

Charting the course towards digital excellence

PT. Akebono Brake Astra Indonesia takes their digital transformation efforts to the next level with the Smart Industry Readiness Index (SIRI)



Adapting to change: Brake pads beyond the pandemic

The global brake pad market is undergoing a transformative shift driven by technological advancements, environmental concerns, and evolving consumer preferences. Specifically, the ceramic brake pads segment has seen substantial growth in the automotive industry due to their superior performance and durability.

The COVID-19 pandemic in 2019 triggered a significant deceleration in global car manufacturing and production. During this period, companies shifted their focus to research and development, investing in new technologies and innovations to adapt and prepare for future growth. This intensified focus accelerated Industry 4.0 advancements in the automotive brake pad industry. IoT integration and real-time data analytics have optimised production processes and supply chain management, and automated quality control systems have enhanced product consistency and reduced defects, resulting in higher productivity, improved product quality, and more efficient distribution of products.

By early 2021, as pandemic restrictions gradually eased and economic activities resumed, the relaxation of stringent measures and resumption of operations boosted consumer demand for both passenger and commercial vehicles, contributing to the recovery of the automotive brake pad market. The necessity to swiftly adapt to changing market conditions encouraged manufacturers to adopt flexible and innovative production techniques.

The global automotive brake pads market is projected to grow from USD 6.6 billion in 2023 to USD 10.86 billion by 2031.¹ In the APAC region, the market is expected to increase from USD 1,398.10 million in 2021 to USD 1,875.27 million by 2028, with an estimated CAGR of 4.3% from 2021 to 2028.²

¹ [Global Automotive Brake Pads Market Assessment, By Material \[Semi-Metallic, Non-Asbestos Organic, Low-Metallic, Others\], By Position Type \[Rear, Front\], By Sales Channel \[OEM, Aftermarket\], By Vehicle Type \[Passenger Vehicle, Commercial Vehicle, Others\], By Region, Opportunities and Forecast, 2017-2031F](#)

² [Asia Pacific Automotive Brake Pads Market Forecast to 2028 - COVID-19 Impact and Regional Analysis By Material Type \(Metallic Brake Pad, Semi-Metallic Brake Pad, Ceramic Brake Pad, Asbestos Brake Pad, and Non-Asbestos Organic Brake pad\) and Vehicle Type \(Commercial Vehicle and Passenger Cars\)](#)



Bridging tradition and technology

PT. Akebono Brake Astra Indonesia (AAI) encountered notable challenges in adopting Industry 4.0, including high initial investment costs, workforce resistance and skill gaps, complex integration with legacy systems, data management and security concerns, and a shortage of technical expertise. Additionally, it encountered difficulties in maintaining operational continuity, customising digital solutions, fostering a culture of innovation, and sustaining momentum in digital transformation.

Operational inefficiencies such as prolonged equipment downtime, supply chain bottlenecks, manual quality control processes, limited data integration, inefficient inventory management, high reject rates, long changeover times, and limited use of automation further hindered its manufacturing processes and product quality. These challenges increased labour and raw material costs, affected competitiveness, and necessitated substantial investments in quality control and advanced technologies to meet elevated customer demands.

Navigating the digital landscape with SIRI

SIRI served as a comprehensive tool for AAIJ to measure their current digital maturity levels, identify enhancement opportunities, and provide actionable insights and best practices. The framework was expected to guide the development of a customised digital transformation strategy aligned with AAIJ's business goals and industry benchmarks, facilitating a structured and impactful approach to transformation. AAIJ undertook the Official SIRI Assessment (OSA) with several key objectives in mind:

Align with Industry 4.0 standards by assessing its current digital maturity state and developing a clear and comprehensive roadmap for its digital transformation journey.

Foster stakeholder alignment by effectively communicating the company's vision and strategy for digital transformation, ensuring unified support across internal and external stakeholders.

Enhance competitiveness by benchmarking against industry standards, identifying areas for improvement, and implementing targeted enhancements to boost performance and market position.

Maximise AAIJ's efficiency and productivity gains by strategically identifying and prioritising areas for investment in key technologies and processes essential for achieving operational excellence.





From initiation to completion

The International Centre of Industrial Transformation (INCIT) appointed independent senior Certified SIRI Assessor (CSA), Kah-Ming Chai, to conduct the OSA for AAIJ.

Briefing

The OSA process kicked off with a 2-hour online onboarding call involving key stakeholders from AAIJ. This session outlined the assessment process, introduced the SIRI framework, and set expectations for the on-site evaluation. AAIJ's focal person also received a list of required data inputs.

