CREATING TOMORROW AND BEYOND

SIRIM

Best Partner for Innovation

ANNUAL REPORT

2021

Today's digital world demands vigilance. SIRIM and stakeholders must prepare for current and future technological disruptions, and ensure that we are agile enough to embrace the unknown changes ahead.

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SIRIM INDUSTRIAL RESEARCH

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VISION, MISSION & VALUES

VISION

Best Partner for Innovation

MISSION

We provide quality and sustainable innovation to industry, government and society

VALUES

Customer Focus

We focus on delivering excellence to our customers.

Integrity

We practice the highest standards of integrity.

Teamwork

We achieve success through dedication, commitment and teamwork.

CULTURAL BELIEFS

A **Achieve Sustainability**
I shape SIRIM for our sustainable future

L **Lead Innovation**
I drive innovation for market competitiveness

E **Engage Teamwork**
I embrace differences and build high-performance teams

E **Act Fast**
I take ownership to exceed R2

D **Deliver Excellence**
I partner to deliver excellent service

FUNCTIONS

01 To enhance public and industrial welfare, health and safety

02 To promote and undertake scientific and industrial research:
- Improving technical processes and method
- Discovering new processes and methods
- Encouraging the utilisation of Malaysian products
- Adopting or adapting technology developed in other countries for use in Malaysia

03 To provide industrial extension and consultation services to assist the industry in meeting standards

04 To improve production processes and technique

ROLES

01 The champion of quality

02 A national research and technology development organisation

03 A vehicle for technology transfer

OBJECTIVES

01 **Industry**
Enhance trade access, competitiveness and business growth

02 **Government**
Contribute towards national policies and aspiration

03 **Society**
Improve quality of life through health, safety, environment and consumer protection

BOARD OF DIRECTORS

01 **Academician Tan Sri Dr. Ir. Ahmad Tajuddin Ali, FASc, P.Eng** (Chairman)

02 **Hairil Yahri Yaacob** (Director)

03 **Datuk (Dr.) Hafsah Hashim** (Director)

04 **Hawariiah Abdul Wahid** (Director)

05 **Datuk Ir. (Dr) Khairol Anuar Mohamad Tawi** (Director)

06 **Dato' Ir. Lim Yew Soon** (Director)

07 **Mohd Rashid Mohd Yusof** (Director)

08 **Norlin Abdul Samad** (Director)

09 **Datuk Omar Shariff Mydeen** (Director)

Bringing the right people onto the Board is about demonstrating that the right leadership will ensure everyone in SIRIM has opportunities, and that they feel they're making a meaningful impact.

BOARD OF DIRECTORS

Academician Tan Sri Dr. Ir. Ahmad Tajuddin Ali, FASc, P.Eng
CHAIRMAN, SIRIM BERHAD

EXPERIENCE

Academician Tan Sri Dr Ir Ahmad Tajuddin Ali was appointed as the Chairman of SIRIM Berhad on 20 May 2015. He also holds chairmanships in Malakoff Corporation Berhad, Linde Malaysia Holdings Berhad, Malaysian Shoaiba Consortium Sdn Bhd, Plytec Holding Berhad and ITMAX System Berhad. Currently, he holds directorships in several companies, including the Malaysian Industry-Government Group for High Technology (MIGHT), Aerospace Malaysia Innovation Centre (AMIC), Institut Integriti Malaysia (IIM) and Northern Corridor Implementation Authority (NCIA).

He is also the Pro-Chancellor of Universiti Tenaga Nasional (UNITEN), as well as a member of the Board of Trustees of Mahathir Science Award Foundation and Yayasan UTeM, Advisory Council of the Federation of Malaysian Manufacturers (FMM), and the Board of Governors of the Malay College Kuala Kangsar (MCKK), his alma mater.

QUALIFICATIONS

- Senior Fellow, Academy of Sciences Malaysia
- Fellow, Institution of Engineers Malaysia
- Fellow, ASEAN Federation of Engineering Organisations
- Fellow, ASEAN Academy of Engineering and Technology
- Registered Professional Engineer, Board of Engineers
- Graduate of Harvard Business School's Advanced Management Program
- Honorary Doctorate of Management Degree, Universiti Malaysia Perlis
- Honorary Doctor of Science Degree, Universiti Kebangsaan Malaysia
- Honorary Doctor of Engineering Degree, Universiti Teknikal Malaysia Melaka
- Honorary Doctor of Science Degree, Universiti Malaysia Terengganu
- Honorary Doctor of Engineering Degree, Universiti Tenaga Nasional
- Honorary Doctor of Science Degree, Universiti Putra Malaysia
- Post-doctoral work in Nuclear Engineering at Oregon State University & Pennsylvania State University

BOARD OF DIRECTORS

HAIRIL YAHRI YAACOB

EXPERIENCE

Hairil Yahri Yaacob is currently the Deputy Secretary General (International Trade) of the Ministry of International Trade and Industry, Malaysia. He joined the Malaysian Administrative and Diplomatic Service in 1995 and has been in the Malaysian civil service for over 27 years. He started his career as the Assistant Secretary at the East Asia Division, Ministry of Foreign Affairs and had a change of portfolio as the Assistant Secretary at the International Relations Division, Ministry of Plantation Industries and Commodities, in 1998.

He has extensive experience in economics and commerce, public management and social development management in his roles, including Deputy Secretary General (Investment) at the Ministry of International Trade and Industry, Counselor (Economics) at the Permanent Mission of Malaysia to the World Trade Organization (WTO) in Geneva, Switzerland from 2005-2008, and Minister Counselor (Economics) at the Embassy of Malaysia, Washington D.C., United States of America from 2011-2018. During Malaysia's chairmanship of APEC 2020, he assumed the role of the Chair of the Senior Officials' Meeting (SOM). Under his steward leadership, Malaysia successfully concluded APEC 2020 on a high note with the adoption of the Putrajaya Vision 2040 and pioneered the digital hosting of APEC meetings.

QUALIFICATIONS

- Bachelor of Arts (Honours) in Politics and International Relations, University of Kent, Canterbury, United Kingdom
- Master's Degree in Strategy & Diplomacy, National University of Malaysia

DATUK (DR) HAFSAH HASHIM

EXPERIENCE

Datuk (Dr) Hafsah Hashim is a member of the Board at SIRIM Berhad, as well as the Chairman of the Investment Committee and SIRIM Tech Venture Sdn Bhd. She also holds directorships in Johor Corporation, Serunai Commerce Sdn Bhd, Arab Malaysia Chamber of Commerce and Malaysia International Halal Foundation. She currently sits on the board of Malaysia Rubber Board and Zurich Life Insurance Malaysia Berhad.

She is also the former Chief Executive Officer of SME Corporation Malaysia (SME Corp Malaysia). Under her almost 14 years of leadership, SME Corp Malaysia formulated the globally renowned SME Masterplan, which charts the direction of SME development until 2020.

QUALIFICATIONS

- Honorary Doctorate in Management and Entrepreneurship, Universiti Tenaga Nasional
- Honorary Fellow, ASEAN Federation of Engineering Organisations
- Master of Business Administration, Aston University, UK
- Bachelor in Applied Science, Universiti Sains Malaysia

BOARD OF DIRECTORS

HAWARIIAH ABDUL WAHID

EXPERIENCE

Hawariiah Abdul Wahid as the Principal Assistant Secretary of the Government Investment Companies Division in the Ministry of Finance, is responsible for the affairs and corporate strategic direction of MOF Inc., particularly in the telecommunication, water and sewerage industries.

Prior to this, she was the Assistant Director of the Implementation Coordination Unit in the Prime Minister's Department, where she coordinated, monitored and evaluated the implementation and outcomes of programmes and projects in Malaysia's Five-Year Development Plan, and coordinated and monitored the effectiveness of policies and strategies of the Federal Statutory Bodies (MDS).

QUALIFICATIONS

- Association of Chartered Certified Accountants (ongoing)
- Bachelor of Accounting (Hons), Universiti Islam Antarabangsa Malaysia

DATUK IR. (DR) KHAIROL ANUAR MOHAMAD TAWI

EXPERIENCE

Datuk Ir (Dr) Khairol Anuar Mohamad Tawi is the founder and Executive Chairman of KAT Group, Malaysia's largest prepaid distributor. It all began in 1999 with KAT Technologies Sdn Bhd being appointed as one of Malaysia's mobile prepaid services distributors. At its peak in 2015, the Group recorded a revenue of RM850 million. Today, prepaid distribution continues to be one of its core businesses.

In the last few years, KAT Group has commercialised its enterprise-grade end-to-end digital distribution platform and is currently rolling out its one-stop payment platform nationwide to individuals and micro-businesses in both rural and urban areas. Under Datuk Khairol's visionary leadership, the Group has won numerous prestigious awards locally and internationally, cementing its reputation as Malaysia's leading digital distribution specialist in the retail and supply chain.

QUALIFICATIONS

- Honorary Doctorate and Fellowship, University of Swansea, Wales UK
- Senior Management Development Programme, Harvard Business School, USA
- Executive Masters in Business Administration, Cranfield Institute of Management, UK
- BSc Hons Electrical & Electronics Engineering, University of Swansea, Wales UK

BOARD OF DIRECTORS

DATO' IR. LIM YEW SOON

EXPERIENCE

Dato' Ir Lim Yew Soon established an exceptional track record with almost four decades of experience in Tenaga Nasional Berhad, where he held various roles, including Principle Engineer, Chief Engineer and General Manager of its operations in Penang, Selangor and the Federal Territory of Kuala Lumpur. He is a Professional (Board of Engineers Malaysia), Chartered (Engineering Council, UK), Competent (Suruhanjaya Tenaga) and Services (Suruhanjaya Tenaga) Engineer.

QUALIFICATIONS

- Masters in Electrical Engineering (MEE), University of Technology Malaysia
- BSc (Hons) Electrical & Electronic Engineering, Strathclyde University, Glasgow, Scotland, UK

MOHD RASHID MOHD YUSOF

EXPERIENCE

Mohd Rashid Mohd Yusof is a member of the Board and Chairman of the Audit Committee at SIRIM Berhad. He commenced his career in 1980 with PETRONAS. He has held various financial positions in PETRONAS as Head of Group Accounting, Head of Group Treasury and Head of Group Internal Audit, as well as Financial Director of Engen Limited, before assuming general management positions as the Chief Executive Officer of MITCO and later Managing Director/Chief Executive Officer of Engen Limited in South Africa.

During his time at Engen Limited in South Africa, he also served a term as the Chairman of the South African Petroleum Industry Association (SAPIA). His last appointment in PETRONAS before retiring in July 2016 was as Vice President of Supply Chain and Risk Management.

Currently, Mohd Rashid sits as an Independent Director on the Boards of Standard Chartered Bank Berhad, Velesto Energy Berhad (previously known as UMW Oil and Gas Berhad), and Worldwide Holdings Behad. He is also a member of the Audit and Risk Committee of Mavcom (Malaysian Aviation Commission) and serves as Chairman of the Board at Velesto Energy. He is the Chairperson of the Audit Committee, Chairperson of the Nomination and Remuneration Committee and a member of the Risk Committee at Standard Chartered.

Previously, he has held key directorships in companies, including Media Prima Berhad, Scicom Berhad, KLCC Holdings Berhad and Putrajaya Holdings Berhad.

QUALIFICATIONS

- Member of the Chartered Association of Certified Accountants (UK)
- Member of the Malaysian Institute of Accountants
- Advanced Management Program at Wharton Business School, Pennsylvania

BOARD OF DIRECTORS

NORLIN ABDUL SAMAD

EXPERIENCE

Norlin Abdul Samad was appointed to the Board of SIRIM Berhad on 5 September 2019. She has 38 years of experience in corporate law in the Plantation, Property Development, Manufacturing and Investment sectors as Head of Legal at Kompleks Kewangan Malaysia Berhad (KKMB) (now known as Amanah Capital Berhad), Golden Hope Plantations Berhad (Golden Hope) and Permodalan Nasional Berhad (PNB).

Previously, she was Company Secretary for KKMB and Golden Hope, and an Associate Partner at Messrs Zaid Ibrahim & Co (Zaid Ibrahim). She held directorships whilst in service with Golden Hope and PNB. She has extensive experience in corporate restructuring/M&A exercises, cross-border transactions/investments, Initial Public Offering (IPO), contract negotiations and corporate governance.

QUALIFICATIONS

- LLB (Hon) University of London
- Barrister-at-Law Honourable Society of Lincoln's Inn
- Advanced Management Program (AMP) INSEAD, Fontainebleau, France
- Admitted as an Advocate and Solicitor of the High Court of Malaya

DATUK OMAR SHARIFF MYDEEN

EXPERIENCE

Datuk Omar Shariff Mydeen is a businessman and entrepreneur with a wide spectrum of businesses and extensive experience in Education, Technical & Vocational Training (TVET), ICT, Property Development, Corporate Strategic Planning and Risk Management industries.

Presently, he is the Executive Director for My-Partners Group of Companies and Skills Johor Sdn Bhd, and a member of the Malaysian Research Institute for Vocational Education & Training (MyRIVET), UTHM.

An accomplished strategist, he played a pivotal role in the inception of Skills Johor, an international vocational skills training hub which transforms and trains knowledgeable and skilled employees to propel the industry in Malaysia. He was involved in the development of Bandar Akademik in Kota Tinggi, Johor, and other state technical and vocational initiatives, as well as numerous graduate and entrepreneurial development programmes.

A significant feather in his cap is the initiation of the MyCareerMyFuture project, a graduate development program in collaboration with the Ministry of Higher Education to enhance employability through training. This programme successfully enhanced the skills of over 6,000 graduates and ensured the successful placement of these graduates into reputable companies.

QUALIFICATIONS

- Executive Master's in Business Administration "First Class", Universiti Teknologi MARA, Shah Alam
- Bachelor of Corporate Administration with Honours (Company Secretary) "First Class", Universiti Teknologi MARA, Shah Alam
- Diploma in Public Administration (Best Student UiTM 1994), Universiti Teknologi MARA, Melaka

"Sustainable leadership is about helping people grow. If we can get people of SIRIM as individuals growing, then we've got a growing SIRIM."

MANAGEMENT COMMITTEE

Dato' Indera Dr. Ahmad Sabirin Arshad, FASc
(President and Group Chief Executive Officer)

Mohd Azanuddin Salleh
(Senior Vice President,
SIRIM Industrial Research)

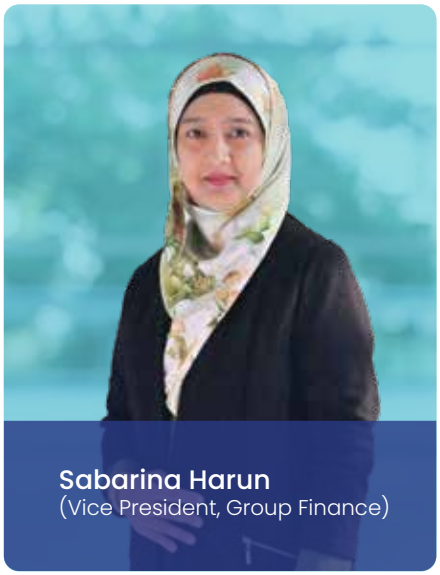
Nik Juliah Nik Jaafar
(Senior Vice President,
Group Human Resource)

Dr. Zanariah Ujang
(Vice President,
Group Strategic Planning)

Management's role is to convey leadership's message and doing it right.

Nur Fadhilah Muhammad
(Vice President & Chief Executive Officer, SIRIM QAS International Sdn Bhd)

YM Tengku Intan Narqiah Tengku Othman
(Chief Digital & Information Officer, Digitalisation & Information Technology)



Sabarina Harun
(Vice President, Group Finance)

CHAIRMAN'S MESSAGE

Academician Tan Sri Dr. Ir.
Ahmad Tajuddin Ali, FASc, P.Eng
Chairman, SIRIM Berhad

On behalf of the Board of Directors (the Board) of SIRIM Berhad, I am honoured to present the Company's annual report for the financial year ending 31 December 2021 (FY2021).

Dear Stakeholders,

On behalf of the Board of Directors (the Board) of SIRIM Berhad (SIRIM), I am honoured to present the Company's annual report for the financial year, which ended on 31 December 2021 (FY2021).

The year under review saw the continuation of the COVID-19 pandemic and brought about adverse operating conditions, threatening the livelihood of all Malaysians and the economic well-being of businesses and industries nationwide. As with many businesses, SIRIM is no stranger to market uncertainty, having survived multiple economic downturns faced by the country and industries. Each time, we have managed to adapt and fulfil our financial obligations to all stakeholders and take care of our employees. Most importantly, we have taken the necessary measures to innovate and evolve our business operations.

CHAIRMAN'S MESSAGE

Adapting to a prolonged pandemic

FY2021 was a year of uneven recovery for Malaysia, with the rolling out of vaccines, reimposing of lockdowns, reopening of borders and severe flooding in several states, including Selangor. Despite those above, the Malaysian economy ended its last quarter of the financial year with a positive growth of 3.6% (Q32021:-4.5%). The rebound was aided by the government's continued policy support (National Recovery Plan), recovery in the labour market, strong external demand and higher private sector expenditure.

SIRIM, as a company wholly owned by the Government of Malaysia and placed under the purview of the Ministry of International Trade and Industry (MITI), did not suffer worse than many other businesses during the prolonged pandemic. We continued to deliver our role in supporting businesses and industry by providing technical support services of testing, calibration, standardisation, certification, and technology and R&D support as the premier industrial research and technology organisation in Malaysia.

Nonetheless, there were operational impacts from the various restrictions and lockdowns imposed. Drawing experience from the previous year, we continued to do almost everything online, ranging from audits, license registration and extension to meetings and training programmes. To exemplify, our employees continued working remotely and in a small team.

Profitable year amid a challenging environment

I am pleased to report that despite the challenges, SIRIM recorded a net profit of RM19.6 million for FY2021, from RM2.8 million achieved in FY2020. This is on the back of RM252.4 million in total revenue and double-digit growth from the previous reporting year.

NET PROFIT

RM19.6mil

(FY2020: RM2.8 million)

REVENUE

RM252.4mil

A pivotal year for our leadership

FY2021 was a landmark and pivotal year for SIRIM. While the pandemic tested our fundamental strength, strong leadership and internal transformation proved SIRIM's agility to remain resilient and adapt to change. That being said, FY2021 saw a change in SIRIM's top leadership as we bade farewell to Datuk Ir Dr Ahmad Fadzil Mohamad Hani, the former President and Group Chief Executive whose term ended on 31 March 2021 after helming SIRIM since 1 April 2017. Under his leadership, Datuk Ir Dr Ahmad Fadzil strived to lead SIRIM as a premier industrial technology and innovation organisation in Malaysia, supporting the national agenda towards digitalisation and delivering strong financial performance alongside excellent project track records.

On 1 April 2021, we welcomed Dato' Dr Ahmad Sabirin Arshad as the new President and Group Chief Executive, bringing along a wealth of management experience and aerospace engineering expertise. During his tenure in FY2021, he has managed to build a team of togetherness within the organisation and build back the morale and pride in working for the organisation, which I firmly believe is a good indicator of a better SIRIM in the future. A future where SIRIM's employees encourage each other and work hard for the organisation, thus serving our valued customers better. As the Chairman of SIRIM, I hope that SIRIM will continue to grow along this vein, becoming the best organisation our employees can be proud of and the best partner for innovation among our valued customers..

CHAIRMAN'S MESSAGE

Thriving while caring for the rakyat

I am proud to report that our esteemed SIRIM researchers bagged four gold medals and one silver medal at the International Invention, Innovation and Technology Exhibition (ITEX) 2021. These are testaments to our value-added and market-driven research and development (R&D) in increasing the industry's innovativeness, productivity and competitiveness.

In addition, I am also pleased to share that SIRIM was awarded the Company of the Year (Industrial Research & Technology) Excellence in COVID-19 Support Award at the Sustainability & CSR Malaysia Award 2021 for the CSR programmes implemented in 2020. While we have successfully delivered our commitments and financial obligations these past years, we cannot overlook the fact that the COVID-19 pandemic has extracted a high cost from the rakyat and businesses. Our COVID-19 relief efforts saw us setting up the Drive-thru Vaccination Programme to support the nation's healthcare system and frontliners. I sincerely believe we played our part in achieving the nation's herd immunity, and SIRIM is deeply grateful for the efforts and commitments of our frontliners.

The pandemic aside, Malaysia also experienced severe flooding in several states nationwide, including SIRIM's home ground in Shah Alam, Selangor. The floods displaced thousands of Malaysians from their homes, including our employees. In light of the severity of the floods, the Board and Management were unanimous in our decision for SIRIM to immediately extend assistance to the employees and rakyat. We offered special relief packages in the form of a food bank programme.

It fills me with great admiration to share that SIRIM's employees, aside from the efforts above, had volunteered and made a personal contribution to help with COVID-19 and flood relief efforts. On this end, I believe this type of dedication goes beyond our fiduciary duties, demonstrating the value that SIRIM, as an organisation, should inculcate and create for our stakeholders.

Embracing IR4.0 with frontier technologies

Advanced robotics, artificial intelligence (AI), the Internet of Things (IoT), big data analytics and cloud computing have changed how businesses work, especially in manufacturing. Even more so today, the demand for frontier technologies and our industries' expectations have always been there. Defined under the notion of the Fourth Industrial Revolution (IR4.0), it is characterised by integrating new automation technologies with big data analytics and Internet connectivity for flexible and intelligent manufacturing that can improve efficiency and competitiveness. IR4.0 extends beyond the conveyor belt and factory gates by transforming upstream and downstream value chain relations.

In the excitement over IR4.0, SIRIM was tasked by MITI to be the assessing body for the Industry 4WRD Readiness Assessment (Industry4WRD RA) programme. Simply put, SIRIM is the key driver of Malaysia's IR4.0 agenda, and the government tasked us to assess the readiness of small and medium enterprises (SMEs) to adopt IR4.0 technologies through the Industry 4WRD RA. To this end, R&D in manufacturing and other key sectors are actively pursued in SIRIM. Nonetheless, at SIRIM, we believe we still do not have sufficient capacity to intensify that pursuit, and as far as the nation is concerned, we are still behind.

Accelerating technology adoption for local manufacturers

However, guided by our vision of becoming the 'Best Partner for Innovation', SIRIM strives to continue strengthening our internal R&D capabilities and employing the right talents in keeping pace with IR4.0. Moreover, we also develop homegrown solutions to increase the productivity and competitiveness of local manufacturers, thus helping them enhance digital capacities and integrate smart manufacturing models, such as enterprise resource planning, intelligent facility management, shop floor automation and compliance. In addition, we provide solutions or interventions in the form of technical advisory, innovation accelerator programmes and standards and best practices development.

Aside from that, SIRIM has launched the Smart Manufacturing Experience Centre (SMEC) in Bukit Jalil to encourage digital adoption in the manufacturing centre. Taking a comprehensive look at the manufacturing sector's ecosystem, SIRIM developed sophisticated solutions to support Malaysia's advancement towards digital transformation and the Industrial Revolution 4.0 (IR4.0). Through this initiative, I am proud to say that SIRIM has created new opportunities and growth in the industry by introducing innovative and pragmatic ideas.

18,125

COMPANIES ASSISTED

61

NEW PRODUCTS

92%

CUSTOMER SATISFACTION INDEX

I am also pleased to exemplify that in FY2021, SIRIM has assisted more than 18,125 companies and launched 61 new products and services with a revenue of RM20.8 million. SIRIM Customer Satisfaction Index (CSI) recorded 92% against the target of 85%. The achievement is better compared to 2020, with a total of 1,188 responses mainly from SMEs, industry and multinational corporations (MNCs).

