

GSMA 5G TRANSFORMATION HUB

The world's most innovative 5G solutions



Changing Wi-Fi to 5G in the Manufacturing industry

Somboon Advance Technology Public Company Limited

Somboon Advance Technology Public Company Limited, based in Thailand, is a notable name in the automobile industry as the second largest manufacturer of auto parts in the country. The company primarily specialises in the production and distribution of vehicle parts for passenger cars, pickup trucks, trucks, and agricultural machinery. Their product portfolio is comprehensive, comprising axle shafts, disc brakes, drum brakes, exhaust manifolds, leaf springs, stabiliser bars, hot coil springs, and other related items.

It is also the first factory located in the Eastern Economic Corridor (EEC) area (Rayong Province, Thailand) to undergo this change. Currently, Somboon Advance Technology PCL has a market capitalisation of \$242 million, a testament to its substantial presence in the auto parts industry in Thailand and beyond.





Changing Wi-Fi to 5G in the Manufacturing industry.

+ CHALLENGE:

 Somboon Advance Technology Public Company Limited faces some notable challenges in its operation. The efficiency of the production line was hindered due to the manual handling of camshafts and manual driving forklifts for product consignment from warehouses to production lines. Such practices often resulted in diminished productivity, quality, and safety.

The company also struggled with storage management. It relied on manual stacking of materials and a paper-based inventory system, which was not only time-consuming but also prone to inaccuracies.

+ SOLUTION:

 To counter these challenges, Somboon Advance Technology introduced strategic solutions. They integrated a 3D Vision Robot into their production lines. The robot, equipped with an industrial camera and AI capabilities, was tasked with handling camshafts.

In the transport department, the company replaced manual forklifts with Unmanned Automated Guided Vehicles (AGVs). These AGVs,

capable of receiving orders via 5G, are now responsible for product transportation within the factory.

Finally, to revamp its storage system, the company implemented an Automated Storage and Retrieval System (AS/RS) Smart Warehouse. Materials delivered to the warehouse by AGVs are now stored automatically following barcode scanning.

+ IMPACTS AND STATISTICS:



The introduction of advanced solutions has had a transformative impact on the operations of Somboon Advance Technology Public

Company Limited, leading to quantifiable improvements.

The 3D Vision Robot has been a game-changer for the company's production lines. It can handle camshafts for two production lines concurrently, improving productivity by 1.25 times as well as enhancing quality, and ultimately leading to a boost in production efficiency.

The implementation of Unmanned Automated Guided Vehicles (AGVs) has significantly improved shipping efficiency and safety. The use of AGVs reduces the risk of accidents and associated costs, contributing to an overall safer and more efficient operational environment.

The Automated Storage and Retrieval System (AS/RS) Smart Warehouse has revolutionised the company's inventory management. This system has dramatically increased the storage capacity by improving shipping efficiency by 12% and the accuracy of retrieval has also been improved resulting in substantial cost savings and reduced material waste.

+ WIDER IMPLICATIONS:



The aggregate effect of these solutions is best reflected in the company's financial performance. The incorporation of these 5G smart solutions has amplified the earning rate of the factory by 60%. At the same time, operational costs have been reduced by 30%, demonstrating the significant, tangible benefits of these advancements in its operation. This dramatic improvement in earnings and reduction in costs underscores the transformative power of technology in modern manufacturing environments.

+ STAKEHOLDERS:

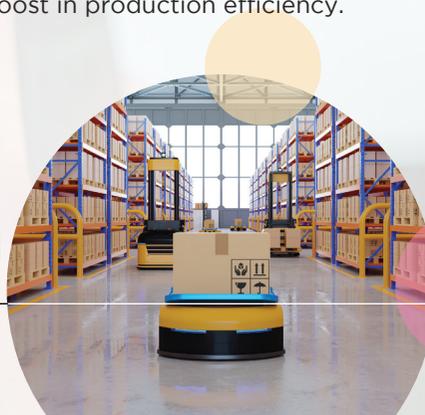


Somboon Advance Technology Public Company Limited, in collaboration with its key stakeholders, has successfully implemented the cutting-edge 5G high-speed solution for its advanced technologies. This collaboration involved Network and Infrastructure Provider AIS, Network Vendor Huawei, and AIS's Solution Partner Siasun. Together, they have deployed the 5G technology to empower the 3D Vision Robot, Unmanned AGV, and AS/RS Smart solution in the company's warehouse.