On-site assessment

The CSA visited AAIJ's factory office in Kelapa Gading, Jakarta to conduct a 1.5-day on-site evaluation of the facility. During this time, the CSA also guided AAIJ through the SIRI Assessment Matrix and Prioritisation Matrix, imparting Industry 4.0 concepts and best practices through interviews and discussions.

Debriefing

After completing the evaluation, the CSA compiled and organised the assessment results to produce the OSA report. In the subsequent online debriefing call, the CSA presented the findings and recommendations to the AAIJ team. The process concluded successfully upon formal submission of the OSA report.



Enhancing core competencies

SIRI provided AAIJ with clear direction for its digital transformation journey, allowing the company to prioritise use cases and investments based on specific KPIs and cost profiles. The CSA worked with AAIJ's factory management team to craft a comprehensive and tailored transformation roadmap aligned with the company's long-term objectives to ensure cohesive growth and industry advancement.

AAIJ strategically utilised these insights and recommendations to enhance **priority dimensions** identified during the assessment, such as **Horizontal Integration, Shop Floor Automation, Enterprise Automation, and Leadership Competency**. By effectively allocating resources to these high-impact areas, the company fostered the development of new strategies, advanced technologies, and intricate systems.



Taking digital transformation to the next level

SIRI has helped AAIJ to enhance their digital transformation roadmap by uncovering new insights to unlock overall efficiency, productivity, competitiveness, and provability.

Insights from the OSA and CSA recommendations enabled AAIJ to relook into their core competencies, develop predictive models to optimise costs and asset efficiency, implement new technologies to advance supply chain automation, and transition to a fully automated production line. Strengthening leadership competencies and enhancing enterprise automation flexibility through system integration also allowed AAIJ to further streamline their business workflows with minimal effort.

Financially, AAIJ will capture cost savings through reduced energy consumption from facility automation, predictive maintenance lowering maintenance costs, and increased operational productivity. Enhanced delivery times and reliability have boosted customer satisfaction, supported by improved supply chain integration and real-time tracking.

AAIJ also prioritised environmental sustainability through the adoption of energy-efficient technologies and IoT applications, aligning with its sustainability goals. The streamlining of operations and cost reduction has allowed AAIJ to optimise their resource utilisation, bolstering operational efficiency and achieving financial savings. Safety improvements driven by AI and automated quality inspections have ensured consistently high standards while reducing errors. Moreover, prioritising higher quality and reliable product delivery has strengthened the company's brand image and fostered customer loyalty.

These efforts underscore AAIJ's commitment to excellence in Safety, Quality, Cost, Delivery, and Environment (SQCDE), which are vital for upholding competitiveness and operational standards in manufacturing.

"Working with SIRI has been a transformative experience for PT. Akebono Brake Astra Indonesia. The insights and strategic advice from the Certified SIRI Assessor have played a crucial role in our digital transformation. Their detailed assessments and personalised recommendations have significantly shaped our digital strategy, helping us identify key areas for improvement and develop a robust digital roadmap."

Irfan Abdurrahman
IT Manager & Head of Digital Transformation



AAIJ's Industry 4.0 Journey with SIRI

The SIRI LEAD Framework is a circular, continuous four-step process that helps manufacturers map their Industry 4.0 journey.

1. Learn

- AAII began its Industry 4.0 journey by implementing Good Lean Manufacturing practices and adopting new IoT technology and connectivity in 2017. In 2021, AAII was officially appointed by the Indonesian Ministry of Industry as the Indonesia National Lighthouse for Industry 4.0.

2. Evaluate

- In late 2023, to assess the Industry 4.0 adoption rate and digital maturity levels of its facilities, and to better scale its digital transformation efforts, AAII engaged INCIT to conduct the OSA on its facilities. The assessment was conducted by a senior CSA appointed by INCIT.