To reiterate, SIRIM and the local manufacturers' journey to embrace frontier technologies is far from over. SIRIM, as an organisation, is making progress, but more needs to be done. Above all, the Board remains cautiously optimistic that both SIRIM and local manufacturers can keep pace with IR4.0.

Strengthening R&D and international collaboration

Few would dispute the impressive contribution of SIRIM towards setting the standards, calibration and measurement, and modernising the country's manufacturing technology. This is evident everywhere, especially on the road. Helmets, without SIRIM mark of quality, will gain less or no consumer acceptance. In fact, the mark of quality has always been the hallmark of the SIRIM brand, not just helmets but also a whole range of products and practices.

Most importantly, this is only possible with the continuous strengthening of our R&D. Hence, I urge SIRIM esteemed researchers to intensify and consolidate the R&D undertakings so that our focus will be on high-impact and value-added research, which will benefit businesses and the country immensely.

Besides continuous R&D, SIRIM is also an ardent practitioner of international collaboration. Our strategic partnership with Germany's Fraunhofer IAO Institute through the SIRIM-Fraunhofer Programme remains our priority, aiming to accelerate technology adoption among local SMEs. In addition, I firmly believe that we should re-energise our memorandum of understanding (MoU) with strategic global partners, including the Scientific and Technological Research Institute of Turkey (TUBITAK), Thailand Institute of Scientific and Technological Research (TISTR) and the National Science and Technology Development Agency of Thailand (NSTDA).

CHAIRMAN'S MESSAGE

Confident outlook for 2022/23

The coming year will see SIRIM focused on supporting the newly-elected and united Government of Malaysia in rebuilding our nation's economy. To this end, we will continue supporting our valued customers through the services they require from us at a price they can afford.

The Board is cautiously optimistic and anticipates SIRIM to present better financial results for FY2023, given the positive trajectory in the last few quarters. Also, SIRIM's fundamentals are hoped to remain strong so that we can focus on delivering our promises to our valued customers.

Aside from strong fundamentals, it is also essential for SIRIM to have a strong portfolio in terms of securing new businesses, producing high-impact research, setting industry-relevant standards and practices, and forging strategic collaborations. On a side note, producing high-impact research is only possible with the right talents, which comes down to education. As a nation, I believe the way forward is encouraging our young ones to take up science, technology, engineering and mathematics (STEM).

Most importantly, SIRIM, as the nation's custodian of industrial technology R&D, standardisation services and quality, is on the right track to coordinate the country's journey towards IR4.0. With the right strategy, initiatives and support, I genuinely believe SIRIM can help modernise the local industries and reinvigorate national economic growth. Insya-Allah.

Acknowledgements

It gives me great honour to chair SIRIM all these years, and I look forward to a fruitful year ahead with my fellow Directors. On behalf of the Board, I would like to thank the Management team for their incredible efforts and commitment, especially during the challenging year under review.

The Board would like to express its utmost gratitude to all stakeholders, especially the Ministry of Finance, Ministry of International Trade and Industry, other ministries, government and regulatory bodies, business partners and our valued customers for their immense and continued support to SIRIM. In particular, to my fellow Board members, I am grateful for your guidance and wise counsel.

On behalf of the Board, I would like to thank Hairil Yahri Yaacob, Deputy Secretary General (Trade) of MITI, Malaysia, for all his contribution, support and counsel during his tenure as Representative of MITI on the Board and wishes him all the best in his future undertakings. I would also like to welcome newly appointed Board members in the year 2021; Datuk Omar Shariff Mydeen and Mohd Rashid Mohd Yusof. SIRIM is looking forward to their guidance and counsel in supporting technological innovation and the development of Malaysia's manufacturing industry.

Lastly, special acknowledgements go to our SIRIM employees, who have shown nothing but true dedication in the face of adversity. Let us continue our efforts as the ***Best Partner for Innovation*** in the coming year.

Tan Sri Dr Ir Ahmad Tajuddin Ali, FASc
Chairman, SIRIM Berhad

PRESIDENT & GROUP CHIEF EXECUTIVE OFFICER'S REPORT

DATO' DR AHMAD SABIRIN BIN ARSHAD
President & Group Chief Executive Officer, SIRIM Berhad

I firmly believe that SIRIM will continue to nurture and empower its people, developing a skilled workforce for sustainable and balanced growth through cooperative actions.

Dear stakeholders,

The COVID-19 pandemic has left an indelible mark on the world, society and our nation. Although the immediate crisis has passed, the continued threat to public health and the imposed lockdowns continue to impact our economy and the lives of Malaysians, hampering the much-anticipated recovery. However, FY2021 saw the Malaysian economy regaining its momentum with a 3.1% growth from -5.5% in the previous year.

Despite the economic slowdown, SIRIM Group remained resilient and achieved a revenue growth of 16% in FY2021. The increase in revenue was contributed by the surge in conformity assessment activities in winning sectors, especially in medical and healthcare. In striving to be the best partner for innovation, SIRIM's long-term plan continues in the pursuit of growth, profitability, and sustainability through its commercial, developmental

PRESIDENT & GROUP CHIEF EXECUTIVE OFFICER'S REPORT

and statutory activities. We remain committed to SIRIM's mandate of contributing to the economy, industry, and society by undertaking scientific and industrial research, providing an industrial extension to assist the industry in meeting standards and quality to be locally and globally competitive, and promoting public and industrial welfare, health, and safety.

SIRIM as enabler to industry

Navigating the profound challenges of the pandemic, SIRIM has introduced two main testing services for face masks and COVID-19 vaccines. As such, we can assure the general public that the products comply with international standards while consistently maintaining quality.

Further supporting the adoption of new norms, SIRIM has invested in new technologies to increase business efficiency and customer experiences, such as remote testing, inspection and calibration. I am proud to report that SIRIM has conducted about 8,000 remote audits for Management System Certification and 4,000 remote evaluations for Product Certification & Inspection. In recognition of our Corporate Social Responsibility (CSR) programmes implemented in 2020, SIRIM was awarded the Company of the Year (Industrial Research & Technology) Excellence in COVID-19 Support Award at the Sustainability & CSR Malaysia Award 2021.

With disruptive innovations transforming the ever-changing global business landscape, SIRIM has capitalised on potential prospects and identified new revenue streams. As part of Industry 4.0 initiatives, SIRIM introduced SIRIM Digital Factory, which focuses on talent development in Artificial Intelligence (AI) and Blockchain.

Additionally, we continued to strengthen collaboration and relationships with various stakeholders, such as the Ministry of Finance, Economic Planning Unit, Ministry of International Trade and Industry (MITI), Malaysian Investment Development Authority (MIDA) and Ministry of Science, Technology and Innovation, by conducting key stakeholders programmes. SIRIM has also signed 57 Memorandum of Understanding (MoU) and 87 Memorandum of Agreement (MoA) with various Ministries and agencies, such as MIDA, North Corridor Investment Agency (NCIA), Cradle Fund, Universiti Teknikal Malaysia Melaka (UTEM), Lazada, Turkish Aerospace and Malaysian Industry-Government Group for High Technology (MIGHT), in the areas of commercialisation, entrepreneurship development, conformity assessment on aerospace, training, and more. As a result of the continuous engagement with industries and key stakeholders, we have served an estimated 18,125 total customers and achieved 92% customer satisfaction.

For FY2021, I am pleased to note that the SIRIM-Fraunhofer Programme, one of our key programmes implemented since 2016 with a total investment of RM132.5 million under RMK11 and RM13.9 million in 2021, has made remarkable achievements. Among these, a total of 831 technology audits were conducted, and 2,425 SMEs were assisted through technology interventions, including the provision of 417 technology uptakes, as well as 2,008 technology applications, technology training, innovation management skills and technology facilitation. In a recent impact study conducted by external consultants, the preliminary results for 167 SMEs under 400 projects showed that 40% of SMEs that have participated in the programme had experienced a rise in productivity, decreased average production costs by 26% and increased sales revenue of 36% with an average profit of 31%.

SIRIM's involvement in entrepreneur development is not new to industries, and our initiatives continue to support national economic growth. One such initiative is our Entrepreneur Development Programme, which has benefitted various micro-, small and medium-sized enterprises (MSMEs), including over 400 entrepreneurs under the SIRIM ECER programme. The programme proved to deliver significant socio-economic impacts. A survey looking at 254 companies under the programme indicated average sales have increased by 53%, and total annual sales increased from RM60 million to RM92 million. After programme completion, the ratio of the fund against sales was 1:2.4.

Recognising talent as our greatest asset

For SIRIM, we are cognizant that a company's fuel and engine to success is its people. Apart from building organisational resilience and implementing growth strategies, we also sharpened our focus on enhancing staff competency and well-being.

In light of the impact of the pandemic on the workforce, we have set up SIRIM's food bank programme, which has benefited 288 recipients and implemented the SIRIM-Selvax Drive-Thru Vaccination Programme, in which 99 staff and family members participated. Aside from that, SIRIM also rendered assistance and contributed RM282,117.30 to 293 staff affected by the severe flooding in Shah Alam, Selangor.

Addressing any potential skill gaps, SIRIM has developed new capabilities and expertise in various areas, including aerospace, medical devices, blockchain, Industry 4.0, and quality management for 84 of its staff. As the President & Group Chief Executive of SIRIM, I firmly believe that SIRIM will continue to nurture and empower its people, developing a skilled workforce for sustainable and balanced growth through cooperative actions.

Upholding SDG and ESG commitments

Aligned with Sustainable Development Goals (SDGs) and Environment, Social and Governance (ESG) practices, SIRIM, under the United Nations Industrial Development Organization (UNIDO) programme, has gone further by promoting and demonstrating energy efficiency (EE) improvements and solar thermal systems application in the heating and cooling process in industries, specifically for Malaysia's industry.

Through the Malaysia Energy Efficiency and Solar Thermal Application Project (MAEESTA) initiative, six installation projects (MIWA Manufacturing, PPNJ Poultry & B Meat, IOI Pan Century Oleochemicals, Ampang Hospital, NB Poultry and Pusat Jantung Sarawak) were completed with a total project cost of RM8 million and solar thermal system cost of RM6 million. The projects have successfully reduced RM1,886,187 in annual operational costs and saved 1,192.98 MWh in thermal energy per year. Upon project completion, greenhouse gas (GHG) emissions were reduced by 785 tonnes of CO2 per year, with an estimated reduction of 15,708 tonnes in the next 20 years (lifetime).

SIRIM has also continuously contributed to the betterment of society and communities nationwide through various programmes, such as the Socio-Economic Programme for B40 households. As the key driver of Malaysia's IR4.0 agenda, we have supported 30 MSMEs in improving the quality of product presentation to further enhance sales revenue. Some of the assistance provided involved areas of brand development, labelling, nutritional content analysis, promotional materials, and basic knowledge of digital marketing.

30 MSMEs
supported

In addition, SIRIM also conducted a Dermasiswa Programme, which has benefited 12 students from Politeknik Sultan Alaudin, offering financial assistance from 2021-2022, amounting to RM54,000. Other CSR initiatives conducted were Corporate Zakat 2021, amounting to RM2.1 million to Pusat Zakat Selangor, Majlis Agama Islam Wilayah Persekutuan and other zakat institutions nationwide. Supporting young talents, we also offered complimentary certificates and privilege cards to Maryam Muzamir, who received the Best Young Inventor Award, the Canadian Special Award and a gold medal at the 6th International Invention Innovation Competition in Canada (iCAN) for her invention of sustainable livestock feed.

PRESIDENT & GROUP CHIEF EXECUTIVE OFFICER'S REPORT

Game-changing opportunities ahead

Moving forward, we have set a new aspiration in line with SIRIM's 10-Year Strategic Plan. As a group, we are optimistic about our journey to becoming a champion of frontier technology and achieving our new target of RM1 billion in income in 2027.

In realising our ambition, SIRIM will introduce two game changers to accelerate the entire Group's transformation. This will rewire SIRIM's capabilities for further digital innovation and accelerate the assimilation of frontier technologies through the public-private partnership (PPP) funding model.

As part of our strategy, we will also position SIRIM in high-impact industries and continue strengthening SIRIM's commitment to ESG, green growth and the circular economy.

Acknowledgement

On behalf of SIRIM Management and the rest of the staff, I would like to express our gratitude to our stakeholders, valued customers and business partners, both in the public and the private sectors, for their invaluable support all these years.

My sincere appreciation also goes to the Board of Directors of SIRIM, ably led by the Chairman, Tan Sri Dr Ir Ahmad Tajuddin Ali, for their guidance and wisdom.

Last but not least, I would like to convey a special note of appreciation to all SIRIM employees for their hard work, loyalty and perseverance in these times of adversity and change.

Dato' Indera Dr Ahmad Sabirin Arshad, FASc
President & Group Chief Executive Officer,
SIRIM Berhad

2.0 SIRIM INDUSTRIAL RESEARCH

SIRIM-FRAUNHOFER PROGRAMME

REPORT BY:

Dr. NORSHIDAH BINTI BAHARUDDIN
DIRECTOR, INDUSTRIAL RESEARCH MANAGEMENT

The SIRIM-Fraunhofer programme was implemented in 2015 as a pilot project and was later approved for implementation under the 11th Malaysia Plan (RMK-11). Under the RMK-11, the SIRIM-Fraunhofer programme assisted over 3,365 companies by implementing various technology-related services and projects. The funding for its implementation continued in 2021, and SIRIM persisted in undertaking technology intervention programmes for SMEs to boost their productivity.

A study conducted in 2021 showed the programme had a significant impact on the participating SMEs: an average increase in productivity of 37%, a 35% average annual increase in technology adoption and application projects, the creation of 635 new products in various sectors, including new product packaging, and more than 100 new market penetration, among others.

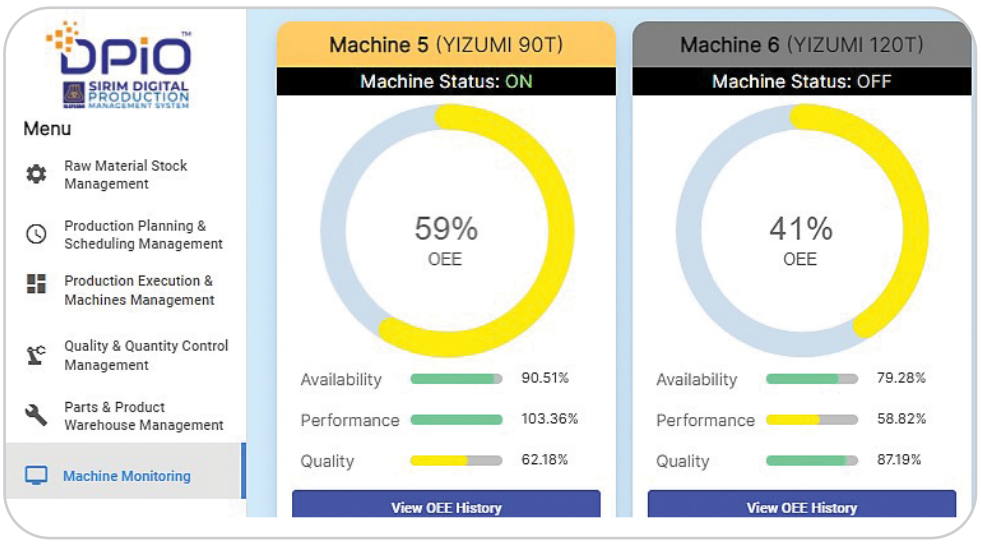
The SIRIM-Fraunhofer Secretariat is responsible for overseeing the implementation of the various technology programmes and the introduction of new ones, all aiming to create maximum impact on SMEs. The programme leverages the Fraunhofer's experience, which has successfully spearheaded the innovation and technology development of German industries.

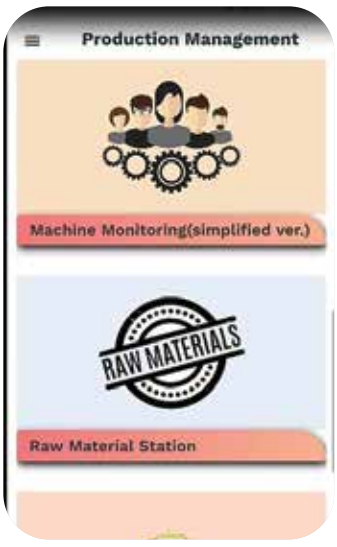
SIRIM Industrial Research (SIRIM IR) is at the forefront of delivering and managing technology adoption and upgrading projects. In 2021, 152 technology intervention projects were successfully completed involving SMEs in various sectors throughout the nation.

Areas of intervention include mechanisation and automation, technology enhancement, technical advisory, localisation of technology, packaging and labelling, enhancement of competitiveness and market access, as well as training and consultancy programmes.

Due to the sluggish recovery from the COVID-19 pandemic, many SMEs realised the importance of transforming their business model, where automation, digitalisation and online marketing play a crucial role. Clearly, companies benefiting from the technology adoption in the programme, such as automation and digital technology, could adapt quickly to the changing needs.

2021 also marked the start of the 12th Malaysia Plan (RMK-12) and the implementation of SIRIM-Fraunhofer 2.0, where new initiatives were introduced for implementation in 2021-2025 to further assist and improve SMEs' recovery from the effects of the pandemic. Some new initiatives include Frugal Innovation, handholding for small and micro companies and other programmes aimed at preparing SMEs for digitalisation to embrace Industry 4.0 technologies.



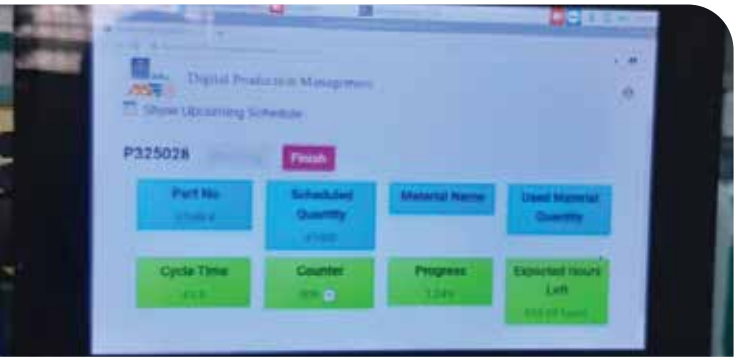


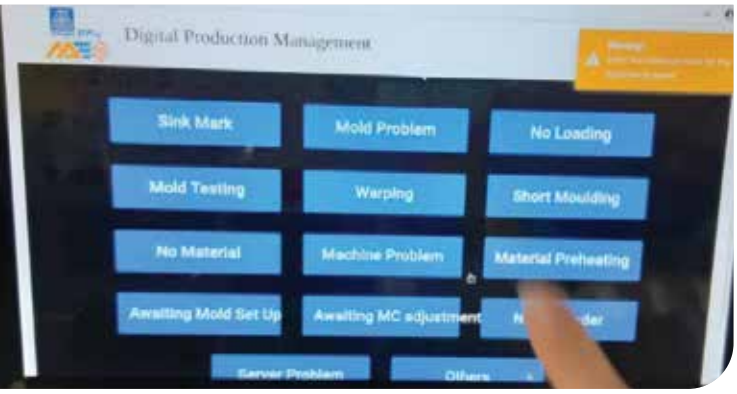
SIRIM-FRAUNHOFER PROGRAMME

The main focus was completing technology intervention projects for SMEs, which were directly impacted by the pandemic in 2002 due to various issues such as logistics, supply chain and limited operation of companies and technology contractors.

One of the successful projects in Solving Industry Wide Problem (SIWP) is the SIRIM-DPio™, a cloud-based, real-time Manufacturing Execution System (MES) to digitalise production management systems in the plastics manufacturing sector. The system resolved issues in manual production management, such as delays in decision-making and inaccurate planning. In the pilot project, beneficiaries have improved their planning and scheduling accuracy and on-time delivery by up to 85%.

The SIRIM-Fraunhofer programme is expected to receive continued funding throughout its implementation under RMK-12. Focusing on enhancing technology adoption, the programme remains attractive and highly sought after by SMEs. Introducing new programmes and expanding the scope of offering will likely have a greater impact on SMEs and significantly contribute to the government's vision of developing technology-centric industry players.





ENVIRONMENTAL TECHNOLOGY RESEARCH CENTRE (ETRC)

IMPLEMENTING MOSTI'S STUDY TO DEVELOP SAFETY RISK INDICATORS FOR NANO-BASED PRODUCTS IN MALAYSIA.

REPORT BY:

ISNAZUNITA BT ISMAIL
GENERAL MANAGER

Engineered nanomaterials such as TiO2, SiO2 and Ag are used in a wide range of consumer products to increase the performance of the respective goods, e.g. antimicrobial properties of textiles. As such, the production of nano products has increased steadily over time. However, the manufacturing and use of nano products have also generated increasing amounts of waste containing nanomaterials and released nanomaterials into the environment. These nano products and their byproducts can eventually end up in waste streams as part of the municipal solid waste management system and different environmental compartments. Currently, waste containing nanomaterials is not managed separately but is collected and treated together with regular waste. In particular, landfilling is Malaysia's most widely applied waste management option. As existing waste regulations do not contain specific references to nanomaterials, they may be released into the environment during all phases of the waste management system and production.

In this context, the Ministry of Science, Technology & Innovation (MOSTI) is spearheading national nano-safety programmes for Malaysia. One of the projects is on 'Kajian Membangunkan Penanda Aras bagi Risiko Keselamatan Produk Berasaskan Bahan Nano'.

SIRIM Berhad is collaborating with MOSTI's National Nanotechnology Centre (NNC) to implement a study on the Development of Safety Risk Indicators for Nano-based Products in Malaysia. The project was launched at the end of 2020 and will be completed by mid-2023. SIRIM Berhad, through its SIRIM Industrial Research's multi-technology centres, namely the Industrial Centre of Innovation in Nanotechnology (IC-I in Nanotechnology), Industrial Biotechnology Research Centre (IBRC) and Environmental Technology Research Centre (ETRC), has surveyed and identified more than 400 nano-based products available in the local market.

From the market survey findings, over 70 products have been identified for further laboratory testing, covering various types of physical and chemical testing, toxicology testing, ecotoxicological testing, and studies on environmental exposure and lifecycle-based environmental impact assessment.

A series of industry engagements has been held in the course of study implementation:

- Nanosafety Webinar for Nano-based Product, 4 February 2021
- SIRIM-Industry Dialogue in Nanosafety, 9 August 2021
- Technical Seminar on Nanosafety, 25-26 October 2021, in conjunction with Program Nano Kebangsaan (NKEB) 2021

ENVIRONMENTAL TECHNOLOGY RESEARCH CENTRE (ETRC)

Upon project completion in 2023, a total of 350 reports will be made available to support subsequent national initiatives and the way forward for the management of nanotechnology, products and requirements in Malaysia.

EMBRACING THE CO-CREATION ECOSYSTEM IN INDUSTRIAL PARK TRANSFORMATION PROGRAMME

The technology–enabled support for The Development of Eco-Industrial Parks–Intervention and Digitalisation (herein known as MY-EIP) project implementation has been tasked to SIRIM Berhad and commenced from June 2020 until December 2023. The project objectives are to facilitate the transformation of brownfield industrial estates to eco-industrial parks (EIPs) based on international good practices and to demonstrate the viability and benefits of eco-industrial park approaches in maximising resource productivity, improving economic, environmental, and social performances of businesses and hence contributes to inclusive and sustainable industrial development in Malaysia.