SOURCES AND FURTHER INFORMATION



Please visit
<https://business.ais.co.th/>
 Or email us at
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Unlocking new possibilities and features with 5G

NUMEROUS ADVANTAGES OF 5G OVER CONVENTIONAL WIRELESS CONNECTIVITY

Using 5G as a reliable alternative to Wi-Fi in smart factories, Somboon Advance Technology Public Company Limited has unlocked new possibilities and features within their manufacturing processes.

SPACE FOR NEW FEATURES

The implementation of digital twinning, which maps out physical assets in a virtual space, allows for highly customisable products and innovative ways to add value. These digital twins, fully connected through 5G, enhance real-time interaction and collaboration between internal and external parties.

INTELLIGENT ROBOTICS

As part of their vision to become an Industry 4.0 facility, Somboon Advance Technology has been actively integrating intelligent robotics into their manufacturing operations. By deploying intelligent sensors to capture workflows and Unmanned Automated Guide Vehicles (AGVs) to manage facilities across different sites, they are moving towards a fully automated and efficient manufacturing environment.



AR/VR

The introduction of mixed reality technologies like augmented reality and virtual reality, made possible by 5G connectivity, has greatly enhanced real-time communication within the company. These technologies support advanced training, remote technical assistance, and collaboration between staff, ultimately improving factory automation and planning decisions. Somboon Advance Technology strives to be a pioneer in achieving a fully autonomous onsite factory within the region as they continue their journey towards Industry 4.0.

5G OFFERS NUMEROUS ADVANTAGES OVER WIRELESS CONNECTIVITY

5G offers numerous advantages over conventional wireless connectivity, such as Wi-Fi. Unlike Wi-Fi, which is prone to interference, congestion issues, and weak signal strengths, 5G provides a more reliable and robust connection. It ensures constant connectivity for machines requiring uninterrupted communication and eliminates the fluctuations in signal strength often experienced with Wi-Fi repeaters.

SMART SENSORS AND VISUAL ANALYTICS

In the pursuit of a smart and automated factory, Somboon Advance Technology recognises the critical role of 5G in enabling smart sensors and visual analytics. By automating complex processes and deploying video analytics and intelligent sensors, they achieve high reliability and efficiency in manufacturing. The use of wireless workstations allows for easy reconfiguration of dynamic production environments, enhancing flexibility and adaptability in their manufacturing processes.

Enables automated robotics and inspection

FASTER AND MORE ACCURATE INSPECTION WITH 5G

From manual inspection to fully automated inspection

One significant aspect of the solution implemented by Somboon Advance Technology Public Company Limited is enabling automated robotics and inspection through 5G connectivity. This transition has had numerous benefits, including enhanced mobility and reduced errors.

Previously, the plant relied on manual inspection and workstations for tasks such as visual inspection, material handling, and component reading. However, with the integration of 5G-enabled solutions, such as A.I. cameras, the process has shifted from manual inspection to fully automated inspection.

Visual analytics, powered by 5G connectivity, has made the inspection faster and more accurate. Furthermore, the deployment of AI-assisted automation has significantly reduced the need for manual work, thereby minimising the potential for human error.

Another notable improvement is the shift from hand-carrying materials to autonomous mobility robots (AMRs). Previously, materials were manually transported from one workstation to another. However, the introduction of AMRs, facilitated by 5G connectivity, has greatly assisted in the transportation of goods in the warehouse.

3D Vision Robot

3D Vision Camera & Robot Auto Grabbing System



Achieving significant improvements
in quality and consistency

THE FOUNDATION OF FULLY AUTOMATED PRODUCTION

CONTINUOUS HIGH OUTPUT PRODUCTION AS A CONTINGENCY

The measures and solutions implemented by Somboon Advance Technology Public Company Limited have resulted in significant improvements in quality and consistency, establishing a foundation for continuous and reliable production.

