (US\$82 million) in Thailand enterprise segment in 2025. AIS believes 5G will have a particularly big impact in the manufacturing, transportation and logistics, building and property, healthcare and agriculture sectors. The operator notes that Thailand’s emerging 5G ecosystem encompasses both the technology supply side, including a strong developer base, and the industry demand side.



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Tanapong Ittisakulchai - Chief Enterprise Business Officer at AIS 5G Business

COLLABORATION ACROSS THE PUBLIC AND PRIVATE SECTORS

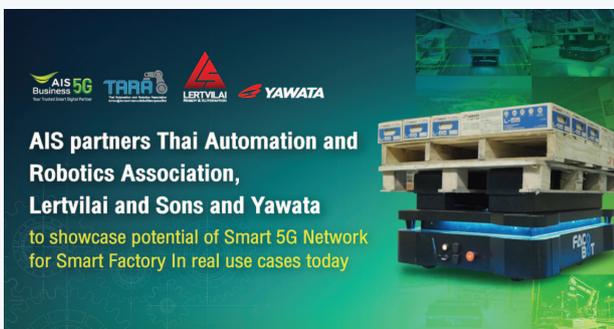


AIS says the development of “real commercial solutions” that enable the adoption of automation and robotics on both the supply and demand sides will require collaboration among a variety of partners in both the public and private sectors.

“To have effective solutions in order to deliver end-users with the best experience, business needs to understand issues or pain-points,” notes Tanapong Ittisakulchai. “Cooperation with a variety of partners from both the business and technology sides is required to ensure the best framework for designing solutions that fulfil business requirements.”

The public sector plays a vital role by setting policies and undertaking activities to engage businesses, AIS says. It notes that incentives for research and development and investment, together with the easing of regulation, can help drive technology adoption in the business environment.

AIS is hopeful that automation and robotic systems will increase the productivity of Thailand’s manufacturing sector, giving it a competitive edge and helping it to withstand foreign competition in the future. “We have seen growth opportunities in the industrial sector to deploy technology as a driver of digital transformation through being a provider of 5G industrial solutions,” says Tanapong Ittisakulchai. “We believe that the collaboration will foster the ecosystem of Thai industry to have the potential to cope with opportunities and competition which will arise in the future.”



ABOUT AIS BUSINESS



As a leader in telecommunication and ICT service providers in Thailand for more than 31 years, AIS Business has been trusted by private companies, from SMEs up to large enterprises, including state enterprises, in adopting our choices of solutions i.e., Enterprise Mobility, Business Network, Business Cloud, IoT/ M2M, ICT, Cybersecurity, including digital services like Digital Marketing, Digital Payment. Together with AIS 5G infrastructure and solutions i.e, network slicing, MEC, FWA and private network, our customers will successfully enable their businesses in the digital economy.

For more information, please visit <https://business.ais.co.th/> or contact AIS Business team taking care of your company or AIS CORPORATE CALL CENTER 1149.