Positive momentum from the last quarter of 2020 has continued into 2021 with activities such as the Awareness and Capacity Building programme, specific activities leading to the development of Eco-Industrial Park Prerequisite and Performance Indicators, engagement with several IPs for road testing of Performance Indicators, and aggressive promotion of the Resource Efficiency and Industrial Symbiosis Opportunities (REISO) programme.

The awareness programme under the MY-EIP project comprises capacity-building training and a series of online webinars, with the sole purpose of knowledge sharing between expert panels in transforming our local industrial park towards eco-industry parks.

The second capacity-building workshop on Resource Efficiency and Cleaner Production (RECP 1) was successfully held from 6 to 9 April 2021. This is a follow-up to its predecessor held on 27 November 2020, where ifu Hamburg, an internationally recognised company specialising in software and consulting services for sustainability through the use of their proprietary software (Umberto), was engaged to train 23 participants on the Material Flow Cost Accounting (MFCA).

The primary goal of both training workshops is to introduce the basic concept of MFCA/RECP implementation in identifying opportunities for process and resource optimisation for tenant companies' production lines. Thus, they would better understand the techniques applied by the assessors during the REISO assessment.

A total of 21 participants attended the RECP I, a four-day virtual training session conducted by the Environmental and Sustainability Solutions CC (EES) from South Africa. In view of the industry's good response, a second RECP training (RECP II) was held on 20-23 September 2022 with an additional 26 participants. Participants who completed the full four-day session and passed the examination were awarded the RECP certificate of completion by the National Cleaner Production Centre, South Africa.

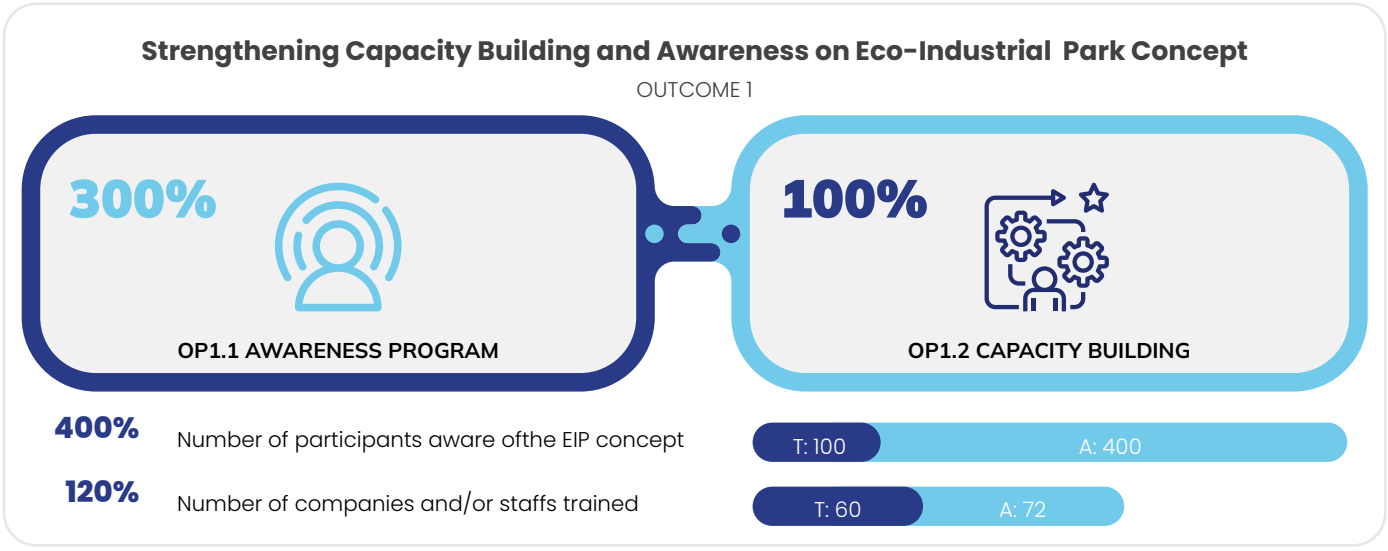
The first instalment of the three-part webinar series was titled 'Malaysia Industries Embracing Sustainable Transformation', which was designed to introduce and establish the basis of eco-industrial park transformation from a policymaker's perspective. In this context, the curated topics emphasised the efforts and initiatives currently underway at the ministerial and policymaker level to spearhead the transformation of industrial parks in Malaysia towards a more sustainable and responsible hub for eco-conscious investors.

ENVIRONMENTAL TECHNOLOGY RESEARCH CENTRE (ETRC)

Overall, the webinar series garnered more than 400 attendees, which was open to all stakeholders, with top-down actors such as ministerial and governance bodies, local authorities, investment offices, and economic regional development councils as the main target audience.

The second webinar on 15 September 2021 covers how industry players identify resource efficiency as one of the key elements in combating the growing threat of resource scarcity. A speaker from UNEP, Asia Pacific Regional Office in Thailand, was invited to share his years of experience on UNEP's initiatives on resource efficiency programmes. Also, another international speaker from Bioregional, London, and a local industry player were invited to share the concept of resource efficiency as part of their business model within their construction ad furniture industry, respectively.

The final webinar was held on 3 November 2021, aiming to broaden the understanding of centralised governance of eco-industrial parks in Korea and the need to use Artificial Intelligence and Big Data in creating the EIP business model. The session began with the first speaker, Prof. Dr Hung-Suck Park, a renowned academician from the University of Ulsan, Korea, who shared the key success factors of the Korean EIP programme. Nah-Yoon Shin of the World Bank Grou, Washington DC, presented about green competitiveness in Malaysia, while Dr Sangjoon An of the Korea Institute of Industrial Technology, shared on the establishment of the Smart Close Loop system for enhancing and designing industrial symbiosis in EcoIndustrial Park.

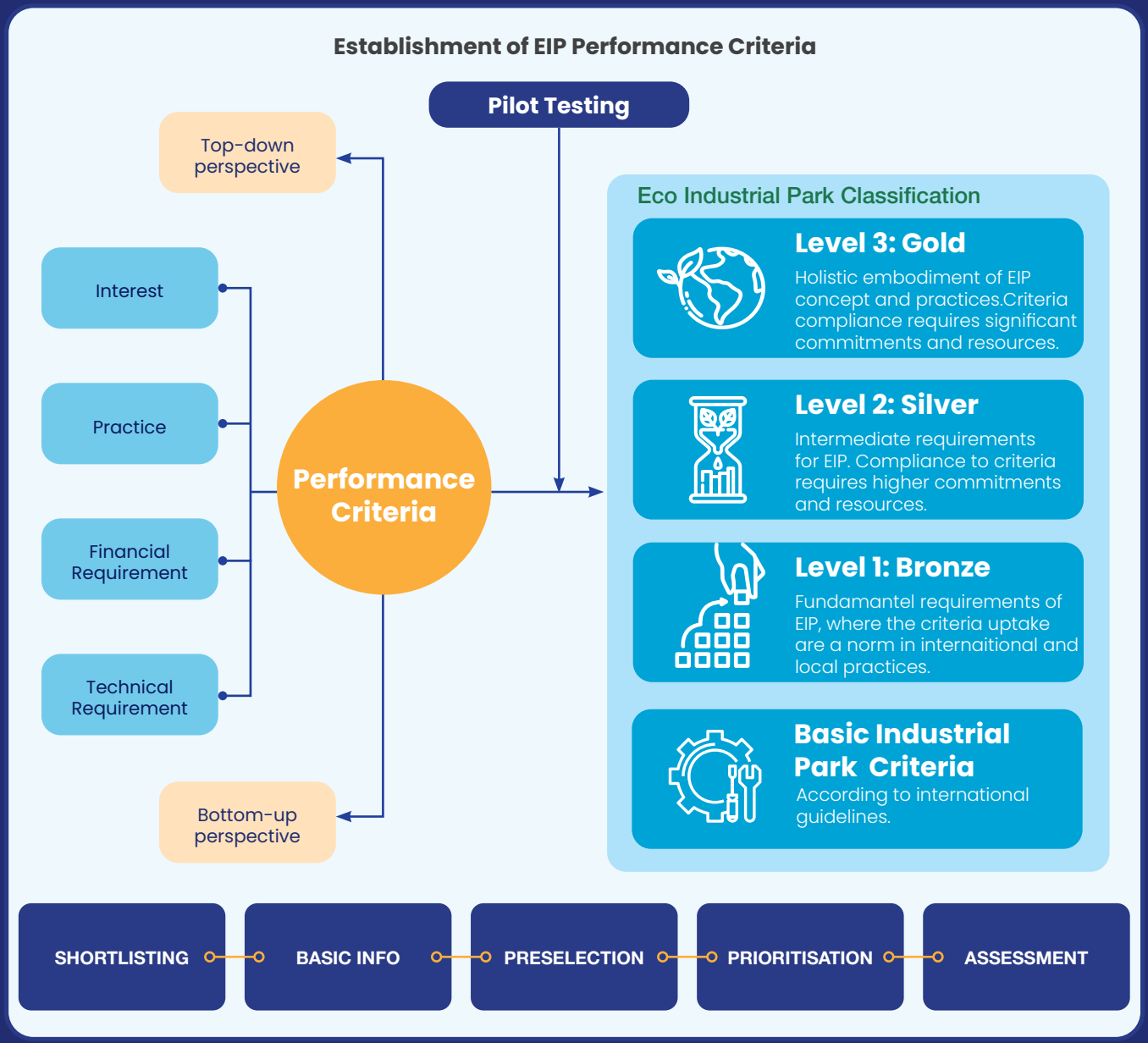


The project ended on a high with the successful completion of FGD sessions to deliberate the mechanisms of EIP implementation, specifically the definition, performance criteria, and criteria threshold. Spanning four days, the event managed to attract about 70 stakeholders from various institutions. The outcome of the sessions was used to further streamline the international framework for EIP for the Malaysian context before further calibrating the criteria via pilot testing.

For activities leading to Creating Industrial Symbiosis Network, the project team had ramped up efforts in engaging companies to participate in the REISO program. Thirty-three companies have registered for the programme, but by year's end, only fourteen companies have agreed to follow through with the program. The programme has continued into 2022 and currently focuses on executing the REISO assessment for the participating companies as well as engaging with third-party assessors.

Overall, the project faced challenges due to travel restrictions and hybrid working conditions for most of the stakeholders, which resulted in the REISO programme remaining idle until the restriction was lifted in October 2021. Efforts were largely concentrated on delivering activities which can be conducted via online engagement, and other deliveries requiring physical inspection or walkthrough audit at the companies' premises had to be postponed.

ENVIRONMENTAL TECHNOLOGY RESEARCH CENTRE (ETRC)



EIP Performance Criteria were established through Focus Group Discussions with several main stakeholders. Several industrial parks were invited to road-test the criteria before an industrial standard on Eco-Industrial Park Classification is deliberated and published.

INDUSTRIAL BIOTECHNOLOGY RESEARCH CENTRE

The Industrial Biotechnology Research Centre (IBRC) actively collaborated in commercial biotechnology projects with local organisations and SMEs to produce bio-based products from renewable resources that hold great potential value for industries in many sectors, including chemicals, wellness and health-care products. Moreover, two technical papers were published in 2021. Under the national SARS-Cov2 initiatives to assist the nation in its battle against the 2019 Coronavirus, IBRC was part of the committee which successfully published the industry standard on hand sanitisers and face masks, and developed the bacterial filtration efficiency (BFE) test for face masks, which was offered as a service to the industry in 2021. IBRC also performed the process validation testing for one of the vaccines offered to the general public.

IBRC was also involved in the research and development, and commercialisation of cosmeceutical products. Researchers formulated 85 cosmetic products, which were registered with the National Pharmaceutical Regulatory Agency (NPRA) and sold by local companies under different brand names. One topical product was successfully registered with the Ministry of Health under the traditional medicine classification (MAL 20106148TC), and commercialisation is still ongoing.

In 2021, the Centre successfully maintained its ISO 9001 management certification after being audited by SAI Global. To remain competitive in the technical testing services field, the Centre extended its ISO 17025 accreditation scope from Standards Malaysia for toxicology, microbiology and material characterisation testing. As a mark of the highest laboratory accreditation standard, the IBRC successfully maintained the OECD Good Laboratory Practice (GLP) compliance in toxicology to the National Pharmaceutical Regulatory Agency and Standards Malaysia for the following products: medical devices, industrial chemicals and pesticides.

REPORT BY:
Dr. AHMAD HAZRI BIN AB RASHID
SENIOR GENERAL MANAGER

The IBRC is made up of two sections:

- **The Cosmetics and Natural Products Section (CNP)**

  The CNP is a one-stop centre for R&D of natural products, which covers the development of new active ingredients and cosmetics formulations, and production under GMP requirements for market access. The value chain of natural products development covers raw material sourcing and processing, extraction and standardisation, bioactivity screening and safety evaluation for upstream activities and product development, stability evaluation, claim substantiation and product manufacturing for downstream activities.

- **The Bio-Process Technology Section (BP)**

  The BP focuses on the industrialisation of bioproducts and biological processes by utilising microbial, fermentation and enzyme technologies. Some of the bio-products have been upscaled, and our industrialisation processes include animal vaccines, biofertilisers, biosurfactants, microbial enzymes such as phytase, and microbial metabolites such as citric acid and natural vinegar. The BP section is also capable of providing solutions for industries using recombinant technology of microbes, such as developing recombinant microbes for pectinase enzyme and lactic acid production.

INDUSTRIAL BIOTECHNOLOGY RESEARCH CENTRE

IBRC offers solutions for products' regulatory needs. Experienced analysts in the centre deliver accredited tests according to international standards. The Centre caters to clients who market a wide range of products, including traditional medicine, medical devices, cosmetics, fabrics, food, beverages, chemical disinfectants and biofertilisers. The tests are ISO/IEC 17025 accredited, ensuring that IBRC's facility is fit for internationally recognised testing protocols and staff competency is thoroughly assessed periodically. IBRC's toxicology lab is compliant with the principles of Good Laboratory Practices (GLP), a laboratory Compliance Programme developed by the Organisation for Economic Cooperation and Development (OECD) countries, which is considered the highest laboratory compliance programme. The tests are shown below.

Microbiology and Molecular Biology

Pharmaceuticals, medical devices, food & beverages, fertilisers, disinfectants, cosmetics, and traditional medicine

Toxicology

For Pharmaceuticals, Medical devices, Cosmetics, Chemicals, Food, Nutraceuticals

Bioassay

Skincare and other topical products, herbal extracts or active functional agents

Capacity Building Workshop

Development of cosmetic product, development of laundry detergent, and post-processing of herbal materials

Trial Production (OEM Services)

GMP manufacturing of cosmetic products meeting NPRA requirements, production of laundry detergent (liquid and powder) and household cleaning agents (multipurpose cleanser, hand dishwashing liquid)

Material Characterisation

Safety and stability analysis for pharmaceuticals, cosmetic products, traditional medicine, pesticides, authentication of herbal extracts or products, and claim substantiation for cosmetic and nutraceutical products

MACHINERY TECHNOLOGY CENTRE

Situated in Rasa, Hulu Selangor, Machinery Technology Centre (MTC) is one of SIRIM IR technology centres. MTC is ISO 9001:2015 certified in the Provision of Engineering Services in the area of Machinery Technology and offers end-to-end design and engineering solutions in machinery and equipment. The centre is supported by 45 technical and 13 non-technical staff and operates two core businesses: Foundry Technology and Machine Design. In line with SIRIM's vision to be the Best Partner For Innovation, MTC continually upgrades its team knowledge and skills according to the latest technology available to fulfil the needs of industries.

REPORT BY:

ZURIANI BINTI USOP
GENERAL MANAGER

FOUNDRY TECHNOLOGY SECTION (FTS)

FTS provides engineering services related to metal casting and machining, serving internal and external clients utilising its foundry and tooling workshop facilities. The external clients comprise oil and gas companies, pump manufacturers, universities and engineering companies. Among the internal clients served are ICI Nanotechnology, ICI Biomedical, SIRIM QAS International Sdn Bhd and the National Metrology Institute of Malaysia.

In 2021, FTS received an order to manufacture special pipe support for an oil and gas piping system while ensuring compliance with industry standards and requirements. SIRIM entirely manufactured the components under stringent control and, once completed, delivered them to the site in September 2021.

FTS implemented the 'Program Pembangunan Kapasiti Vendor (PPKV) Bumiputera Fasa 3' funded by the Ministry of Entrepreneur Development and Cooperatives (MEDAC), in which 44 vendor companies participated. While part of the project was implemented in 2021, the project was extended by MEDAC due to the pandemic. The project concluded in September 2021, with 15 vendor companies obtaining their QMS ISO 9001:2015 certification under the programme. Conversely, the remaining companies successfully completed their Innovative and Creative Circle (ICC), which focuses on resolving waste issues by identifying the root causes using proper tools and techniques.

FTS was involved in implementing the SIRIM-Fraunhofer programme in areas including technology audit, technology uptake, and post-project audit. Throughout the year, auditors from FTS participated in technology audits as either the lead or second auditors to reach the targeted number of audits assigned to MTC. FTS had undertaken three technology uptake projects as the lead implementer and another six projects as the sub-implementer.

1,000 kg standard weight fabricated by FTS for the National Metrology Institute of Malaysia

Test specimen machined by FTS for Plastics and Composites Material Section, SIRIM QAS International Sdn Bhd

FTS also assisted local companies in localising parts and components for various industries, including oil and gas, machinery and equipment, automotive, marine and energy. Moving forward, FTS plans to extend assistance to other sectors with the potential for parts and components localisation, such as rail, defence and industrial automation. Generally, the assistance provided covers three stages: design, prototyping and pilot production. Upon completing the pilot production stage, the companies can opt to continue their commercial production by renting SIRIM facilities.

MACHINERY TECHNOLOGY CENTRE

MACHINE DESIGN SECTION (MDS)

The core operations of MDS are in the areas of machine design and development, machining and fabrication services, as well as technical assessment dan verification services. Additionally, MDS is also involved in research and development activities and assisting industries with their research projects.

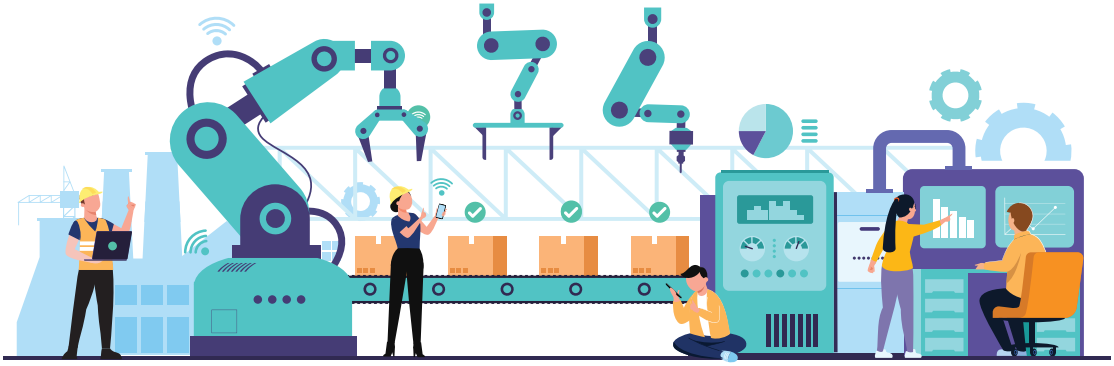
MDS has implemented several commercial projects for various clients. One ongoing project is the Technical Consultation on the Supply, Delivery, Commission and Establishment of Processing Machines for The Development of Commercial-Ready Glass Solar Panels For Dye Solar Cells. This project is expected to be delivered and commissioned in 2022 to the Centre of Innovative Nanostructures and Nanodevices (COINN), Universiti Teknologi PETRONAS. One of the newly secured projects in 2021 is the Automated Visual Inspection System for Inspection on Wood Colour, Size and Defect, funded by the Malaysian Timber Industry Board (MTIB). Another project is the Halal Technology Transformation Programme, funded by TEKUN Nasional.

In 2021, MDS industriously provided engineering services to industries, particularly the automotive sector, such as Miyazu (Malaysia) Sdn Bhd, where MDS provided fabrication and machining services for developing stamping dies for car components. Besides, continuous support was provided to Protech Master Coach Sdn Bhd in monorail fabrication and assembly works. On top of that, MDS has also served higher learning institutions in research work, such as the fabrication of a testing platform and jig for Universiti Teknologi MARA (UiTM).

Automotive Stamping Die Machining

Welding Work of an Ongoing Project

Testing Platform and Jig for UiTM



MACHINERY TECHNOLOGY CENTRE

For assessment and verification services, MDS's six qualified Industry4WRD Readiness Assessment (RA) assessors actively carried out 26 RA in 2021. Another team of seven qualified verifiers have conducted 57 verification jobs for the Malaysian Investment Development Authority's (MIDA) Automation Capital Allowance (ACA) programme and 10 verification jobs as part of the plastic industry Approval Permit (AP) renewal process for Jabatan Pengurusan Sisa Pepejal Negara (JPSPN).

MDS also published several articles in various publications in 2021, including:

1. Improvement in the accuracy of the dynamic behaviour prediction of a bolted structure using a simplified finite element model and model updating (IOP Conference Series: Materials Science and Engineering, Vol. 1041(1), p. 012051).

2. Stochastic model updating of bolt-jointed structure for structural dynamics applications (International Journal of Automotive and Mechanical Engineering, 18(2), 8760-8771).

3. Design, simulation, and experiment of PSO-tuned Fopid Controller for height position control of a scissor mechanism platform (FME Transactions Vol. 50(1)).

MDS has also expanded its staff capabilities with two certified GTAW Welders, one Certified Industry4WRD Readiness Assessor, and two engineers recognised as Professional Technologists. Continuous implementation of the talent development programme at MDS can advance the planned journey towards implementing and offering Frontier Technology to the industry.

As part of the journey, MDS has begun planning and establishing internal capacities and capabilities for an Intelligent Precision Machine, an advanced production machine that combines the capabilities of a precision machine with advanced computing and communication technologies. The Intelligent Precision Machine will enhance MDS's existing capabilities in designing and developing customised precision machinery and CNC machines. Examples of the CNC machines developed in-house by MDS are the 5-axis CNC Optical Dicing Machine, 4-axis 3-spindles Filament Winding Machine and 3-axis Vertical Machining Centre. At the same time, MDS continuously offers engineering services like precision machining using CNC machine centres, CNC laser cutting, precision measuring using a Coordinate Measuring Machine and precision machine measurement and calibration using a laser interferometer.

INDUSTRIAL CENTRE OF INNOVATION IN NANOTECHNOLOGY

Industrial Centre of Innovation in Nanotechnology (IC-I in Nanotechnology) is a SIRIM IR industrial centre of innovation located in Kulim Hi-Tech Park, Kedah. Having ISO 9001:2015 certification in the Provision of Testing Services in Advanced Materials and Nanomaterials, IC-I in Nanotechnology undertakes research and development in Nanotechnology and Engineering Materials for industrial applications. The Centre has worked with government agencies, industries, communities, and universities as partners or collaborators in developing new knowledge and value-adding technology for the industry.

The purpose of IC-I in Nanotechnology is to provide innovative solutions in nanotechnology and engineering materials to boost technology penetration of SMEs in functional coating, green materials, engineering materials and technical services and consultancy. The Centre also supports and collaborates with National Nanotechnology Centre (NNC) and Nano Malaysia Berhad (NMB) under the Ministry of Science, Technology and Innovation (MOSTI) to spur and enhance the nanotechnology industry in Malaysia.

