

STRIVE & THRIVE FOR A SUSTAINABLE FUTURE

A story of Lee Kian Seng



PETRONAS

Nominated for
Young Engineer Award
Asian Downstream Summit 2022



Graduated with Chancellor Award from Universiti Teknologi PETRONAS, Lee Kian Seng has his stint in computer vision and robotics as a visiting scholar of Erasmus Mundus Masters in Vision and Robotics in France. He presented numerous research papers on autonomous drone control at international conferences in Europe and Asia. In 2016, he returned to serve the sponsor of his tertiary education – PETRONAS and has begun a meaningful career with the organization, driving operational excellence, orchestrating digital transformation and trailblazing into uncharted territory.

Fortifying the Core

Mechanical Engineer (2016)

PETRONAS Refinery (Terengganu), PETRONAS Chemicals Aromatics

His first assignment landed him a challenge of maintaining the oldest plant in PETRONAS – the then 34-year-old refinery which is also the operator of PETRONAS aromatics plant, sharpening his **engineering skills** and developing a deep appreciation of **plant operations**.

Mechanical Engineer (2018)

The Refinery and Petrochemical Integrated Development (RAPID) Project

Leveraging on his expertise in refinery and aromatics plant, he was seconded to RAPID project in Pengerang, Johor, performing **pre-commissioning** activities of the 300,000-bpd refinery and petrochemical complex.

Internal technical advisor for mechanical equipment.

Led **Joint Integrity Program** with in-house developed calculation software based on international codes & standards, upholding technical excellence.

81% ↑ Efficiency
in performing calculation

100% Technical Compliance
for critical joints identified

Pioneered **pressure relief device (PRD) management system**.

69% ↑ Efficiency
improvement in end-to-end
process time and data analysis

0 Error in Test Limits
determination from auto-calculation
based on PRD's datasheet

↑ Process Safety
with auto-generated PRD
performance analysis

Designed an end-to-end **inspection worklist management system** from inspection report preparation to worklist closure and worklist analytics.

76% ↑ Efficiency
improvement in end-to-end
process time and data analysis

USD510k ↓ Manpower Cost
reduction in annual contractor
manhour for report preparation

0 Major Fire & LOPC
from better management of plant
integrity worklist

Reinvigorating the Operation

Digital Accelerator (2019)

PETRONAS Group Digital

As a passionate advocate of the immense potential of digital in complementing engineering practices, Lee was scouted to the newly established digital team with the mission of transforming PETRONAS into a digital-enabled organization. During which, he demonstrated an aptitude in understanding diverse **business pain points** and **innovating** for solutions. He **coached** other digital team members on plant operation knowledge and key consulting skills. Besides, he also quickly developed his **digital skillset**, i.e. artificial intelligence, machine learning, software development and agile methodology and applied them to the projects he led, successfully realized millions in business value and won multiple international awards. This position has also notably polished his **leadership and interpersonal skills** in garnering support from all levels to drive transformation.

Led development of **AI-driven live advisory for LNG plant start-up** to capture the tacit knowledge of operators to achieve consistent & optimized start-ups.

44% ↓ Start-Up Duration
as compared to past average

17% ↓ Carbon Emission
from reduced gas usage

USD16mil Value Captured
from production opportunity

Led development of **fuel energy cost optimization model** that minimizes cost while meeting design, operational and contractual requirements.

50k tonne ↓ CO₂e Emission
per year from fuel gas saved

USD2.5mil ↓ Energy Cost
per year comparing to similar plant load

Led the data discovery of 15 downstream plants to pioneer an **enterprise dashboard** covering key performance indicators across operation, maintenance, finance and production planning, enabling insights driven action.

Contributed to designing and building an **enterprise data platform** to accelerate the monetization of data for PETRONAS.

Expanding into the Uncharted Space

Step Out Portfolio (2022)

PETRONAS Group Digital

Recognizing his technical and leadership capabilities, he was further challenged to commercialize internally developed digital solutions to generate a new revenue stream for PETRONAS, an uncharted space for the group. He exhibited commendable **courage** in taking up the challenge and **customer-centricity** to excel in this role. This assignment also hones his **business acumen** and **entrepreneurial skills**, giving him an excellent training ground to lead the business in the future.

Crafted the first release of **Commercialization Playbook** to democratize commercialization of products at scale with pace and compliance with governance, while protecting company interest.

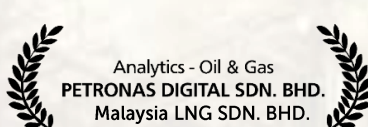
Coached product teams to perform **desirability, feasibility and viability** assessment for products funneling.

Curated **go-to-market strategy** for the identified products, leveraging on their unique selling propositions.

Leading engagement with **20+ customers** with potential revenue of **USD8.3mil**.

Awards & Recognitions

Attributing to the outstanding results of his initiatives, he has received recognitions from multiple reputable institutions and was invited to speak at various professional conferences.



Conclusion

From the opportunities given, Lee has acquired distinctive engineering and digital competencies, that coupled with his leadership skills, have yielded remarkable results for PETRONAS. His passion in innovation has reinvigorated new ways of working in the organization and has inspired people around him to challenge the status quo for a step change in plant safety, reliability and efficiency. He has also demonstrated applaudable courage in pioneering commercialization effort, while enhancing his business acumen. The enriching experience at different phases of his career has developed his versatility and set him on the right path to become a key contributor to the sustainable future that PETRONAS envisions.