In light of challenges related to labour supply and skill shortages, the company has recognised the need for contingency measures. The scarcity of operators and technicians, exacerbated by the COVID-19 pandemic, has adversely affected production. By adopting fully automated processes, Somboon Advance Technology aims to reduce reliance on manpower and mitigate the impact of labour shortages.

One of the implementation's key benefits is the achievement of higher consistency and quality output. Through increased automation and the integration of advanced technologies, the company expects to improve productivity by 50%. This boost in productivity not only ensures higher output but also enhances consistency, leading to a higher standard of quality across its product range.



Solution offers major advantages to other businesses

The solutions implemented by Somboon Advance Technology Public Company Limited offer significant competitive advantages to other businesses operating in the same industry.

- One major advantage lies in the utilisation of artificial intelligence (AI), machine learning (ML), and analytics to optimise its operational efficiency and quality control processes.
- Automation of processes through the use of robots brings substantial benefits in terms of improved productivity.
- Another advantage is the ability to implement contactless remote operation as a contingency during lockdowns or disruptions. By leveraging remote operation capabilities, businesses can maintain continuity and minimise downtime, even in challenging circumstances.
- Furthermore, these solutions address the challenge of managing tight labour supply and ageing workforces. With the implementation of automation and advanced technologies, companies can overcome labour shortages and skill gaps.
- Ultimately, the implementation of these solutions leads to improved customer satisfaction. By optimising efficiency, enhancing product quality, and ensuring timely delivery, businesses can provide customers with better products and services.



Future plans

Future plans for Somboon Advance Technology Public Company Limited include further advancements in industrial 5G technology and utilising automation systems and IoT in the factory to improve productivity and efficiency on the digital infrastructure of 5G and the platform that already existed.

"5G capability, with its fast response and low latency, enables real-time AI response, allowing for accurate material sorting by robot arms and seamless coordination with the warehouse system. AGVs can effortlessly receive orders from the production line and deliver to their destinations. The instant response and high reliability offered by 5G are unparalleled compared to traditional communication methods like Wi-Fi or previous cellular technology."

"Thanks to the revolutionary 5G technology, including Network Slicing and Private Network, enterprises like Somboon Advance Technology are empowered to embark on their Industry 4.0 transformation journey. These advanced features of 5G play a pivotal role in delivering tailored 5G services, enabling businesses to optimise their operations and embrace the next level of industrial innovation."



About the GSMA

The GSMA is a global organisation unifying the mobile ecosystem to discover, develop and deliver innovation foundational to positive business environments and societal change. Our vision is to unlock the full power of connectivity so that people, industry, and society thrive. Representing mobile operators and organisations across the mobile ecosystem and adjacent industries, the GSMA delivers for its members across three broad pillars: Connectivity for Good, Industry Services and Solutions, and Outreach. This activity includes advancing policy, tackling today's biggest societal challenges, underpinning the technology and interoperability that make mobile work, and providing the world's largest platform to convene the mobile ecosystem at the MWC and M360 series of events.

For more information, please visit the GSMA corporate website at www.gsma.com.

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GSMA 5G Transformation Hub

The GSMA 5G Transformation Hub is a source of information on some of the most innovative 5G solutions in the world. This portal contains case studies detailing design, benefits, key players, measured value and the future impact of scaling up these 5G solutions worldwide. The 5G Era is now firmly established and this family of standardised GSM technologies, including mmWave, are being rolled out successfully across the globe. The GSMA 5G Transformation Hub, launched at MWC Barcelona in 2022, provides details of how 5G is best placed to deliver real value for a range of key sectors including manufacturing, energy, transportation, media and live entertainment, smart cities and construction.. Many more case studies will be added, in the coming months, covering even more industries and the GSMA is asking Members to nominate innovative 5G case studies to add to this global digital showcase. The 5G Transformation Hub and this particular Case Study are both sponsored by Qualcomm.

www.gsma.com/5GHub

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