REPORT BY:
Dr. MOHD ASRI BIN SELAMAT
DIRECTOR

Key Activities in 2021

Conforming to the Centre's role, IC-I in Nanotechnology has conducted market-driven research and development in nanotechnology and engineering materials to deliver outputs and products for future commercialisation. The "Inovasi Kimia dan Bahan Termaju Produk Biodegradasi Bagi Aplikasi Teknologi Hijau" project was carried out under RMK-12. One of the project's main goals is to set up processing and testing facilities for biodegradable plastic development and testing for industries.

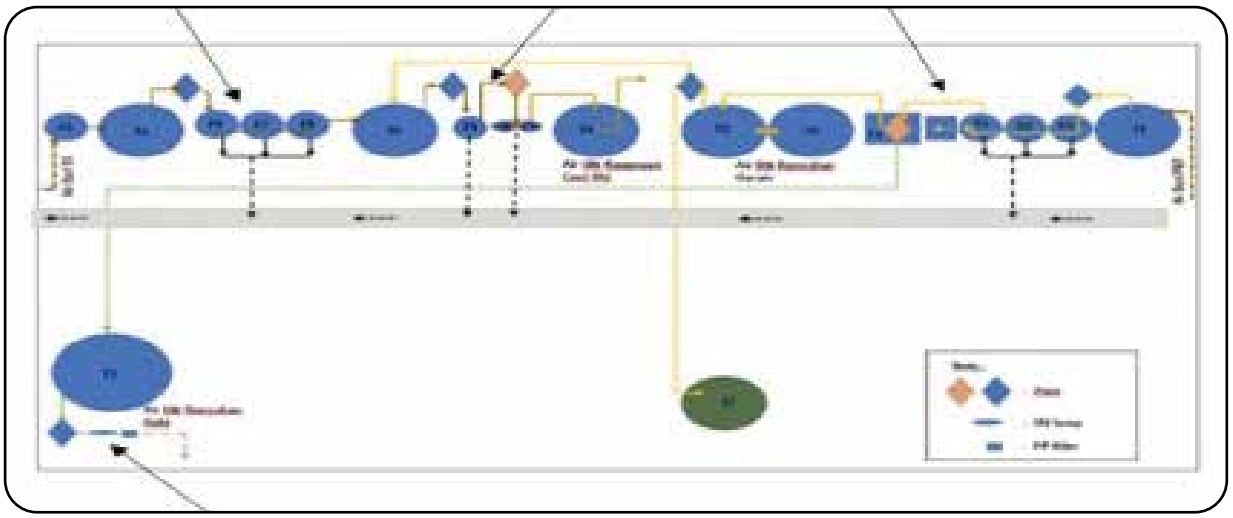
Currently, IC-I in Nanotechnology is working with MOSTI's National Nanotechnology Centre (NNC) in the Nanosafety Programme to survey the distribution of nano-based products in the local market, and ensure that products that are truly qualified as "nano-based products" will be tested for their level of safety, in which the size range and dimension is defined in ISO/TS 27687:2008.

INDUSTRIAL CENTRE OF INNOVATION IN NANOTECHNOLOGY

In the implementation of the SIRIM-Fraunhofer programme, IC-I in Nanotechnology played an active role in technology audit, technology uptake, and post-project audit. Throughout the year, IC-I in Nanotechnology auditors participated in technology audits either as lead or second auditors. This was done to realise the targeted number of audits assigned to IC-I in Nanotechnology. In 2021, IC-I in Nanotechnology completed a total of 16 technology uptake projects and two Solving Industry Wide Problem (SIWP) projects as the lead implementer. Some of the completed projects are:

- Productivity Increase in Feed Production for Ruminant Industry (SIWP)
- Automated Glaze Spraying Process for Increased Productivity of Ceramic Production (SIWP)
- *Peningkatan Produktiviti Jeruk Madu Pak Ali Melalui Sistem Integrasi Rawatan AYAQ-NANOTM dan Air Bilasan Buah*
- *Pembangunan Sistem Automasi Untuk Pembotolan Produk Sos UMMI*
- Automation of Glue Spraying System for Production of Whiteboards
- Upgrading of Curing Oven for Powder Coating Process
- Improvement of Custom Designed Jewelry Production Using Single-Use Prototype Wax Mould Maker System
- *Peningkatan Pengeluaran Air RO* (Reverse Osmosis) *dan Air Minuman melalui Integrasi Sistem Pengeluaran*

Integrated mixer and shredder machine system and triple-layer electrical dryer system delivery to SIWP's project implementers



Sistem Integrasi Rawatan AYAQ-NANO dan Air Bilasan Buah installed at Syarikat Jeruk Pak Ali Industries

INDUSTRIAL CENTRE OF INNOVATION IN NANOTECHNOLOGY

In 2021, 46 audits were conducted for SMEs, consisting of one technology audit, nine post-technology audits, 18 post-project assessments and 18 readiness assessments. Fourteen qualified technology auditors from IC-I in Nanotechnology carried out the audits. As a result, the SMEs involved have adopted various technology interventions such as technology enhancement, innovative processes and automation, improving the productivity of their operations.

In technical services and consultancy, about 326 testing and technical reports were conducted for SMEs, Government Agencies and Universities, an estimated 17% increase compared to 2020. This allowed the Centre to participate in testing contracts and offer materials characterisation services for ceramics, metals, composites, and polymers by utilising high-end equipment and materials processing facilities.

For research, IC-I in Nanotechnology has completed the Smart Fund Project fund under MOSTI, titled 'Pilot Manufacturing Process of Producing Current Collector using Local Carbon Material for Light Rail Transit (LRT) Application'. This project involved developing a pilot manufacturing process to produce a local current collector prototype using the innovative powder metallurgy technique. The prototype can then be used in light rail transit (LRT) applications.

IC-I in Nanotechnology seeks to increase awareness and collaboration among industry partners, academia, research institutions and government agencies on its technological capabilities and facilities through participating in technology exhibitions and organising seminars, workshops and training programmes. Through these ventures, contract research and development, consultancy, training and technical service projects can be undertaken by IC-I in Nanotechnology in the near future. Aside from that, IC-I in Nanotechnology has received recognition with two Gold Awards from ITEX 2021 for the Water-Based Rust Converter for Corrosion Protection of Steel Component and Structure, and the innovation of ceramic hives for Kelulut (stingless bee). Moreover, the Centre published four papers in refereed journals and registered one industrial design patent.

In the future, IC-I in Nanotechnology hopes to enhance its visibility by placing its experienced personnel within the expert panel for grant proposal evaluations involving the Smart Challenge Fund and being recently appointed for a new grand scheme, Main Grand Challenge Fund, consisting of AGF, TED1, TED2, SRF, AIF, ASEAN Science and Technology Innovation Fund and other nanotechnology-related funds.

INDUSTRIAL CENTRE OF INNOVATION IN SENSOR

Established in 2017, the Industrial Centre of Innovation in Sensor (IC-I in Sensor) focuses on developing products and services utilising sensor technology such as biosensors, photonics, and integrated sensing system.

REPORT BY:

HAMIDAH BINTI SIDEK
DIRECTOR

PROJECTS FOR YEAR 2021

1. TED 1
Development of Quantum Dot-Based Lateral Flow Assay for the Detection of Hepatitis B

2. TED 2
Cloud-Based Intelligent Measurement Monitoring and Analytic System in Support of Radiation Machine

3. SIIMF (SIRIM Industrial Innovation Model Fund)

- Development of New Round Clear Plastic Jar for Emerging Market Penetration
- Development of Smart Air Freshener Dispenser for Hygiene Solution Management System
- Smart Inventory Management (SIM) System
- Upgrading of Cutting and Coating Process for New Product Development
- Automated Cutting and Tracking System (ACTS)
- Retrofitting and Upgrading Plastic Extrusion Blowing Machine for Productivity Improvement

4. SIIMF (SIRIM Industrial Innovation Model Fund) (Sub Implementer)

- Productivity Enhancement by Implementing Partially Offset Energy Consumption of Solar PV Net Energy Metering (NEM) together with Overall Equipment Effectiveness (OEE) Sensors onto the Wet Lamination Process Machine
- Development of Real-Time Machine Data Collection System (MDCS)
- Development of Digitalised Warehouse Management System
- Development of Semi-Automated Filling Station for Water-based Adhesive Manufacturing Process

5. SIWP (Solving Industry Wide Problem)
Design and Development of Real-Time Machine Monitoring System (RT2M)

6. SIWP (Solving Industry Wide Problem) (Sub-Implementer)
Retrofitting and Upgrading Plastic Manufacturing System Towards Digital Production Management

7. SIRIM Industrial Research Fund (SIRF) (Sub Implementer)
Development of Smart Ceramic Hive for Kelulut Thoracica Farming

8. Product Development Program (PDP) (Sub Implementer)
Smart Harvesting System for Stingless Bee Farming

9. Commercial

- *Sistem Pemantauan Maklumat Bersepadu*
- Security Card Printing with Monitoring System
- Development of Online Prover Certification
- Encryption Serial Number System

INDUSTRIAL CENTRE OF INNOVATION IN SENSOR

NETWORKING SESSION

PATENT
PI2021006782
Filing date: 15 NOVEMBER 2021
Title: On-Chip Molecular Diagnostic System and Application of the same

PUBLICATIONS
Relationship between morphology analysis and durability of geopolymer paste. ICOGMPAC 2021, Journal of Physics: Conference Series, doi:10.1088/1742-6596/2080/1/012020. Siti Aisyah Razak, Farah Farhana Zainal, Shaiful Rizam Shamsudin, Mohd Nasha'Ain Nordin

AWARDS
ITEX 2021 GOLD Medal, Modular Microfluidic System for Dengue Serotype Detection

COMMERCIALISATION

NEW COLLABORATORS
- DSR Taiko Berhad
- JR Hajj Niaga Sdn Bhd
- Respack Manufacturing Sdn Bhd
- Vit Makanan (KL) Sdn Bhd
- Biofact Life Sdn Bhd
- Fragstar Corporation Sdn Bhd
- Alypz Sdn Bhd

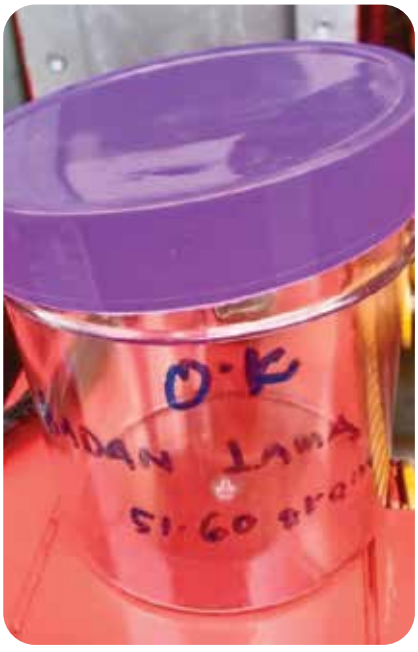
NEW GROWTH ERA
- Intelligent sensor network supporting smart industry, infrastructure and track & trace solution
- Blockchain platform and cryptography
- IoT application for precision farming

TYPE OF PROJECT: SIMF
(SIRIM INDUSTRIAL INNOVATION MODEL FUND)

1. Development of New Round Clear Plastic Jar for Emerging Market Penetration

Mold- Body (1350ml)

Mold- Cap (1350ml)



The Product

INDUSTRIAL CENTRE OF INNOVATION IN SENSOR

2. Automated Cutting and Tracking System (ACTS)

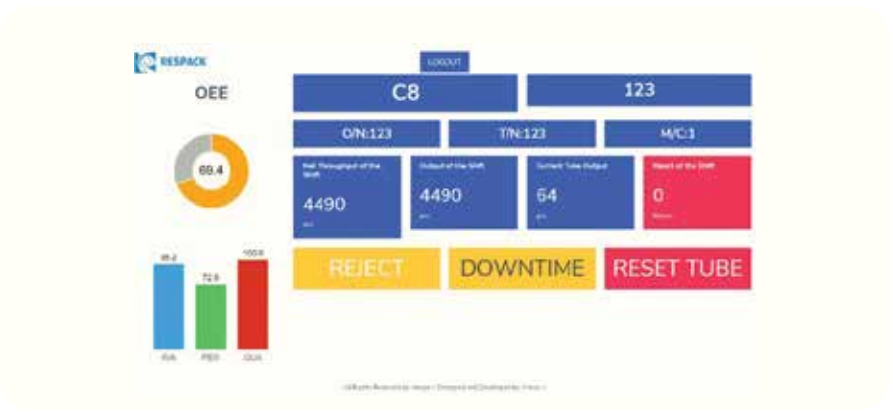
Textile Tracking system (TTS)

QR code scanning

TYPE OF PROJECT: SIWP
(SOLVING INDUSTRY-WIDE PROBLEM))

1. Design and Development of Real-Time Machine Monitoring System (RT2M)

IoT Control Panel



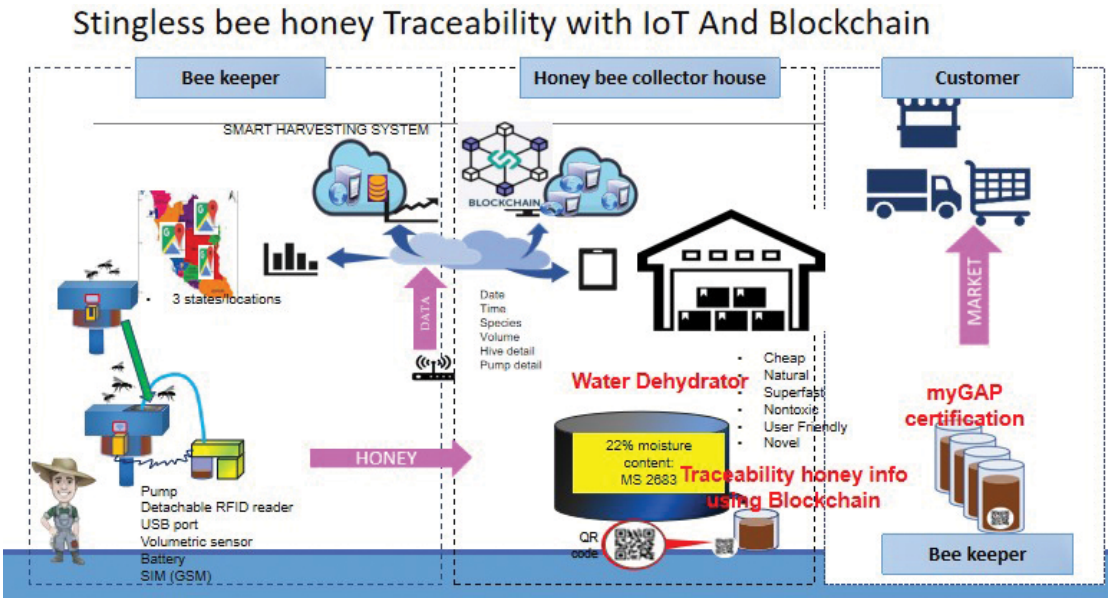
Coreless Bag on Roll Making Machine

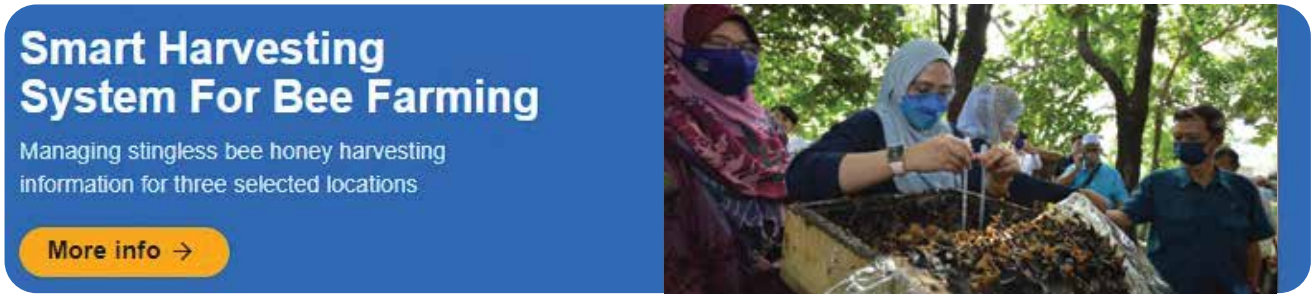
Dashboard

INDUSTRIAL CENTRE OF INNOVATION IN SENSOR

TYPE OF PROJECT: PRODUCT DEVELOPMENT PROGRAMME *(PDP) (SUB IMPLEMENTER)*

1. Smart Harvesting System for Stingless Bee Farming





AWARD

INDUSTRIAL CENTRE OF INNOVATION IN BIOMEDICAL

The Industrial Centre of Innovation in Biomedical (IC-I in Biomedical) launches and develops innovative applications and solutions within the medical sector. Examples include metallic implants for fracture fixation, bioceramics for repairing bone defects, soft tissue wound management, and craniofacial and biomodelling services. With such advancements in reconstructive surgery, medical professionals can undertake the challenge of treating patients with minimal damage to surrounding tissues and offer aesthetically pleasing results.

In 2021, IC-I in Biomedical contributed a total revenue of RM1,517,196.00 to SIRIM Berhad through biomodelling and craniofacial services, ISO 17025 accredited testing services and SIRIM-Fraunhofer (SIIMF) projects.

IC-I in Biomedical also managed to maintain accreditation of ISO/IEC 17025: 2017 under the Advanced Materials Testing Laboratory in the fields of chemical and physical testing (NO: SAMM 875).

As part of the Centre's commitment to being the 'Best Partner for Innovation', IC-I in Biomedical focused on its capability and capacity for leadership, services and consultancy to provide clients with the most accurate and recent information for sharing knowledge and expertise in the field of metallic biomaterials, bioceramics and bioassay, wound management, craniofacial and biomodelling services.

In March 2021, IC-I in Biomedical launched a new website, http://biomed.sirimir.my, as a platform to initiate and deliver innovative applications and solutions within the medical sector.

REPORT BY:

Dr. ROSDI BIN IBRAHIM
DIRECTOR

IC-I in Biomedical also completed 32 projects under the SIRIM Industrial Innovation Model Fund (SIIMF) in 2021.

INDUSTRIAL CENTRE OF INNOVATION IN BIOMEDICAL

MDIC 1-Day Workshop at The Light Hotel on 8 December 2021

IC-I in Biomedical organised a launching ceremony of the Medical Device Innovation Centre (MDIC) on 30 October 2021. It is intended to partly address the key challenges in the medical devices industry, particularly the innovation ecosystem and provide the way forward to close the gap between the industry and SIRIM.

IC-I in Biomedical completed 32 project SIIMF in 2021. Project Completed in 2021 as follow:

No.	Company
1	QPP EAR PIERCING SDN BHD
2	OSA TECHNOLOGY SDN BHD FD-20-1274
3	CREATIVE DENTAL TECHNOLOGIES SDN BHD FD-20-1248 330
4	LONGE MEDIKAL SDN. BHD. JF-20-1210
5	TRENTIM WOOD INDUSTRIES SDN BHD FD-20-1261
6	SHENG WANG INDUSTRIES SDN BHD FD-20-1250
7	ICERAMIC SOLUTIONS SDN BHD FD-20-1242-330
8	ATNESIS SDN BHD FD-20-1294

No.	Company
9	CCB MEDICAL DEVICES (M) SDN BHD FD-20-1236-330
10	ALFAIZ FOOD & BEVERAGE SDN BHD FD-20-1264
11	CREATIVE CONTACT (M) SDN BHD FD-20-1270
12	JANZ PRECISION ENGINEERING FD-20-1249
13	RIDWAN FOOD INDUSTRIES SDN BHD FD-19-1262 330
14	LUMUT CRACKERS SDN. BHD. FD-20-1278
15	UWHM SDN BHD FD-20-1275
16	TEE PHARM MEDICAL SDN BHD FD-20-1299

INDUSTRIAL CENTRE OF INNOVATION IN BIOMEDICAL

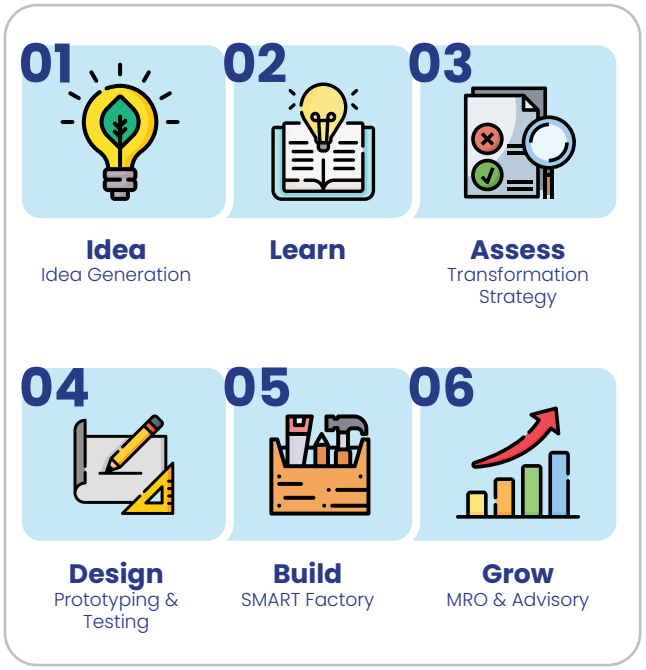
No.	Company
17	METALFINISHING INDUS
18	SHAHIRAH INDUSTRY SDN BHD FD-20-1304
19	SYARIKAT KOVRA ENTERPRISE FD-20-1293
20	PAK ALI FOOD INDUSTR
21	LADENT DENTAL SOLUTION FD-20-1328
22	DELL TRADING-SABAH FD-20-1314
23	MEDICAL INNOVATION VENTURES SDN BHD (MEDIVEN) FD-20-1300
24	MINA TRADING FD-20-1313

No.	Company
25	UNIVERSAL PLASTICS INDUSTRIES SDN BHD FD-20-1301
26	Data Tunggal
27	KAK KIAH CAKE HOUSE FD-20-1322
28	SYARIKAT MUTIARA FD-20-1296
29	ASIA NUTRI PHARMACEUTICAL FD-20-1203-330
30	YCL PRECISION ENGINEERING SDN BHD FD-20-1307
31	KK DRINKS SDN BHD
32	DIPTECH INDUSTRIES (ESMAS) JF-20-1218

Technical visit and discussion were conducted on 24 November 2021 with Prof Ir Srimalar Sreekantan, Director of USM Centre for Innovation and Consultation. Also present was Dr Rabiatul Basri from AMDI, USM Bertam. The discussion was on multiple points of testing and analysis by AMTL for their PRGS projects on the Production of Blood Bags and Biodegradable Plastics.

INDUSTRIAL CENTRE OF INNOVATION IN SMART MANUFACTURING

In achieving the aspiration to be the centre of choice for Industry 4.0 in Malaysia, the Industrial Centre of Innovation in Smart Manufacturing (IC-I in SM) strives to prioritise its services into a smart homegrown manufacturing solution, catering idea generation to business growth. Targeting the manufacturing sector as its technology recipient, IC-I in SM works closely within the triple helix of the federal and state government, industry and academia, aiming to bridge the gap between the entities. In creating valuable output, six main clusters were introduced, i.e. Additive Manufacturing and Computer Aided Engineering; Software and Data Analytics; Vertical and Horizontal Integration; Control and Instrumentation; Mechanical Engineering; and Readiness Assessment and Technology Audit.