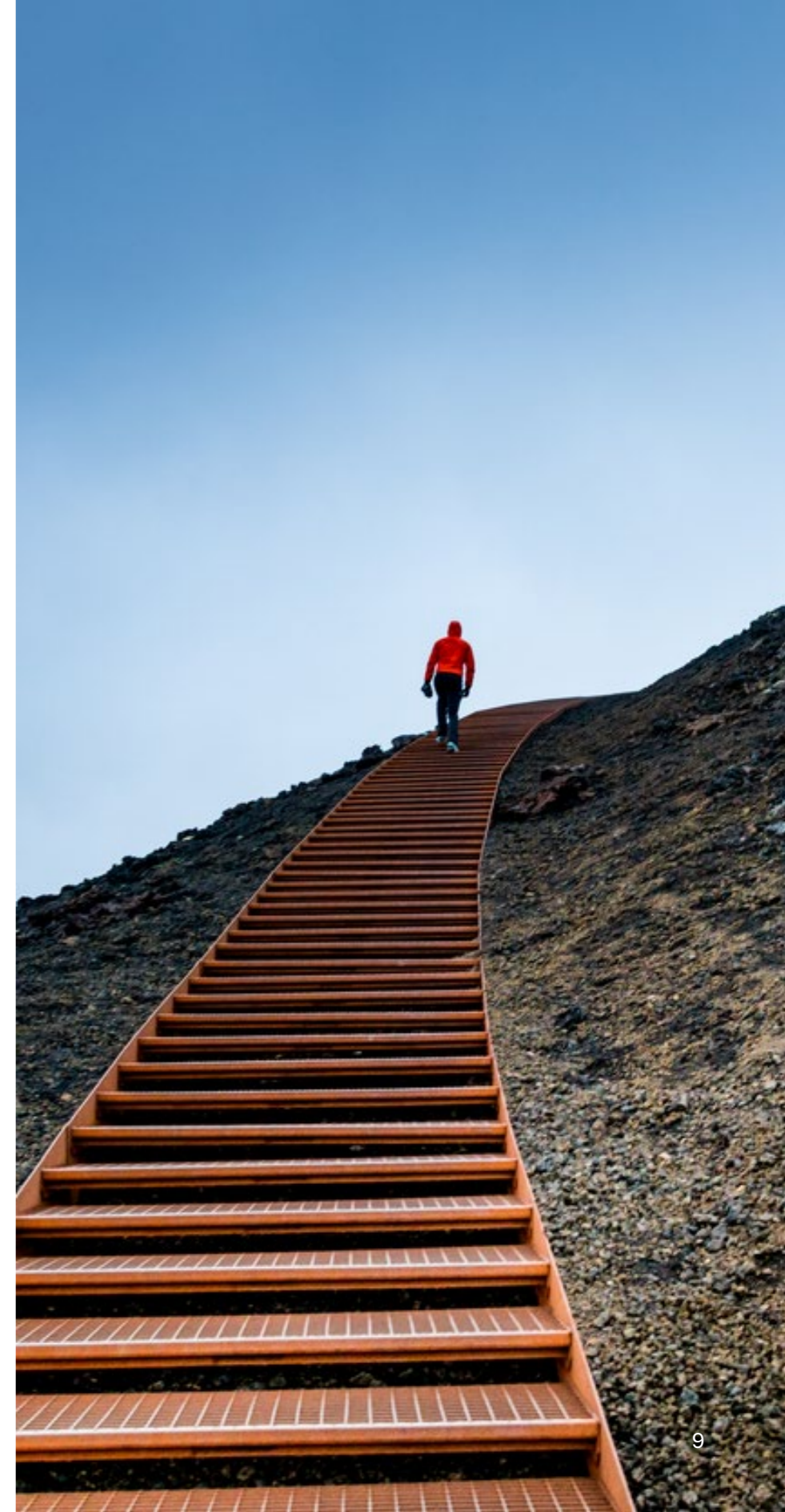
4-step Transformation Journey

4. Deliver

- Through SIRI, AAII has managed to refine its core competencies, integrated new systems, strategies, and initiatives that enhanced overall efficiency, productivity, and profitability. Facility automation also significantly increased cost savings and optimised resource utilisation, effectively contributing to AAII's green initiatives.

3. Architect

- The OSA revealed fundamental insights critical to AAII's digital transformation journey, including high-impact dimensions to prioritise for enhancement and opportunities and recommendations on how to move forward. The CSA and AAII worked together to develop a tailored digital transformation roadmap while prioritising use cases and investments.



About INCIT

The International Centre for Industrial Transformation (INCIT) is an independent, non-government institute founded with the goal to spearhead global manufacturing transformation. Headquartered in Singapore, INCIT champions the Industry 4.0 journeys of manufacturers, developing and deploying globally referenced frameworks, tools, concepts and programmes for all manufacturing stakeholders to advocate for the global rise of smart and sustainable manufacturing.

About PT. Akebono Brake Astra Indonesia

PT. Akebono Brake Astra Indonesia is a leading manufacturer of Automotive Brake Components, dedicated to innovation and quality. Established as a joint venture between Akebono Brake Industry Japan and PT. Astra Otoparts Indonesia, the company supplies brake components to 70% of the Indonesian automotive market. With a commitment to leveraging advanced technologies and digital solutions, PT. Akebono Brake Astra Indonesia continues to set industry standards in product excellence and operational efficiency.

Disclaimer

The content provided in this case study is intended for informational purposes only and is presented based on our understanding and interpretation of the project or initiative described. Results may vary based on individual circumstances, and specific outcomes are not guaranteed. Readers are advised to consult with our professional advisors for tailored guidance and recommendations.

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