REPORT BY:

Dr. MOHD SHAHRUL AZMI BIN MOHAMAD YUSOFF
DIRECTOR

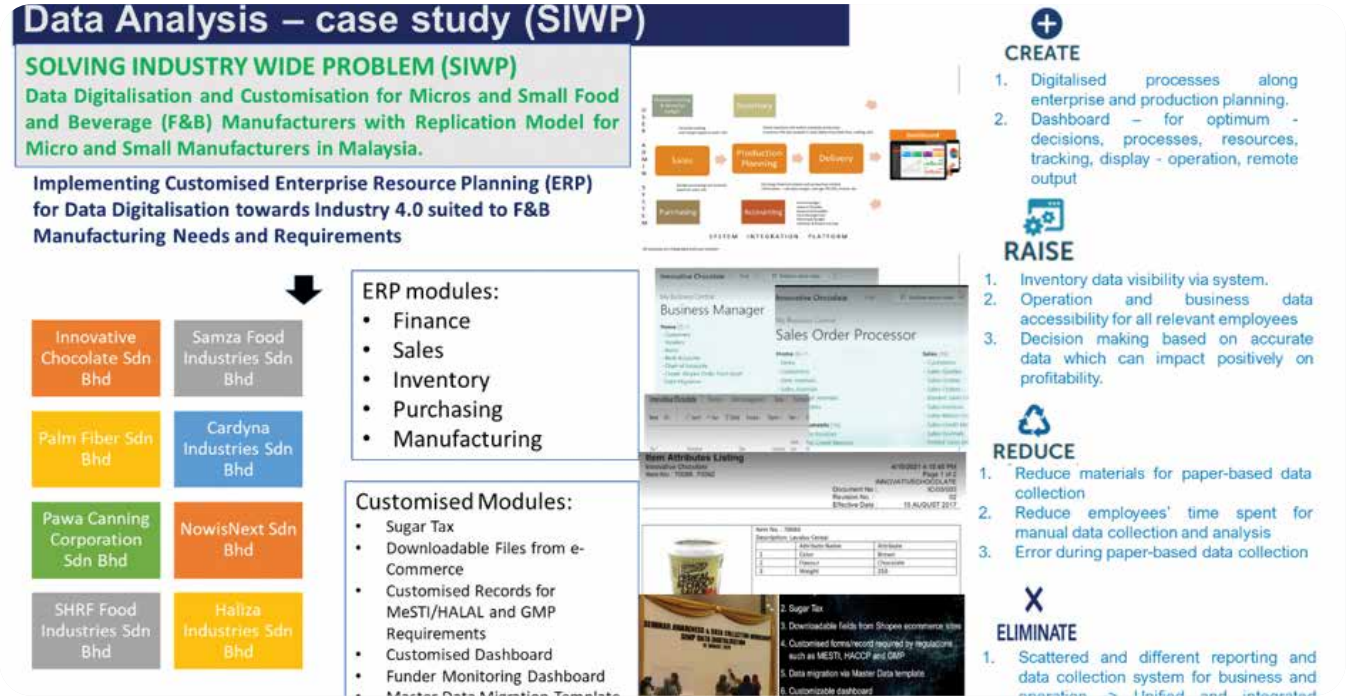
In 2021, IC-I in SM completed one Technology Audit, 44 Readiness Assessments, and 20 Technology Uptakes to assist SMEs under the SIRIM-Fraunhofer programme alongside a few high-value projects as follows:

1. SIWP - Data Digitalisation and Customisation for Micros and Small Food and Beverage (F&B) Manufacturers with Replication Model for Micro and Small Manufacturers in Malaysia

As the nation is geared towards Industry 4.0, SIRIM continues its role to equip the industry's micro and small manufacturers vertically, competing and surviving the ever-challenging playing field. Solving Industry Wide Problem (SIWP) is one of the initiatives to ensure seamless and successful implementation of data digitalisation within the micro and small manufacturing environment, creating sustainable business wealth (in terms of data, information and knowledge creation, collection, sharing, and manipulation).

With funding from the SIRIM-Fraunhofer programme, eight SMEs were selected to participate in the project, where they were equipped with a suitable and tailored data digitalisation tool, Enterprise Resource Planning (ERP), to manage and maintain the enterprise and production data effectively.

INDUSTRIAL CENTRE OF INNOVATION IN SMART MANUFACTURING

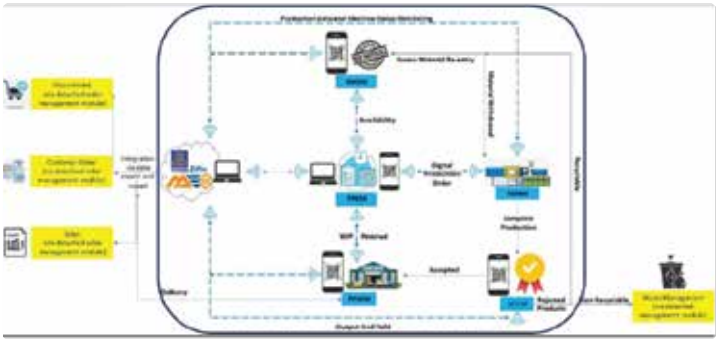


2. SIWP - Retrofitting and Upgrading Plastic Manufacturing System Towards Digital Production Management

IC-I in SM has developed a Digital Production Management, better known as SIRIM-DPio™, a cloud-based real-time production monitoring system with the integration of several pillars of Industry 4.0. The system was conceived as the first step for four selected plastics manufacturers (SMEs) to adopt Industry 4.0 into their shop floors. With its promising potential commercialisation, the invention was awarded the Silver Medal in ITEX 2021.

High Tech Project Programme 2019-2011

- SIRIM Digital Production Management System (SIRIM-DPio™) is a comprehensively customized Manufacturing Execution System (MES) that developed to fulfill the need of Malaysian Small-Medium-Enterprise (SME) companies towards adoption of Industry 4.0.
- SIRIM-DPio™ is a cloud-based and real-time monitoring system, that visualises via digital dashboard system, and smart mobile application to digitalise production management process.



PROJECT VALUE: 1.6 Million

COMPANIES LIST:

- Spen Industries Sdn.Bhd.
- A. Warner PlasticManufacturing
- Binsen Plastic Industry Sdn.Bhd.
- EHP Industries Sdn. Bhd.

BENEFIT OF SIRIM-DPio™:

- Eliminate paper-based documentation
- Reduce rates of inaccuracy in planning and scheduling
- Create new digital culture in visualising all production-related information in a digital system
- Increase machine utilisation rate
- Improve traceability and visibility in the value-chain activities
- Improve order lead time
- Increase customer satisfaction index

INDUSTRIAL CENTRE OF INNOVATION IN SMART MANUFACTURING

3. Cooperative Product Improvement and Development Programme

The objective of the Cooperative Product Improvement and Development Programme is to ensure the products produced by cooperative entrepreneurs under Suruhanjaya Koperasi Malaysia's sponsorship are competitive and resilient, with the ability to penetrate both local and international markets. It also aligns with the government's aspiration to increase rakyat's economy through entrepreneur-oriented cooperative programmes. Among the activities that will increase the competitiveness of their product are product branding, labelling, and packaging, including monitoring advisory services. The selected cooperatives will be further developed under the Cooperative Product Improvement and Development Programme.

INDUSTRIAL CENTRE OF INNOVATION IN ENERGY MANAGEMENT

The core competency of the Industrial Centre of Innovation in Energy Management (IC-I in EM) is centred on developing total solutions for industries in the areas of energy efficiency, renewable energy and energy storage. IC-I in EM also collaborates with industries on consultancy and research projects to promote greater acceptance of renewable energy in the marketplace.

REPORT BY:

MOHD FAUZI BIN ISMAIL
DIRECTOR

Highlights of 2021

- **Vendor and Technology Development for Manufacturing of FRP Products by Pultrusion Process**

Under the SIRIM-Fraunhofer - Solving Industry-Wide Problem (SIWP) programme, the Industrial Centre of Innovation in Energy Management has been instrumental in developing a vendor capable of producing a solar streetlight composite pole based on the pultrusion process. This technology is the first of its kind developed in Malaysia. It provides a continuous and cost-effective method for manufacturing fibre-reinforced plastics with constant cross-sections and shapes.

Continuous fibre roving or tapes are pulled using a puller through a resin bath of thermosetting polymer. The resulting impregnated fibre composites are then pulled and passed through a series of heated forming dies. After the pultrusion process, the products are cut to the desired lengths. With this technology, it is highly anticipated that the vendor will be able to produce poles at greater speed, and consistently of high quality.

The pultrusion system installed at the vendor site

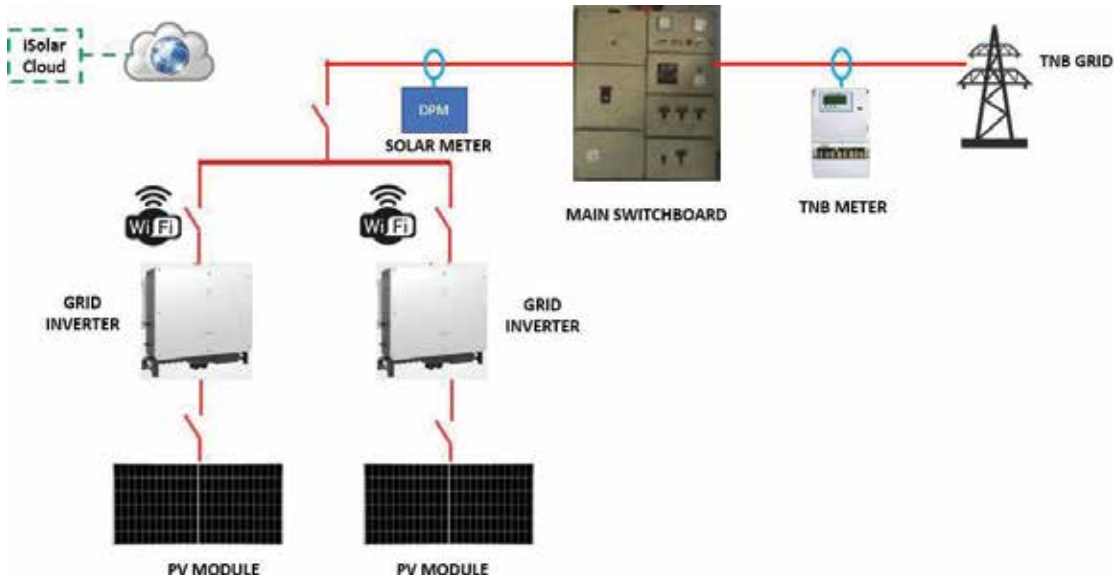
Continuous production of 160 mm diameter composite pole for solar streetlight

Highlights of 2021

- **Malaysian Timber Industry Board (MTIB) Project on Hybrid Energy Kiln Drying of Malaysian Timbers for Sustainable Future**

Konsortium PEKA Sdn Bhd introduced two major technology interventions. The first technology intervention involved the installation of 154 kWp Solar PV on a building rooftop. The 154.70 kWp grid-connected solar photovoltaic (GCPV) system was designed to supply green energy to a low-voltage electricity network at the company, under the self-consumption (SELCO) program. The energy generated by the solar PV system will be consumed for the building's own usage, and any excess is not allowed to be exported to the grid.

The Solar PV system installed in this project is also supplied with an online monitoring system (iSolar Cloud). The monitoring system provides relevant data retrieved from the inverter and the digital power meters (DPM).



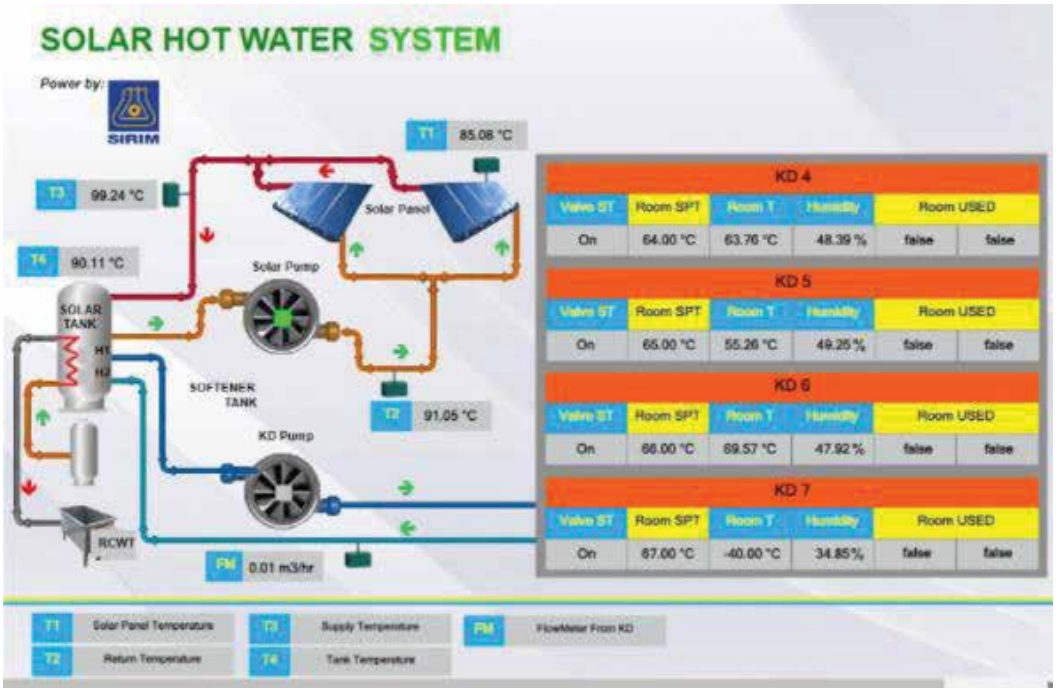
Solar PV System Design

Solar Thermal and Solar PV installed on a rooftop

INDUSTRIAL CENTRE OF INNOVATION IN ENERGY MANAGEMENT

Highlights of 2021

Another major technology intervention involved a solar thermal system responsible for supplying part of the thermal energy required for the wood drying process in kiln-dryer (KD) chambers. The solar hot water system is also equipped with a remote monitoring system that provides information on certain parameters, such as temperatures and the flow rate at the solar loop, hot water tank, and KD. The figure below illustrates the graphic view of the solar thermal remote monitoring system.



Dashboard of the Solar Hot Water System


Solar thermal collectors


Heating coils in Kiln Dryers


15m³ hot water storage tank


Solar hot water pump


Control Panel for solar hot water system

The overall system installation of the Solar Hot Water System

Highlights of 2021

- **SIRIM Industrial Innovation Model Fund (SIIMF) Projects:**

1. Syarikat Perusahaan Majulah

The proposed technology at Syarikat Perusahaan Majulah involved the installation of an electric thermal air drying system to replace the diesel dryer. With the technology, the company benefited from improved production due to the shortened drying process, and enhanced product quality. The drying process in the enclosed drying chamber ensures more hygienic output products by preventing animal or insect contamination during the drying process.

The thermal drying system consists of six units of electric heater blower fans, three circulation fans, two ventilation fans, a temperature sensor, a humidity sensor and a controller box. The drying chamber can reach a maximum temperature of 60°C (programmable up to 70°C). The hot and dry air will be circulated within the chamber and will be released through a ventilation fan if the temperature or humidity inside the drying chamber exceeds the maximum limit set.

Electric Drying Chamber

2. Jalina Resources Millionaire

Jalina Resources Millionaire manufactures dried tapioca chips in a variety of flavours. The process involves drying through natural sunlight. The drying process takes around seven hours to dry. The intervention project assists the company in upgrading its drying process through a solar-assisted thermal dryer system. The system substitutes the conventional drying process, which requires long hours for drying, and additional hours during cloudy and rainy days.

The project outcomes indicate improved productivity as follows:

- Reduced drying time from seven hours to four hours per day.
- Increased drying capacity of wet tapioca from 100 kg to 200 kg per day.

Solar Drying System of tapioca chips

INDUSTRIAL CENTRE OF INNOVATION IN ENERGY MANAGEMENT

Highlights of 2021

3. Rezza Productive (M) Sdn Bhd (Formerly known as Bio Haruantech (M) Sdn Bhd)

Established in 2009, the company specialises in manufacturing Meals, Ready-To-Eat (MRE), which are produced through retort sterilisation process. The project's objective was to provide semi-automated filling and sealing machines to replace manual operation.

The project outcomes indicate improved productivity as follows:

- Increased production capacity from 3,000 units per day to up to 7,000 units per day.
- Increased process performance rate from six units per minute to up to 15 units per minute.
- Reduction of manpower from 10 operators to two operators.

Semi-automated filling and sealing machine

4. Sajiria Sdn Bhd

Sajiria Sdn Bhd manufactures various bakery products, such as sandwich breads, burger buns, sausage buns and filling buns. The project was to provide a new continuous automatic Dividing and Rounding machine, and Moulding machine to replace the current manually operated machines.

The project outcomes indicate improved productivity as follows:

- Increase production capacity from 12,000 pieces to up to a maximum of 48,000 pieces per day.
- Reduction of manpower from four operators to two operators to operate the Dividing and Rounding machine, and the Moulding machine.

Dividing and rounding machine

INDUSTRIAL CENTRE OF INNOVATION IN RENEWABLE ENERGY

The Industrial Centre of Innovation in Renewable Energy (IC-I in RE) mainly focuses on providing innovative solutions in the production of affordable and clean energy; and clean water and sanitation. These include providing solutions to renewable energy generation, energy efficiency, and energy storage industries and producing safe and affordable clean water for communities.

REPORT BY:

Ts AZHAR BIN ABDUL RAOF
DIRECTOR

SUSTAINABLE CLEAN WATER THROUGH SOLAR-POWERED DESALINATION FOR PULAU SEBANGKAT, SABAH

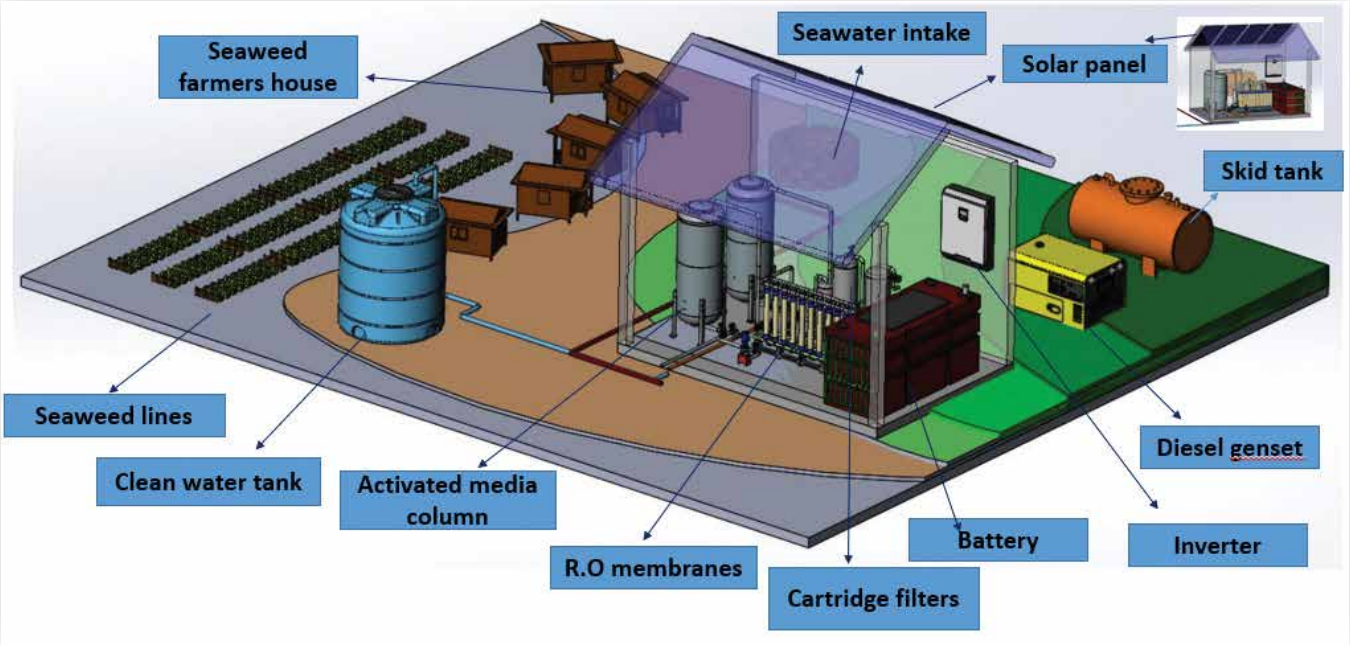
Safe drinking water is one of the fundamental human needs to live a healthy life. It is also a necessity for a prosperous community anywhere across the globe. Therefore, ensuring the continuous availability of safe drinking water is a great challenge that deserves global attention.

While certain regions in our country are fortunate to enjoy an unlimited supply of clean water and electricity, other areas, such as remote coastal regions and islands, are teetering on the brink of critical levels of freshwater scarcity, limiting the viability of livelihoods, let alone sustainable development. For the community of Pulau Sebangkat in Semporna, Sabah, the above challenges have been significantly mitigated using an innovative, renewables-driven and decentralised solar seawater desalination system provided by IC-I in RE. Ministry of Science, Technology and Innovation (MOSTI), under the Malaysia Social Innovation (MySI) programme, funded the solar-powered seawater desalination project in Pulau Sebangkat to overcome the drinking water supply issue on the island.

Prior to the project's completion, the islanders lived below the subsistence consumption threshold for water due to their sole dependency on unsustainable and expensive water sources, which were sold for RM100 per cubic metre. Clean water purchased from the mainland was only used for cooking and drinking, while the islanders used seawater for other needs, such as bathing and washing clothes. After the development of solar-powered desalination and distribution systems, the local populace is now free from the stress of water deprivation. Presently, they have access to a continuous, high-quality drinking water supply at the highly competitive market price of RM30 per cubic metre. In addition, any excess electricity produced by the solar energy systems is being used to power the community's streets and house lighting.

The above-mentioned impacts prove the success of the seawater desalination project and show the promising potential of renewable energy-driven seawater desalination solutions for remote communities.

INDUSTRIAL CENTRE OF INNOVATION IN RENEWABLE ENERGY



3.0 SUBSIDIARIES & BUSINESS UNITS

SIRIM QAS INTERNATIONAL SDN BHD

SIRIM QAS International (SIRIM QAS), a wholly-owned subsidiary of SIRIM Berhad, remained true to its mission of helping customers be globally competitive through testing, inspection, and certification services. The year 2021 posed unprecedented challenges, with the COVID-19 pandemic heavily affecting people and economies worldwide. It was also a tremendously challenging time for businesses, including SIRIM QAS and its customers.

SIRIM QAS transitioned most of its workforce to work from home and implemented remote audits and inspections as alternatives to on-site audits and inspections. Its staff, especially the auditors, demonstrated great resilience and agility in adapting to the new work norms. The auditors conducted around 1,300 remote audits that year, involving more than 4,000 audit days in addition to on-site audits. Besides mitigating COVID-19 health risks and overcoming travel and work restrictions in certain geographic regions, SIRIM QAS helped customers to achieve cost savings due to reduced audit costs of remote audits.

Putting the safety of its staff and customers as utmost priority, SIRIM QAS implemented SIRIM's safety protocols at the workplace in full compliance with the Ministry of Health and government guidelines.

REPORT BY:

NUR FADHILAH MUHAMMAD
CHIEF EXECUTIVE OFFICER

SIRIM QAS also provided consignment services for imported electrical appliances, including inspection, sampling, testing, and issuing security labels at the port of entry or their warehouses. This service was well-received by importers who were eager to minimise travel and sample handling by their staff while also benefitting in terms of time-saving and convenience. Mindful that many businesses were facing unforeseen hardships during the time, the organisation also offered a significant rebate on its services that year.

SIRIM QAS further enhanced the digitalisation of its testing, inspection and certification (TIC) offerings, enabling customers to apply online for its services. It introduced an online application for Special Approval for multimedia and communication products, with approval turnaround time within 24 hours.

SIRIM QAS also took the opportunity to improve its business processes during the business slowdown, streamlining its Product Certification process and significantly reducing the turnaround time on issuing new Product Certification licenses by more than 60%.

SIRIM QAS INTERNATIONAL SDN BHD

In light of the COVID-19 pandemic and the recommendation to wear face masks by the World Health Organization (WHO) to protect against the spread of the virus, SIRIM QAS International introduced testing and product certification for medical face masks. This service is performed to ensure that the quality and performance of the face masks sold in Malaysia comply with the standards set.

Besides that, SIRIM QAS expanded its testing services to include testing of geotextiles and slow bend test for rails and enhanced its cosmetics testing services. In addition, the organisation also introduced the IPv6 Compliant Product Certification program in 2020. The Malaysian Communications and Multimedia Commission (MCMC) mandated that all IPv6-capable equipment directly connected to the service provider shall be certified.

Launch of SIRIM Trusted Mark Scheme

Through its collaboration with the Turkish Standards Institution (TSE), the national standardisation and certification body in Turkey, SIRIM QAS International can now assist local medical device manufacturers in obtaining CE Mark for their devices.

Next year, SIRIM QAS International plans to offer the IECEx 02 Certified Equipment Scheme once it is accepted as an Ex Certification Body by the IECEx. Another certification scheme in the pipeline is the AS 9100 Quality Management System certification for the aerospace industry.

SIRIM QAS INTERNATIONAL SDN BHD

SIRIM QAS International takes great pride in being a nationally and internationally accredited and recognised testing, inspection and certification body. Its accreditations and recognitions assure clients of complete competence and impartiality. This year, SIRIM QAS achieved another accreditation when the Department of Standards Malaysia officially recognised its fully equipped Photovoltaic Testing Laboratory. The organisation expects to get its Photovoltaic Testing Laboratory listed under the IECEE CB Scheme next year to further enhance the global acceptance of its photovoltaic test report.

Besides its commitment to customers and stakeholders, SIRIM QAS is also deeply aware of its responsibility to give back to society during this crisis. The organisation donated 96,000 medical face masks and hand sanitisers to four not-for-profit organisations in the healthcare sector, including the National Cancer Society of Malaysia and the National Kidney Foundation Malaysia. The face masks were used by personnel and volunteers in these organisations as part of their personal protective equipment (PPE) and hand sanitisers to keep them safe during the COVID-19 pandemic. SIRIM QAS also financially assisted 15 diploma students from underprivileged B40 families under its Program Dermasiswa.

SIRIM QAS continued to educate consumers on the importance of standards, testing and certification to ensure product quality and safety through social media and advertisements. A highlight of its media activity was the continuation of the Safety Awareness Campaign. Led by SIRIM QAS International and in collaboration with the Energy Commission (ST), Malaysian Electrical Appliances Distributors Association (MEADA), and Federation of Malaysian Electrical Appliances Dealers' Association (FOMEDA), the campaign aimed to raise awareness among consumers and industry players of the importance of the SIRIM-ST label on E&E appliances.

Besides that, SIRIM QAS and the Malaysian Institute of Integrity (IIM) collaborated to organise a thought leadership forum on the topic of corruption and anti-bribery management system (ABMS) titled "Breaking the Chain of Corruption through ABMS for Economic Sustainability".

Program Dermasiswa (Diploma) recipients

SIRIM STS SDN BHD

SIRIM STS Sdn Bhd is the leading one-stop resource centre for training, standards and consultancy services. SIRIM STS offers services for the development of SIRIM Industry Standards. It upgrades the human capital of local and international industries through training and consultancy services, serves as WTO National Enquiry Point on technical barriers to trade, and supports knowledge dissemination through SIRIM Technical Library. SIRIM STS assists organisations and their personnel in implementing excellent business culture by associating quality, technology and best practices with their daily work demands.

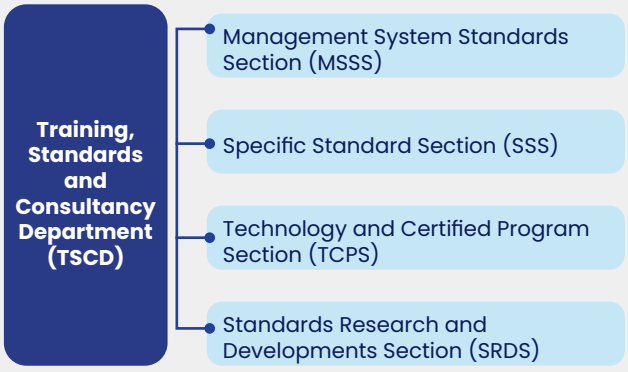
REPORT BY:

RAJA YAHYA BIN RAJA ARIFFIN
CHIEF EXECUTIVE OFFICER

Highlights of 2021

In January 2021, the Training and Consultancy Department (TCD) expanded its portfolios with standard development activities, and was renamed to Training, Standards and Consultancy Department (TSCD). With this restructuring, TSCD comprises four sections: Management System Standards Section (MSSS), Specific Standards Section (SSS), Technology and Certified Program Section (TCPS), and Standards Research and Development Section (SRDS).

2021 New Composition for TSCD



- **Training, Standards and Consultancy Department (TSCD)**

In 2021, TSCD organised 737 training courses for 1,242 organisations, involving a total of 12,059 participants. Of these organisations, 156 were made up of SMEs. In terms of advisory and consultation, these sections secured 68 new consulting or collaborative projects, of which 17 are SMEs funded by the SIRIM-Fraunhofer programme. The number of training courses organised and participants were higher than the previous year. To enhance service delivery during the movement control order, SSTS offered online consultation and training services and organised 173 online public training.

Training in 2021

737 Training Courses

1,242 Organisations

12,059 Participants

156 SMEs

SIRIM STS SDN BHD

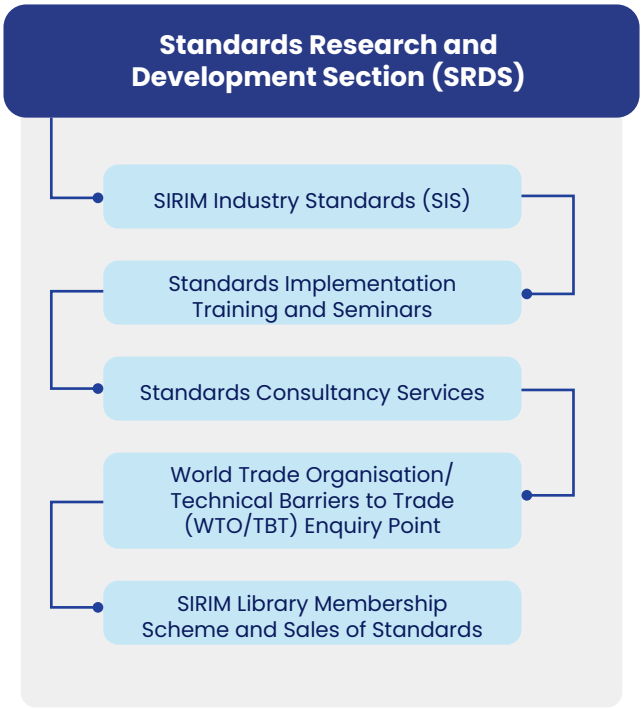
Achievements in 2021

The Management System Standards Section (MSSS), Specific Standards Section (SSS), and Technology and Certified Program Section (TCPS), continue to focus on core advisory and training services related to quality, technology, and best practices, including advisory and training for Standards-Based Management Systems. Guidance and training for Tools and Techniques for Quality and Best Practices, such as Total Quality Management (TQM), Green 5S, 7 QC Tools, Statistical Process Control (SPC), Quality Control Circle (QCC), Kaizen, Customer Service Management, Total Productive Maintenance (TPM), Innovation Management and Lean Management, were also offered. Furthermore, TCPS provided technology-related training, including Certified Welders-AWS, Certified Welding Engineers-AWS, Certified Welding Inspectors-AWS, and Certified NDT programmes on ultrasonic testing (UT) and radiography testing (RT) approved by the Department of Skills Development or JPK. The section also offered Industry 4.0 and soft skills training.

New products and services were introduced in 2021, namely the Factory Transformation Programme, Lead Auditor course on ISO 22000 (PSMB), TPM Assessor course, Innovation Management Assessor course, Standards-Based Management Systems training such as ISO 18788, ISO/IEC 17023, ISO/IEC 17024 and MS 2610, and Certified Internal Auditor for HACCP. A total of 286 individuals were qualified through SIRIM Personnel Certification Programmes (SPCP), including Certified Internal Auditor for Quality, Certified Internal Auditor for HACCP, Certified Quality Professional, Certified Quality Manager, Certified Six Sigma Green Belt, Certified Food Safety Management System Executive, Certified Lead Implementor ISO/IEC 27001, Certified Lead Implementor ISO 22301, and Certified Halal Executive (JAKIM approved).

A total of 73 organisations were guided towards obtaining various certifications, accreditations, and recognitions. Thirty organisations were assisted with Standards-Based Management Systems, such as AS 9100, ISO 9001, ISO 14001, ISO 37001, ISO 41001, ISO 45001, ISO 55001, IMS, ISO 22000, ISO/IEC 17025, ISO/IEC 17043, GMP, HALAL and HACCP. Moreover, 33 organisations have been assisted in achieving SIRIM Best Practices Recognition Schemes such as Green 5S, Lean Management, Innovation Management, TPM and Customer Service Management.

Standards Research and Development Section (SRDS) is the standards arm of SIRIM STS. SRDS develops SIRIM Industry Standards (SIS), organises standards implementation, training and seminars, and offers standards-related consultancy services. SRDS, on behalf of SIRIM Berhad, serves as Malaysia's Enquiry Point for the World Trade Organisation's Agreement on Technical Barriers to Trade (WTO/TBT). SRDS also provides businesses and organisations access to industry, foreign and international standards through SIRIM Technical Library Membership Scheme and SIRIM Standards Store.



SIRIM STS SDN BHD

Achievements in 2021

- **SIRIM Industry Standards (SIS)**

  As a service provider in the development of industry and organisation standards and consultancy, SRDS established collaborative efforts in industry standards development for various organisations, including the Public Works Department, PUSPAKOM Sdn Bhd, Department of Fisheries Malaysia, Malaysia Design Council, United Nations Industrial Development Organization, Perbadanan Kemajuan Kraftangan Malaysia and Halal Development Corporation Berhad.

  Overall, SRDS developed 24 SIRIM Industry Standards (SIS) and 11 SIRIM ECO Standards in 2021.

- **Standards Implementation Training and Seminars**

  In 2021, 25 Standards Implementation Training programmes (public and in-house training) were conducted, with 13 public training and seminars, and 12 in-house training.

Training on aerospace industry

- **Standards Consultancy Services**

Factory Transformation Programme

SRDS introduced the Factory Transformation Programme (FTP) to provide training and advisory services, aiding industry players to enhance their performance, sustain their business, and become Industry 4.0-ready.

FTP focuses on implementing four best practices, namely Green 5S, Lean Management, QC Tools & Techniques, and Innovation Management. It is critical for industries to incorporate these practices before adopting Industry 4.0 technology.

Through allocation from the SIRIM-Fraunhofer fund, SRDS executed its first Factory Transformation Programme (FTP) for SME manufacturing companies. A total of 17 companies participated in the programme, with 14 from timber industries.

SIRIM STS, Malaysian Timber Industry Board (MTIB), Malaysian Timber Council (MTC), and ICA 40 Sdn Bhd joined forces to create the FTP for the timber and furniture industries. The SIRIM-Fraunhofer fund financed 80% of the participation fees based on this collaboration, and MTC provided the remaining 20% of the funding.

MCMC Project

In 2021, SIRIM STS completed the consultancy services on a strategic review of the Mandatory Standard (MS) for Electromagnetic Field (EMF) Emission from Radiocommunication Infrastructure. There are two project deliverables, i.e., revision of MS for EMF to ensure that the requirements, including the referenced documents, are up to date; and submission of a comprehensive report on the Strategic Initiative Plan that the Malaysian Communications and Multimedia Commission (MCMC) should adopt for an efficient implementation of the MS for EMF.

Market Access Consultancy

In 2021, SIRIM STS finalised and completed the Market Access Consultancy Programme (MACP), where SRDS provided companies with technical knowledge and support for better market access. The MACP guided companies on product compliance and standards requirements, ensuring product acceptance by regulators and consumers. A total of 17 companies participated and benefited from this programme.

SIRIM STS SDN BHD

Achievements in 2021

- **World Trade Organisation/Technical Barriers to Trade (WTO/TBT) Enquiry Point**

Throughout the year, the national WTO/TBT Enquiry and Notification Point distributed 3,970 notifications from other WTO member economies through the E-ping platform to relevant national stakeholders, including regulators, industries, and exporters. Currently, 311 registered users have received timely notifications on proposed changes to regulations and standards of foreign countries.

On the home front, three regular notifications on the amendment of Malaysian food regulations by the Food Safety and Quality Division, Ministry of Health, and four regular notifications on telecommunications apparatus by the Malaysian Communications and Multimedia Commission (MCMC) were forwarded to WTO. Also, a total of 27 enquiries were received and responded to accordingly.

- **SIRIM Library Membership Scheme and Sales of Standards**

The SIRIM Library Membership Scheme sees a membership of 197 companies, organisations and government agencies reaping the benefits of access to the most comprehensive collection of international, foreign, association and Malaysian standards.

SRDS develops SIS and SIRIM Eco Standards, manages standards implementation training, delivers standards consultation services, and provides a sales counter for SIS and SIRIM Eco Standards sales purposes. SRDS is also responsible as a sales agent of Association and Organisation Standards (e.g. National Fire Protection Association [NFPA] and American Society for Testing and Material [ASTM]). In 2021, SRDS recorded sales of 640 copies of international and foreign standards.

Moreover, about 180 copies of standards were sold online through the SIRIM Standards Store platform. SRDS also managed to secure an agreement with International Electrotechnical Commission (IEC) to become an agent, selling IEC standards and publication. A total of 62 copies were sold through SRDS.

SIRIM STANDARDS TECHNOLOGY SDN BHD

SIRIM Standards Technology Sdn Bhd (SIRIM SST) is a wholly owned subsidiary of SIRIM Berhad and is one of Malaysia's leading calibration and measurement laboratories. With 28 years of experience since its establishment in 1994, SIRIM SST is located at six strategic locations in Shah Alam, Permatang Pauh, Senai, Kuantan, Kuching and Kota Kinabalu, with its most recent distribution and collection centre, in Malacca. Targeting to be the top calibration and measurement services company in Malaysia, SIRIM SST provides a comprehensive and diverse range of calibration and measurement services throughout Malaysia, Singapore, Thailand, and Brunei.

Leveraging its experienced team with strong technical competency, high precision calibration equipment, comprehensive calibration facilities, accredited ISO/IEC 17025 laboratories, and value-added calibration and measurement services, SIRIM SST continues to serve the needs of diversified market sectors such as oil and gas, manufacturing, aviation, utilities, food, semiconductors/electronics, healthcare, education, agriculture, defence, automotive, telecommunications, government agencies and construction.

The scope of SIRIM SST's accredited calibration and measurement services ranges across major parameters used by the industries, including Radio Frequency (RF), Electrical (Direct Current and Low Frequency (DCFL) & Time Frequency), Force & Pressure, Temperature, Dimensional, Mass and Volumetric.

REPORT BY:

Dr. FARIDAH BINTI HUSSAIN
CHIEF EXECUTIVE OFFICER

FACTS AT A GLANCE

ISO/IEC 17025

Accredited laboratories serving diversified market sectors

SIRIM SST currently serves

>3,100

companies per annum

VALUE PROPOSITION

Trusted and Reliable High-Quality Calibration and Measurement Services

Highlights of 2021

While the nation is transitioning towards endemicity, SIRIM SST remains focused and vigilant in serving the needs of the industries. To do so, we ensure utmost quality through the precision of calibration and measurement, strengthening the business competitiveness of SIRIM SST's customers.

In 2021, SIRIM SST served 3,100 companies locally and internationally and issued more than 36,100 calibration certificates. This achievement demonstrates SIRIM SST's value proposition in providing 'Trusted and Reliable High-Quality Calibration and Measurement Services'.

SIRIM STANDARDS TECHNOLOGY SDN BHD

In addition, SIRIM SST has enhanced its offerings by providing calibration services in the fields of Radio Frequency (RF). The laboratory is equipped to offer comprehensive calibration services relating to voltage, current, resistance, distortion, electrical-related parameters, time, frequency, radiofrequency and microwave measurement standards and facilities. Thus, SIRIM SST's future direction is to establish strategic partnerships to support and enhance multinational companies utilising Electrical and RF technology in their field of work.

Furthermore, SIRIM SST offers 3D measurement services through its Coordinate Measuring Services Machine (CMM) located at the facility in Shah Alam.

This capability supports the automotive and aerospace sectors by providing accurate measurements for various components such as aircraft propeller blades, jigs, and fixtures.

Complementing its measurement and calibration services, SIRIM SST is committed to providing additional services such as on-site calibration, collection and delivery, repair services, technical assistance, and consultancy services to support industries' competitiveness and sustainability in the global market. New services introduced in 2021 are the calibration of Industrial Infrared Thermometers (IRT) and Thermography.

SIRIM SST also facilitates and supports industries through consultation and training by applying and verifying their calibration results through technology transfer programmes, offering world-class customised technical training for groups and individuals at all levels on operating and using the calibrated instruments to their fullest potential.

Moving forward in 2022, SIRIM SST will continue to deliver excellent calibration and measurement services and actively engage with the industry to establish its presence in the market and gain new customers. The development of state-of-the-art technology is a priority to ensure SIRIM SST remains at the forefront of customer satisfaction.

ACHIEVEMENT

>36,188 calibration certificates issued

NEW OFFER

Infrared Thermometer Thermal Imagers

ACHIEVEMENT

>3,100 companies have been served locally and internationally

SIRIM STANDARDS TECHNOLOGY SDN BHD

2021 Achievements

- **TOP 10 CUSTOMERS (MNCs, SMEs & GOVERNMENT)**

No.	Customer Name	RM '000
1	Advanced Energy Industries (Malaysia) Sdn Bhd	298
2	Keysight Technologies Sales (Malaysia) Sdn Bhd	282
3	TNB Group	255
4	Malaysia Marine and Heavy Engineering Sdn Bhd	245
5	PETRONAS Group	223
6	Panasonic Group	183
7	SIRIM QAS International Sdn Bhd	178
8	Lumileds Malaysia Sdn Bhd	170
9	Flextronics Group	168
20	Proton Gorup	133

SIRIM TECH VENTURES SDN BHD

REPORT BY:

Ts. AJMAIN BIN KASIM
CHIEF EXECUTIVE OFFICER

In 2021, SIRIM Tech Venture Sdn Bhd (STV) showed positive growth through various business activities in technology commercialisation and composite cylinder testing. STV continues to strengthen its capabilities in both areas by engaging in capacity-building programmes, undertaking related projects and supporting SIRIM's business activities.

The business model, 'Technology Enterprise and Commercialisation Hub', or TECH Ecosystem™, remains an important platform by bridging the industry to a wealth of knowledge created through university research. The value chain activities in TECH Ecosystem™ facilitate the progress of technology maturity from the Technology Readiness Level (TRL), preferably from TRL 6 and above, until it is ready for commercialisation. Advisory activities comprise project screening, joint technology enhancement, technology assessment, techno-economic feasibility study, market validation, business linkages, technology valuation, industry-need matching, capacity building and funding advisory. This collaboration platform will benefit all parties in the long run.

The year 2021 witnessed the dilution of shares of STV's subsidiary, Granulab (M) Sdn Bhd, and the signing of the Share Sale Agreement between STV and KPower Berhad executed on 5 January 2021. The dilution of share is an example of industry-push initiatives for medical devices-related industries to increase market share and gain higher growth.

Signing of Technology Commercialisation Agreement between SIRIM Tech Venture Sdn Bhd and Safari Holdings Sdn Bhd on 15 April 2021

The TECH Ecosystem™ continued to attract partners, collaborators and clients onto the platform to build a collaboration network. The platform achieved good success with the signing of a Memorandum of Understanding (MoU) with various parties such as the Malaysian Industry Development Authority (MIDA), Universiti Malaya (UM), Universiti Teknikal Malaysia Melaka (UTEM) and facilitating a tri-partite MoU of SIRIM Berhad with Cradle Fund Sdn Bhd and Cradle Ventures Sdn Bhd.

There were precarious challenges during the COVID-19 pandemic, which affected the industry's readiness for new technology investment and commercialisation. In 2021, only one technology commercialisation agreement was signed, involving STV and Safari Holdings Sdn Bhd, for the commercialisation of LPG composite. The composite, low-pressure Liquefied Petroleum Gas (LPG) Cylinder is manufactured using SIRIM's filament winding process, and the inner layer is wrapped by medium-density polyethene (MDPE) fibreglass materials. The performance of the composite cylinders has been tested according to the BS EN 14427 standard. The cylinders are lightweight (50% lighter compared to current steel LPG cylinders), ergonomic, and non-corrosive.

SIRIM TECH VENTURE SDN BHD

Signing of Share Sale Agreement between SIRIM Tech Venture Sdn Bhd and KPower Berhad on 5 January 2021

STV undertook and delivered various projects for clients, namely 'Implementation of Development Of Commercial Ready Glass-Based Solar Panel Of Dye Solar' in collaboration with Universiti Teknologi Petronas (UTP); 'Hypermarket/ Supermarket Program - Merchandising and Business Matching For SMEs' with collaboration with Mydin Mohamad Holdings Berhad; 'Burst Testing for Non-Metallic Pipe' for Petronas Research Sdn Bhd (PRSB); 'Fabrication of 100 litres Compressed Natural Gas (CNG) Cylinder' for ICI Bio-Natural Gas of SIRIM Berhad; 'Impact Study on Implementation of SIRIM-Fraunhofer Programme' for SIRIM Berhad; and 'Skills Training on Micro-Precision Grinding' for Institut Latihan Perindustrian Kuala Lumpur (ILP KL) and ILP Rembau, Negeri Sembilan.

Signing of Agreement between SIRIM Tech Venture Sdn Bhd and DSR Taiko Berhad on 22 December 2021

The strategic collaboration of STV and MIDA brought beneficial output for both parties, as the signing of an agreement between STV and DSR Taiko Berhad on 22 December 2021 was witnessed by MIDA for the implementation of 'Holistic Business Solutions from Orchards to Consumer (O2C) For Malaysia's King Of Fruits, Specifically The Musang King' project.

Signing of Agreement between SIRIM Tech Venture Sdn Bhd and DSR Taiko Berhad on 22 December 2021

SIRIM TECH VENTURE SDN BHD

As effective decision-making is pertinent in the technology commercialisation's many-step processes, strengthening the capabilities of STV's human resources is one of the focus initiatives in 2021. The STV's team were exposed to public speaking and live sessions, developing a confident and knowledgeable human resource to manage clients' and stakeholders' expectations. STV conducted various capacity-building programmes pertaining to negotiation, Intellectual Property (IP) analysis, Technology Transfer and Commercialisation and High Impact Presentation.

The strategic business objectives of competitiveness, connection and culture of excellence are executed through various engagements. STV advanced towards meeting unknown customers by organising a 'CEO NeTZ' session on 15 December 2021 and connecting with decision-makers.

CEO NeTZ Session organised by SIRIM Tech Venture Sdn Bhd with representatives from various private and public universities on 15 December 2021

STV conducted five webinar sessions, namely 'Hypermarket and Supermarket Merchandising & Business Matching for SMEs' on 16 March 2021 in collaboration with Mydin Mohamad Holdings Berhad; 'Awareness Talk on SIRIM for Cradle Community' on 3 August 2021 in collaboration with Cradle Fund Sdn Bhd; SIRIM Technology Colloquium on Gasket and Seal' on 3 August 2021 in collaboration with Tekno Logam Sdn Bhd; 'Pemerkasaan Rantaian Nilai Sektor Makanan & Minuman' for Malaysian Technology Development Corporation (MTDC) Entrepreneurs on 9 September 2021 in collaboration with MTDC; and 'Bicara Usahawan – Bagaimana Membangunkan Model Perniagaan' on 3 December 2021.

SIRIM Technology Colloquium organised by SIRIM Tech Venture Sdn Bhd on 3 August 2021

Regarding public presentation, five representatives from STV presented papers in seminars organised by various entities, namely Malaysian Agricultural Research and Development Institute (MARDI), Majlis Rekabentuk Malaysia, Agensi Nuklear Malaysia, MONASH University Malaysia and Environmental Technology Research Centre (ERTC) of SIRIM Berhad. STV is appointed Deputy Chair For Innovation Award Programme For Malaysian Technology Exposition (MTE) on 22-26 March 2021.

In addition, digitalising internal business processes include establishing various dashboards for financial purposes and prospecting an order book for monthly management reporting, with a live database view via the 360 office platform. Ultimately, the SIRIM Group made significant digitalisation efforts to increase productivity and data quality, as well as enhance customer experience.

PACKAGING AND SECURITY DESIGN CENTRE

SIRIM Packaging and Security Design Centre (PSDC) is one of the leading security printers in Malaysia, which offers one-stop security solutions for brand protection in safeguarding products and documents against counterfeiting. Furthermore, PSDC plays a major role in supporting the government agenda to enhance the socio-economic growth of micro and small enterprises, thus, stimulating the growth of the country's SME sector. Through its three key business sections: Security Design, Packaging Design and Entrepreneur Development, PSDC continues to provide excellent services and undertake projects in collaboration with government agencies and industry players.

In 2021, PSDC achieved growth in its financial performance compared to the year before despite pandemic challenges.

During the year, PSDC's Security Design services delivered an increasing demand for security labels for SIRIM Product Certification Scheme. As a security labels development and printing services provider for SIRIM QAS International Sdn Bhd since 1994, PSDC established collaborative efforts with SIRIM QAS International to support SMEs in general for product compliance. Through security labels, consumers can easily identify the products certified by SIRIM QAS International.

Additionally, PSDC has secured projects with external clients from various sectors, such as the Ministry of Health, Universiti Kebangsaan Malaysia, Universiti Sains Malaysia, Universiti Selangor, various Polytechnics in Malaysia, Majlis Perbandaran Sepang, Majlis Perbandaran Pulau Pinang, Parlimen Malaysia, etc. The security products range from security certificates, transcripts, licenses, and permits to security ID cards. PSDC has also expanded its industry clients for security packaging to assist them in protecting their products from counterfeit, as well as securing their revenue.

Being a registered security printer with the Ministry of Finance, PSDC is under the purview of the Chief Government Security Officer. As such, one of the ongoing measures undertaken by PSDC is compliance with security requirements for utmost confidentiality.

REPORT BY:

RAFIDAH MOKHDAR
CHIEF EXECUTIVE OFFICER

FACTS AT A GLANCE

190 million pieces
security label printed

498
entrepreneurs nurtured

475 SKUs
or product packaging designed and developed

PACKAGING & SECURITY DESIGN CENTRE

On Packaging Design services, PSDC collaborated with government ministries and agencies to serve micro and small enterprises as beneficiaries. Through PSDC's Innopack Programme, entrepreneurs received product transformation and enhancement assistance through branding, labelling and innovative packaging. In 2021, a total of 475 product stock-keeping units (SKUs) were enhanced and transformed, including food & beverages, cosmetics, textiles, etc. PSDC provided various services, such as advisory and consulting, idea and concept, design and branding, myIPO registration, nutrition testing, packaging development and printing, training and workshop, as well as audit impact assessment. Throughout the year, PSDC has strengthened its offerings with value-added services, customised

modules, and repackaged programmes. Under this banner, PSDC also offered the Biz Transformation training programme to help participants understand the importance of branding and labelling requirements for packaging. The training programme included customisable modules and value-added content like digital marketing and e-commerce.

Among PSDC's key partners and clients are Kementerian Perdagangan Dalam Negeri dan Hal Ehwal Pengguna (KPDNHEP), Suruhanjaya Koperasi Malaysia (SKM), Tekun Nasional, Angkatan Koperasi Kebangsaan Malaysia Berhad (ANGKASA), Department of Industrial Development & Research (DIDR) Sabah and Lembaga Kemajuan Kelantan Selatan (KESEDAR) among others.

The Entrepreneur Development Programme (EDP) provides consultancy services to nurture the entrepreneurship of micro and small enterprises. Ongoing collaborations with East Coast Economic Region Development Council (ECERDC) for the ECER-SIRIM entrepreneur programme were established in 2018 and have been successful to date. In 2021, 403 entrepreneurs within the east coast region were assisted and nurtured to enhance their business growth.

In partnership with Northern Corridor Industrial Authority (NCIA), PSDC has also expanded the EDP to the northern corridor and is hopeful for another success. The ongoing first batch of Entrepreneur NCER-SIRIM involves approximately 40 entrepreneurs.

A series of stakeholder engagements, networking sessions and webinars were also conducted throughout the year. The engagements organised were with stakeholders, such as Majlis Perbandaran Kota Bharu Bandaraya Islam, Majlis Perbandaran Sepang, Pertubuhan Peladang Kebangsaan, Lembaga Peperiksaan Malaysia, and Jabatan Kimia Malaysia.

PACKAGING & SECURITY DESIGN CENTRE

Majlis Perbandaran Kota Bharu Bandaraya Islam (MPKB BRI)
11 March 2021

Signing of Agreement between SIRIM Tech Venture Sdn Bhd and DSR Taiko Berhad on 22 December 2021

Majlis Perbandaran Kota Bharu Bandaraya Islam (MPKB BRI)
11 March 2021

Signing of Agreement between SIRIM Tech Venture Sdn Bhd and DSR Taiko Berhad on 22 December 2021

Moving forward, PSDC endeavours to enhance its capacity and technical expertise to achieve business growth and sustainability. PSDC will continue to focus on its core businesses whilst consistently innovating to meet the changing trends and stakeholders' requirements. To meet evolving demand and trends, PSDC aims to incorporate and establish smart and intelligent packaging, as well as reinforce product authenticity through the use of technology such as blockchain.

4.0 DEVELOPMENTAL & NATIONAL PROJECT

NATIONAL METROLOGY INSTITUTE OF MALAYSIA

The National Metrology Institute of Malaysia (NMIM) plays a central role in the National Measurement System in promoting good measurement practices and enabling businesses to make accurate and traceable measurements according to the national measurement standards or SI units. This is delivered through an effective measurement dissemination programme.

NMIM is also the Secretariat of *Majlis Pengukuran Kebangsaan (MPK)* or National Measurement Council, of which under the Ministers of the Federal Government (No.3) Order 2020 [P.U.(A) 201/2020], MPK is placed as an Agency under MITI effective from 9 July 2020.

REPORT BY:

DR. OSMAN ZAKARIA
SENIOR DIRECTOR

As the National Metrology Institute (NMI), it is important that NMIM continues to upgrade existing national measurement standards and develop new capabilities for disseminating measurement traceability to meet the country's changing and emerging measurement needs.

Highlights of 2021

NMIM's major achievements in 2021 include publishing 126 new Calibration and Measurement Capabilities (CMCs) in the International Bureau of Weights and Measures (BIPM) Key Comparison Database, establishing 39 new capabilities for calibration, pattern approvals, and training courses, serving 535 companies and calibrating 5,837 measuring instruments throughout the country as well as internationally. NMIM has approved 177 Pattern Approvals for regulated measuring instruments covering electrical, mechanical, and flow scopes to fulfil Legal Metrology functions.

In prospering its networking and relationship with the Ministries and Government Departments, NMIM initiated and participated in 34 engagement sessions. The participating government departments and agencies include the Ministry of International Trade (MITI), Ministry of Domestic Trade and Consumer Affairs (MDTCA), Ministry of Transport (MOT), Ministry of Health (MOH), Ministry of Education (MOE), Economic Planning Unit, Road Transport Department, Department of Environment, Malaysia Palm Oil Board, National Pharmaceutical Regulatory Agency, National Institute of Health, National Institute of Occupational Safety and Health (NIOSH) and Malaysian Investment Development Authority partnering with the French leading Technical Centre for Mechanical Industry (MIDA-CETIM) as well as academia and industry. In efforts to reach other stakeholders and customers, NMIM participated in many exhibitions, including Aspirasi Keluarga Malaysia 2021, under MITI Pavilion at KLCC from 9 to 12 December 2021, and SIRIM Industrial Engagement in Penang and Kelantan.

NMIM organised 35 metrology training courses and trained more than 150 participants in transferring measurement and calibration knowledge and techniques to metrology personnel from government departments and agencies, legal metrology authorities, accredited laboratories, academia, and industries. The training courses were held via online and face-to-face sessions either at NMIM or in-house. Under the SIRIM-Fraunhofer programme, NMIM successfully completed the remaining projects and assisted six SME companies in improving their processes relating to measurement.

NMIM also organised 119 interlaboratory comparisons, namely the Proficiency Testing and Measurement Audit (PT/MA) programmes which attracted more than 150 participants. Through the

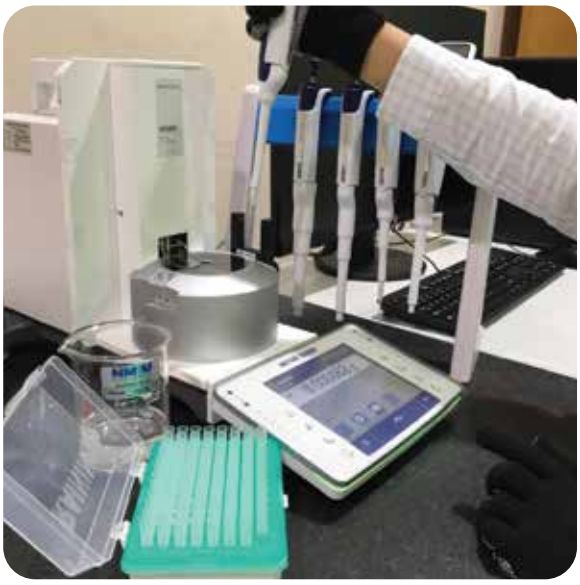
NATIONAL METROLOGY INSTITUTE OF MALAYSIA

Highlights of 2021

PT/MA programmes, NMIM assisted more than 80 accredited calibration laboratories under Standards Malaysia's Skim Akreditasi Malaysia (SAMM) in improving their measurement and calibration techniques to build and maintain confidence in their technical competence in the related field, ensuring quality services for their customers throughout the country.

On the international fora, NMIM, as the President and Secretariat of Asia Pacific Legal Metrology Forum (APLMF) since January 2021, organised the virtual 28th APLMF Meetings on 1-2 November 2021 and three online technical courses with the participation of 17 economies. Malaysia, through NMIM, was appointed as the organiser to conduct the APLMF-MEDEA (PTB Germany) Training Course on Verification and Pattern Approval of Electricity Meters and EV Supply Equipment virtually, from 18 to 21 January 2021, together with APLMF Course Coordinator, Marian Haire. Within the ASEAN region, NMIM was appointed by the Ministry of Domestic Trade and Consumer Affairs, to represent Malaysia, which was selected as the Vice Chair of the ASEAN Consultative Committee on Standard and Quality under Working Group Legal Metrology (ACCSQ WG3). NMIM co-chaired the 35th ACCSQ WG3 Meeting with the Philippines, which was held virtually on 10 to 11 November 2021.

Regarding Community Projects, NMIM successfully arranged three CSR programmes relating to the COVID-19 pandemic, namely SIRIM Food Bank (NMIM collection centre), *Tabung Prihatin NMIM*: *COVID-19* for NMIM staff, and Cash4FB for 18 NMIM cleaners and landscape workers, who were financially and medically affected by the pandemic. Another CSR programme conducted was the Cambodia Well Donation, where the collection from NMIM staff managed to build two wells for two families, continuing the past initiative where four wells had been successfully built.



New Service: Micropipette Calibration

APLMF-MEDEA (PTB Germany) Training Course on Verification and Pattern Approval of Electricity Meters and EV Supply Equipment on 18 to 21 January 2021

Training Course on Gold Traceability to Ar Rahnu Yapeim

Highlights of 2021

SIRIM Industrial Engagement, SIE in Penang on 30 November 2021

MIDA-CETIM Visit on 9 to 12 November 2021

Pameran Aspirasi Keluarga Malaysia at KLCC on 9 to 12 December 2021

MALAYSIA DESIGN COUNCIL

The Malaysia Design Council or Majlis Rekabentuk Malaysia (MRM) continuously brings a series of industry empowerment programmes focused on helping businesses thrive in the post-pandemic era. Throughout the year, MRM successfully conducted a series of design industry-related programmes, such as coaching, seminars, good design recognition.

REPORT BY:

HUSAINI BIN ISMAIL
DIRECTOR

Highlights of 2021

- **Good Design Practice Promotion Programme & Product Design Consultation Programme – MARA Ipoh**

(Embrace Design—Creating Own Design as Own Brand)

MRM actively emphasises the importance of embracing good design as a strategic marketing tool for a product. Therefore, a design consultation session with over 20 MARA entrepreneurs was held at the MARA Ipoh branch from 9 to 11 March 2021. Specially invited by MARA Perak, MRM is honoured to be on the field, providing consultation to entrepreneurs and sharing the essence of good design and how they can achieve good design recognition.

Good Design Practice Promotional Programme was held in conjunction with the Product Design Consultation session with MARA Entrepreneurs at MARA Ipoh office.

Knowledge Sharing Session: Design Consultation with MARA entrepreneurs. MRM design consultation mainly focuses on Good Design recognition, which is recognised as the most prestigious design recognition in the nation.

15 MARA entrepreneurs involved in the design consultation session

4 Design Experts went to the field to provide product design consultations

30 Products received free Design Consultation

Highlights of 2021

- **Design Awareness - Design Education Poster Distribution**

  To ingrain understanding of design in education sectors.

  MRM is steadfast in its beliefs. MRM believes that design education is one of the critical areas to focus on to ensure that students apply design thinking from an early stage. A good understanding of design and a design-oriented mindset should be implemented, starting from primary and secondary school students to design students in higher learning institutions. Therefore, MRM developed a series of eye-catching posters targeted to bring greater awareness and understanding of design concepts to be distributed for free to schools and design institutions all over the nation.

6 Design posters in a series

Distributed to

200 Schools

29 Design Institutions

250

sets printed with 2 republications

- **Halal Product Transformation Programme**

  Shifting Original Equipment Manufacturing to Own Brand and Own Design Manufacturing

  In collaboration with the Ministry of Entrepreneur Development and Cooperatives (MEDAC) through their agencies, the SKUs eligible for the product transformation programme were selected by the agencies with dedicated criteria. MRM and product owners work closely to understand and identify the products and infrastructure available at the involved entrepreneurs' premises to facilitate the product design process.

  The main focus is to increase the commercial value and competitiveness of Halal products in the open market. Successful collaboration program with TEKUN and SME Corp has also generated an innovative design to our F&B industry players. The product transformation consists of product evaluation, product development and after-transformation report. In 2021, the programme successfully transformed 24 Stock Keeping Units (SKUs), which was targeted to increase sales and the capability to compete in the global market. These SKUs aim to be recognised in the Malaysia Good Design Award by MRM.

MALAYSIA DESIGN COUNCIL

Highlights of 2021

RM288,000
Total Project Value

24 Stock Keeping Units (SKUs) undergone product transformation

12 Companies awarded with PUTRA grant

- **MOU Signing Ceremony between MRM and SW Corp**

Towards more programs initiated for future sustainability, mainly in the design industry.

Highlights of 2021

- **Design Talk on Jana Pendapatan Daripada Bahan Terbuang Melalui Rekabentuk organised by MRM and SWCorp on 15 September 2021**

To conclude MRM's activities in 2021, a seminar called *Memperkasa Industri Pembuatan Melalui Rekabentuk Kitaran* (Circular Design) was successfully conducted at Everly Hotel Putrajaya on 16 December 2021, with total of 200 participants and the presence of various key speakers from the sustainable and design industry. The seminar emphasized on the objectives of embracing circular design as contributor to national sustainable development goals.

NATIONAL PRECISION TOOLING SDN BHD

The National Precision Tooling Sdn Bhd (NPT) is a special purpose vehicle mandated by the Government as the lead collaborator in the implementation of the "Development of the Bumiputera Automotive Tool, Dies and Moulds (TDM) Industry" Project or TDM Project. TDM Project's primary objectives are to increase the capability and capacity development, as well as enhance the Bumiputera automotive TDM industry clusters and increase their participation in the TDM business of local manufacturing sectors for import substitution and export potential. The objectives are targeted to be achieved through the following development programmes:

REPORT BY:

IR DR MOHAMAD JAMIL SULAIMAN
DIRECTOR

- Equipment Acquisition Programme (EAP)
- Human Capital Development (HCD) Programme
- Technical Assistance-Expert Attachment Programme (TA-EP)

Highlights of 2021

Throughout TDM Project 1.0, 15 companies benefited from the project, out of which 12 companies have successfully shown significant impact in terms of wealth creation, job creation and market expansion. The results of an impact study conducted by an independent consultant, Ernst & Young (EY), showed that participation of local TDM makers for one Full Model Change (FMC) has increased by 5% (from 10% to 15%), an increase of RM14 million per FMC.

15 Beneficiary Companies under TDM Project 1.0

NATIONAL PRECISION TOOLING SDN BHD

Highlights of 2021

In a separate study by NPT, the wealth creation generated by TDM Project 1.0 was commendable:

Revenue increased by

21%

(RM524 mil to RM634 mil)

210

skilled workers were developed

Market expansion (new customers) of

38 Companies

16 (Overseas)

22 (Local)

Job creation increased by

84%

2,005 to 3,696

(Increment of 1,691 workers)

2,770 Local Workers

(Increment of 1,020 workers)

926 Foreign Workers

(Increment of 671 workers)

The beneficiary companies of TDM also made significant inroads in terms of market expansion with local and international customers in various industry sectors, as depicted below.

International Companies

NATIONAL PRECISION TOOLING SDN BHD

Highlights of 2021

Local Companies

TDM Project 2.0

Following the success of TDM Project 1.0, the Economic Planning Unit (EPU) has agreed to the continued implementation of the TDM Project through the ECCD (Engineering Capability and Capacity Development) approach to assist and develop Bumiputera companies in the TDM and machining-based engineering areas of Automotive, Aerospace, Medical Devices and Rail Industries, herein referred to as the TDM Project 2.0. The selected beneficiary companies under TDM Project 2.0 will have to undergo an engineering capability and capacity development programme comprised of the following:

- Coaching and Certification Building Programme
- Equipment Acquisition Programme
- Design Capability Development Programme

A total of RM35 million was allocated for 25 beneficiary companies under TDM Project 2.0 for the 2022-2024 period. Below is the allocation structure under TDM Project 2.0.

Highlights of 2021

TDM Project 2.0

Allocation:

RM35 mil

Programmes: RM29 mil
Operating Cost: RM6 mil

Companies: 25

Duration: 2021-2023

Sectors:

Automotive | Medical Devices | Rail | Aerospace

P1 Coaching & Certifications Building (CCB)

Allocation: RM 3 mil
Funding: 100%
Budget: RM120,000 per company

P2 Equipment Acquisition Programme (EAP)

Allocation: RM 25 mil
Funding: 70:30
Budget: RM 1 mil per company

P3 Design Capability Development (DCD)

Allocation: RM 1 mil
Funding: 100%
Budget: RM 1 mil for CAD/CAM/CAE software-floating licenses

Based on the recommendation by EPU to MITI, TDM Project 2.0 project will be under MITI's direct supervision, in line with the reporting structure of SIRIM. SIRIM and MITI were involved in the final stage of preparing the TDM Project 2.0 agreement, which will pave the way for the smooth implementation of the project in 2022.

5.0 CORPORATE

GROUP STRATEGIC PLANNING DIVISION

REPORT BY:

IMATUL IZAH BINTI IBRAHIM
HEAD

Group Strategic Planning (GSP) continues to chart SIRIM's business direction for business growth and sustainability through four functions: strategic planning and business intelligence, strategic communication, performance monitoring and risk management, and marketing and promotion in local and international markets.

With its five Regional Offices in the Northern, Southern, and East Coast regions of Peninsular Malaysia, as well as Sarawak and Sabah, GSP provides outreach services with value-added and innovative products and solutions while simultaneously strengthening relationships with the state's government and industry.

STRENGTHENING COLLABORATION WITH KEY STAKEHOLDERS

Managing and strengthening relationships with SIRIM's key stakeholders have always been GSP's main priority. In 2021, GSP carried out two Key Stakeholder Engagement Sessions: a session with the Ministry of Finance (MOF), Ministry of International Trade and Industry (MITI) and Implementation Coordination Unit (ICU) on 12 August 2021 and another session with the Ministry of Science, Technology and Innovation (MOSTI), University of Putra Malaysia (UPM) and other research institutions on 2 December 2021 to brief on SIRIM's R&D and projects implemented for the government and industry.

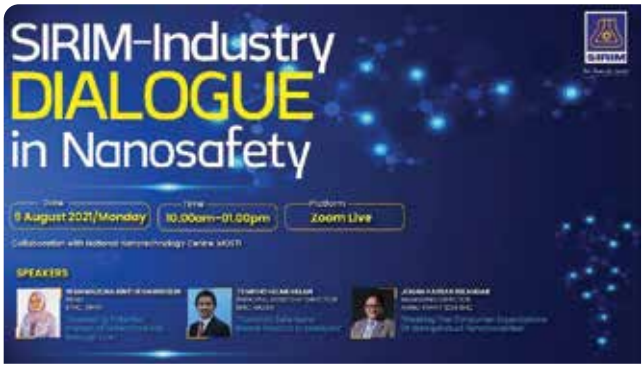
Stakeholder engagement with MITI and MIDA on 6 July 2022

Stakeholders Engagement Programme with MOF, MITI and ICU on 12 August 2021

GROUP STRATEGIC PLANNING DIVISION

STRENGTHENING COLLABORATION WITH KEY STAKEHOLDERS

GSP's signature programmes, such as SIRIM-Industry Engagement (SIE) and SIRIM-Industry Dialogue (SID), significantly bridged the industry to SIRIM's services. They provide a platform to exchange information and support the ministries and relevant agencies. In 2021, GSP successfully organised the SIE programme in Penang on 30 November and SID session in nanosafety on 9 August with 186 industry participants. One of the most prominent events organised by GSP was the launching of the Medical Device Innovation Centre (MDIC) in Kulim on 30 October 2021, officiated by the Senior Minister and Minister of International Trade and Industry (MITI), Datuk Seri Mohamed Azmin Ali. The launch of MDIC was conducted to promote its services to the medical device industry in Malaysia's Northern region.



SIRIM-Industry Dialogue in Nanosafety on 9 August 2021

SIRIM-Industry Engagement (SIE) in Penang on 30 November 2021

Launching of MDIC (Medical Device Innovation Centre) by Senior Minister and Minister of International Trade and Industry, Datuk Seri Mohamed Azmin Ali, SIRIM Kulim, on 30 October 2021

To elevate SIRIM's international visibility, GSP explored various potential business opportunities, including submitting proposals to TÜBİTAK-MIGHT for COVID-19 on Post-Pandemic Impact and 13 international proposals through the World Association of Industrial and Technological Research Organizations (WAITRO). Aside from the increased effort to expand global reach, SIRIM also focused on strengthening the brand locally. To this end, GMRO participated in 12 exhibitions, such as Malaysia Technology Expo (MTE) 2021, International Greentech & Eco Products Exhibition & Conference Malaysia (IGEM) 2021, Oil & Gas Asia (OGA), Malaysia International Halal Showcase (MIHAS) and others.

GROUP STRATEGIC PLANNING DIVISION

DEVELOPING NEW BUSINESS GROWTH FOR SIRIM

In identifying and developing new business for SIRIM, GSP has organised two SIRIM Business Growth Seminars – Malaysia in Covid: Economic Challenges and Way Forward, involving prominent speakers from the Institute of Strategic and International Studies (ISIS) Malaysia, Roland Berger and Federation of Malaysian Manufacturers (FMM); as well as Building Post-Pandemic Resilience Through Technology & Innovation by Bank Negara, the Business Council for Sustainable Development (BCSD) and the Malaysia Digital Economy Corporation (MDEC).

Launching of MDIC (Medical Device Innovation Centre) by Senior Minister and Minister of International Trade and Industry, Datuk Seri Mohamed Azmin Ali, SIRIM Kulim, on 30 October 2021

Due to its roles and responsibilities in developing the Strategic and Group Business Plans with actionable intelligence for long-term competitive advantage, GSP continues to support SIRIM business units (SBUs) and subsidiaries (SUBs) with strategic intelligence, market and business studies, and consultations. Its achievements in 2021 include the market intelligence activities involving the Fitch Mini-Webinar with the management, GSP and Group Market Intelligence (MI) Team on 23 March 2021 and the publishing of two Group Market Intelligence Reports – Macro Analysis on Policies and Business Environment in Malaysia by Industrial Research Management Centre (IRMC), SIRIM Industrial Research on 17 August 2021; and Environmental Scanning 2021: Resetting from Pandemic by Strategy and Business Development (SBD), GSP on 18 August 2021. In addition, GSP also produced a Preliminary Strategic report on the Market Landscape & Business Direction of Future Joint and Engineering Inspection Services in SIRIM (JIS & EIS).

ELEVATING SIRIM BRAND

In improving SIRIM's website, GSP added the SIRIM Chatbot features on 1 February 2021 with 2,262 chatbot sessions recorded, of which 50% of the engagements were resolved by the chatbot while the remaining were resolved manually by customer service. Moreover, GSP conducted a PR-integrated campaign on Lifesciences (COVID-19) through media and social media with the following impacts:

35.4 million
Social Media Impressions

RM18.4 million
PR Value

GSP also published 295 articles on SIRIM from January to August 2021. During the pandemic, GSP was appointed as the Focal Point for Crisis Communication for COVID-19 to coordinate communications on COVID-19 for the Group and develop the SIRIM Group Communications Plan for COVID-19.

GROUP PERFORMANCE MANAGEMENT OFFICE (GROUP PMO)

INTRODUCTION

SIRIM's 10-Year Strategic Plan comprises eight strategic thrusts and is executed over three phases. Currently, the 10-Year Strategic Plan is in Phase 2, Strengthen Capabilities (2020-2022).

REPORT BY:

NOR AZLAN BIN MOHD RAMLI
DIRECTOR

The PMO steers business efficiency through performance delivery and enterprise risk management for SIRIM's sustainability by partnering with subsidiaries and strategic business units.

Phase I
(2018-2019)

Build Solid Foundation
Solid operating and business model with people, processes, systems & infrastructure in place

Phase II
(2020-2022)

Strengthen Capabilities
Proven operation and business model with admirable reputation in the market

Phase III
(2023-2027)

Accelerate Growth
Established market presence with solid platform set for new ventures

Activities & Achievements of 2021

- **Gallery Walk to Welcome SIRIM's New President, Dato' Indera Dr Ahmad Sabirin Arshad, 18 March 2021**

A Gallery Walk for SIRIM's New President, Dato' Indera Dr Ahmad Sabirin Arshad, was organised to illustrate the 'New SIRIM' through the implementation of the SIRIM 10-Year Strategic Plan.

Gallery Walk with SIRIM's New President, Dato' Indera Dr Ahmad Sabirin Arshad

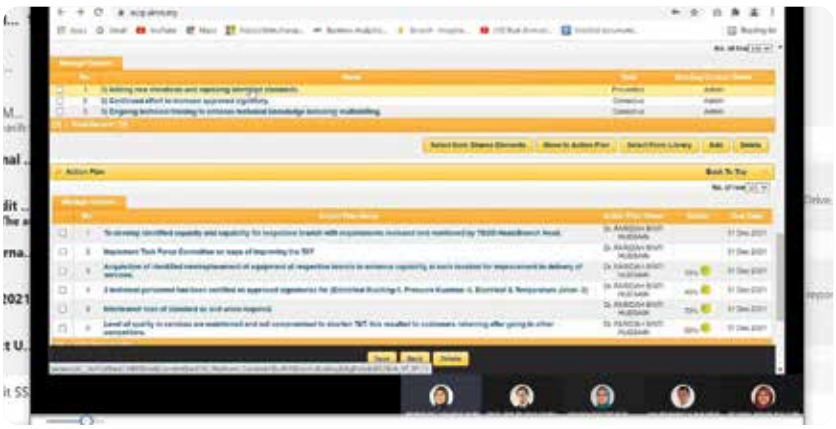
Activities & Achievements of 2021

- **Digitalisation of SIRIM Balanced Scorecard and SIRIM Enterprise Risk Management – Development of eBSC and eCRP Systems**

Apart from being the custodian of SIRIM's 10-Year Strategic Plan, PMO also undertakes the activities of SIRIM Group Balance Scorecard (BSC) Performance Monitoring and Reporting, and SIRIM Group Enterprise Risk Management. The digitalisation of these two functions has resulted in the development of eBSC and eCRP, which concluded in Q1 2021.

Briefing on BSC and Group KPI 2021 to SIRIM SBU/SUBs Strategic Representatives was conducted on 4 February 2021 to introduce the new eBSC and ensure its usage across SIRIM Group of Companies.

Risk Awareness for Top Management was conducted on 24 February 2021 to introduce the new eCRP, ensure its implementation across SIRIM Group of Companies, and refresh SIRIM Top Management on ERM.



SIRIM ERM Risk Verification Audits were conducted from 24 August to 3 September 2021 at selected business units and subsidiaries to gauge the level of usage of the new system as well as ensure risks and action plans are managed according to SIRIM ERM practices.

GROUP PERFORMANCE MANAGEMENT OFFICE (GROUP PMO)

Activities & Achievements of 2021

- **SIRIM's 10-Year Strategic Plan and SIRIM IR FIRST Review Exercise**

The appointment of an independent external consultant to conduct 'SIRIM Impact Study and Strategies Review Analysis' in May 2021, signified the start of SIRIM's 10-Year Strategic Plan and SIRIM IR FIRST Review Exercise. Given that both strategic plans are currently in the implementation phase and the recent unprecedented changes due to the pandemic, it is important to assess the continued relevance of each strategic thrust/pillar/enabler and the progress made towards achieving the intended objectives.

- **SIRIM's 10-Year Strategic Plan – Highlights of 2021**

During the implementation of the SIRIM 10-year Strategic plan, Group PMO has steered the transformation of SIRIM through the following activities based on specific Strategic Thrusts (ST).

ST1 – Best Customers Experience

ST1 aims to help SIRIM become a customer-focused organisation in all its operations. As part of the initiative to adopt a customer-centric mindset and establish a SIRIM-wide integrated online platform for services, ST1 has embarked on reorganising the SIRIM Customer Relationship Management (CRM) system to ensure consistency in key customer processes such as order management, fulfilment and invoicing. The CRM system pilot run (Phase 1) at SIRIM QAS International Sdn Bhd was completed in July 2021. With its full implementation across SIRIM, the CRM tools will create a uniform and centralised customer interaction.

ST2 – Integrated and Innovative Solution

The initiatives carried out by ST2 intend to allow SIRIM to achieve a digital business model transformation and establish thought leadership in key areas. In March 2021, SIRIM Tech Venture (STV) Sdn Bhd developed a mobile application highlighting STV services and offerings of innovations and technologies from multiple parties, such as institutes of higher learning, intellectual property owners and industries. The mobile app, STV i-Venture, acts as a bridge to connect technology developers, inventors and technology takers.

STV i-Venture mobile app acts as a bridge to connect technology developers, inventors and technology takers.

Activities & Achievements of 2021

ST3 – Industry Driven Serving Market Needs

By developing a clearer focus on selected industries and supporting the embrace of Industry 4.0 (I 4.0), SIRIM is adapting and leveraging the major shift in Malaysian manufacturing towards I 4.0.

Through its Centre of Excellence in Smart Manufacturing, SIRIM has managed to conduct the following programmes and training as part of the effort to develop a competent and highly skilled workforce on I 4.0:

Factory Transformation Programme, Phase 2 for the furniture industry (SIRIM STS – Malaysian Timber Industry Board – Machine Technology Centre, SIRIM IR) concluded in October 2021:

- Developed five modules based on standards for the FTP programme
- Selected 14 SMEs based on criteria identified
- Completed all on-site visits and proposals with solutions recommendations
- Completed training and consultancies.
- Completed audit programmes in October 2021

Other I 4.0 training conducted to the public in 2021:

- Lean Manufacturing & Overall Equipment Effectiveness (OEE) Calculation
- Blockchain Kickstart Development: Distributed Ledger Technology (DLT)
- Training and Knowledge Transfer of Manufacturing Execution System (MES) for Industry
- Blockchain Technology & Smart Contract

SIRIM has also developed three new standards on I 4.0:

- Criteria for organisations to adopt Industry 4.0 - Published as SIRIM 37:2021
- Industry 4.0 - Competency requirements for key personnel – Published as SIRIM 39:2021
- Guidelines for innovation through regulatory sandbox – Published as SIRIM 47:2021

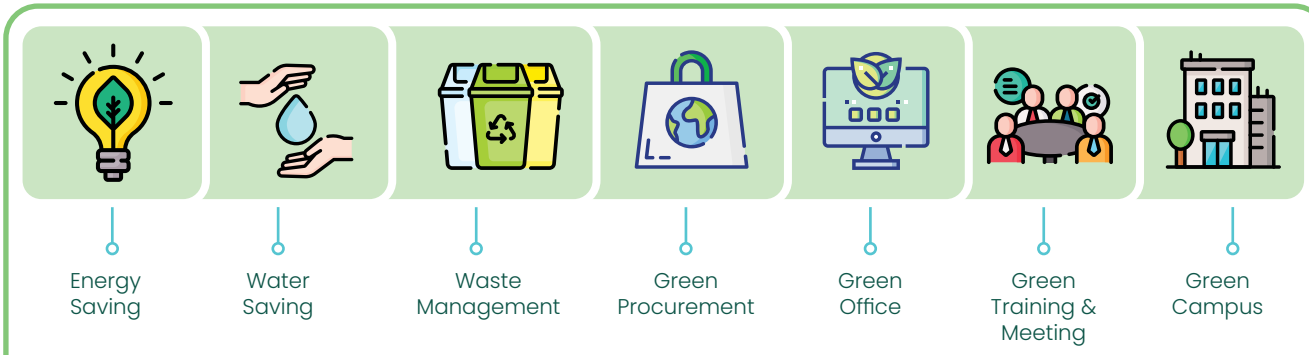
Three new SIRIM Standards on I 4.0 were developed and published in 2021.

GROUP PERFORMANCE MANAGEMENT OFFICE (GROUP PMO)

Activities & Achievements of 2021

ST4 – Greener SIRIM for Greener Malaysia

The ST4 initiative serves to help SIRIM reduce its environmental footprint and participate in a sustainable Malaysia. In 2021, ST4 successfully developed and obtained approval from SIRIM management on 14 December 2021 to implement SIRIM Green Guidelines. The objective of the guidelines is to create a greener, cleaner and more sustainable workplace by practising the principle of 4 R-Reduce, Reuse, Recycle and Recover through seven Key Focus Areas (Energy Saving, Water Saving, Waste Management, Green Procurement, Green Office, Green Campus and; Green Training and Meeting).



Seven Key Focus Areas of SIRIM Green Guidelines: Energy Saving, Water Saving, Waste Management, Green Procurement, Green Office, Green Campus and Green Training and Meeting

ST5 – Group Synergies

ST5 comprises six initiatives focusing on extracting synergies between SIRIM business units and subsidiaries. Throughout 2021, ST5 has successfully concluded the following parts of the SIRIM Digital Transformation Plan (DigitS):

- CODELAB – SIRIM Enterprise Integration Platform
- SIRIM Online Payment Gateway
- Dashboard GDIT Cybersecurity
- Thirteen Dashboards de veloped by 35 SIRIM developers during SIRM Hackathon Data Drive
- Digitisation of SIRIM internal business processes:
  - eBSC (SIRIM Balanced Scorecard)
  - eCRP (SIRIM Enterprise Risk Management)
  - GDIT Crisis Log Automation
  - Ezzy Booking
  - JejaQTAMU - Visitor Management System
  - Trust – Testing Report Automation

Activities & Achievements of 2021

ST7 – Partnership

By creating networks with external parties, SIRIM is becoming the catalyst for the growth of industrial, technology, standards and conformity assessment in Malaysia in areas such as Industry 4.0, Medical Devices and Rail, among others. In 2021, multiple partnerships were established with external parties such as Petronas, Malaysian Timber Industry Board (MTIB), DE Metrology and DSR Taiko Berhad, resulting in RM9.6 million revenue generated.

SIRIM also completed the development of the SIRIM Partner Relationship Management System (PRMS) in December 2021. PRMS was developed to manage SIRIM partnerships by providing a uniformed and centralised partner experience by utilising PRMS tools, from the beginning stage of enquiry to partnership project completion.

SIRIM Partner Portal Login Page for External Organisations

ST8 – SIRIM Brand

In this strategic thrust, SIRIM seeks to reinvigorate its brand to appeal to the newer generation and increase public awareness. The ST8 initiative aims to improve SIRIM Brand by raising public awareness and perception of SIRIM's achievements. Among the significant activities of ST8 in the year 2021 are:

- Two Facebook Campaigns: *Anda Tanya, Kami Jawab*, have resulted in:
  - » Total Reach: 16,003
  - » Total Engagement: 1,810
  - » Question & Answer: 295
- SIRIM Podcast channel on Spotify
- SIRIM Foodbank campaign received coverage in local media

SIRIM Facebook Campaigns: Anda Tanya, Kami Jawab and SIRIM Podcast Channel on Spotify

The essential items were gathered since Friday 18 June and to date, the items are still being received from SIRIM staff at various collection points at SIRIM Shah Alam, SIRIM Rasa, NMIM & SIRIM Bukit Jalil

SIRIM Food Bank Campaign received coverage in local media

GROUP MARKETING AND REGIONAL OFFICE

NETWORKING AND STRATEGIC COLLABORATIONS

REPORT BY:

HASNUL AKMAL BIN HARON
HEAD

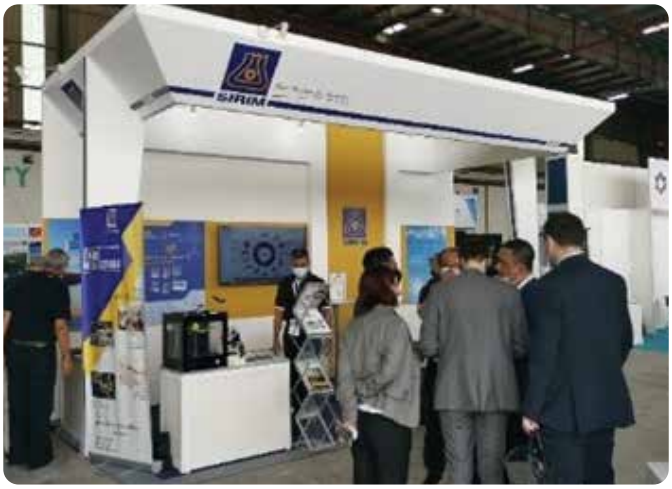
SIRIM continues to strengthen its relationship with its key stakeholders in Federal and State Governments, and industry players through strategic collaborations to deliver sustainable innovation to the industries, growing the economy, and bolstering productivity and competitiveness. A total of 12 Industry Engagements were completed in 2021, which were carried out by Group Marketing under Group Marketing and Regional Office (GMRO) and Group Strategic Planning (GSP), in the Central Region, Penang, Kelantan, Pahang, Sabah, Johor, Terengganu, Perak, Melaka and Kelantan. Over 80 networking, seminars, webinar, workshops, and business talks were also carried out on standardisation, automation, entrepreneurship, and IoT.

A major event organised by Group Marketing and Regional Office was the launching of SIRIM's Medical Device Innovation Centre (MDIC) at SIRIM Kulim on 30 October 2021, which was officiated by Senior Minister and Minister of International Trade and Industry, Dato' Seri Mohamed Azmin Ali.

GROUP MARKETING AND REGIONAL OFFICE

Group Marketing also actively participated in events and exhibitions in 2021, such as physically: The Selangor International Business Summit – in the Food & Beverages Sector & Medical Sector hosted by Invest Selangor Berhad, The Micro-SME Digitalisation Summit hosted by MyDigital of Economic Planning Unit (EPU), The Selangor Aviation Show, The 32nd International Invention, Innovation & Technology Exhibition (ITEX), and *100 Hari Aspirasi Keluarga Malaysia* hosted by the Prime Minister Office (PMO); and virtually: Malaysia Technology Expo, The ASEAN Science, Technology & Innovation Week invitation by Ministry of Science, Technology & Innovation (MOSTI), The International Greentech & Eco Products Exhibition (IGEM) by Ministry of Environment and Water (KASA), Malaysia International Halal Showcase (MIHAS), Malaysia International Water Convention (MIWC), METALTECH, and Nano Summit – Conference & Exposition (NANOKEB) hosted by MOSTI.

An MOU with Tusas Malaysia (M) Sdn Bhd (a subsidiary of Turkish Aerospace Industries) was signed during the Selangor Aviation Show on 25 November 2021.



Selangor Aviation Show

Selangor International Business Summit – in the Food & Beverages Sector & Medical Sector

GROUP MARKETING AND REGIONAL OFFICE

100 Hari Aspirasi Keluarga Malaysia

100 Hari Aspirasi Keluarga Malaysia

32nd International Invention, Innovation & Technology Exhibition (ITEX)

Under the purview of the International Business Unit, GMRO, and GSP, the National Metrology Institute of Malaysia (NMIM) was appointed as the President and Secretariat of the Asia-Pacific Legal Metrology Forum (APLMF) for two years. The International Business Unit (IBU) under GMRO is leading the Secretariat Team to take over from Trading Standards (Ministry of Business, Innovation & Employment), New Zealand. The transition period ends in March 2021 for a full transfer to Malaysia.

SIRIM and Korea Conformity Laboratories (KCL) signed an MoU on 29 May 2019 that will focus on establishing a Building Integrated Photovoltaic (BIPV) demonstration and research site, developing a BIPV certification scheme and establishing testing facilities for the BIPV system.

GROUP HUMAN RESOURCE DIVISION

WAGE SUBSIDY PROGRAMME (WSP)

Wage Subsidy Programme (WSP) or Program Subsidi Upah (PSU) is among the Malaysian government's initiatives to help businesses cope with manpower costs due to the COVID-19 pandemic since April 2020. Companies fulfiling the following conditions can apply for the programme:

- Decline of 30% or more of total sales or income in 2021 compared to any other month in 2019/2020/2021
- Limit to 500 employees only
- No salary employee limit was set

REPORT BY:

NIK JULIAH NIK JAAFAR
SENIOR VICE PRESIDENT, GROUP HUMAN RESOURCE

Upon submitting the application on 14 September 2021, SIRIM received the first payment of RM300,000 on 29 September 2021 and the second payment of the same amount on 5 November 2021. The table below shows the payment details.

SBU/SUB	Number of Staff	Amount Received on 29 September 2021	Amount Received on 5 November 2021
PSDC	65	39,000	39,000
NMIM	107	64,200	64,200
SIRIM IR	328	196,800	196,800

PERKESO
PROGRAM SUBSIDI UPAH 3.0

SIRIM & SELVAX VACCINATION PROGRAMME

The Selangor Vaccination Programme (SELVAX) Drive-Thru Vaccination Programme was a huge success, with a total of 105 staff participating in the program. Sixty-seven employees attended, alongside 29 family members and five walk-ins. The first dose was given on 31 July 2021 and 21 August 2021.

Selangor Vaccination Programme (SELVAX) Drive-Thru Vaccination Programme

GROUP HUMAN RESOURCE DIVISION

COLLECTIVE AGREEMENT BETWEEN *KESATUAN PEKERJA-PEKERJA SIRIM BERHAD* (KEPS) AND SIRIM

Kesatuan Pekerja-Pekerja SIRIM Berhad (KEPS) consists of non-executive employees of SIRIM. Collective bargaining for SIRIM's first Collective Agreement (CA) commenced on 28 April 2021. SIRIM's first CA was signed on 27 December 2021 in the presence of Anita Ahmad, Director of the Industrial Relations Department, Selangor. The CA was registered and recognised by the Industrial Court on 24 March 2022 and is in place until 31 December 2023.

Collective Agreement between Kesatuan Pekerja-Pekerja SIRIM Berhad (KEPS) and SIRIM

CODE OF ETHICS 2021

The purpose of the SIRIM Group Business Code of Ethics is to strengthen the commitment of SIRIM Berhad and its Subsidiaries (SIRIM Group) by practising the values of integrity, objectivity, and professionalism in delivering the SIRIM Group's services to the general public and maintaining confidence and trust towards the SIRIM Group.

There are five categories of the Code of Ethics as follows:

- *Berkaitan Pemegangan Apa-Apa Jawatan Pengarah Syarikat/Pengurusan*
- *Berkaitan Pemilikan Apa-Apa Syarikat/Perniagaan Luar*
- *Berkaitan Apa-Apa Pekerjaan Atau Penjawatan Lain*
- *Berkaitan Ahli Keluarga*
- *Berkaitan Aktiviti Politik*

The detailed results of the Code of Ethics 2021 are as follows:

Stage	Number of Declarations	Number of Staff
Total submissions	411	374
Conducted investigation	64	56
Conducted further investigation	32	28

GROUP HUMAN RESOURCE DIVISION

EMPLOYEE ENGAGEMENT AND SATISFACTION SURVEY (EESS)

A positively engaged workforce boosts productivity, reduces turnover, strengthens internal company culture, and increases customer satisfaction. In short, it underpins the company's ability to do things right and do them well. Group Human Resource Division (GHR) conducted an Employee Engagement and Satisfaction Survey in Q3 of FY2021, which saw 95% of employees taking the opportunity to share their perceptions of how it feels to work in SIRIM. The satisfaction index for the year is 77%.

MYHR

MyHR is a Cloud-Based Enterprise Resource Planning (ERP) Human Resource System and was launched on 12 January 2021. MyHR consists of modules Leave, Medical, Overtime, Employee Portal, Job Description, Payroll, HR Admin & Attendance. It is a centralised system that automates the information production process system, which expedites procedures and frees up staff time.

STAFF ENGAGEMENT PROGRAMMES 2021

The Government's directive on mass gatherings has given GHR an opportunity to be more creative in reaching out to SIRIM staff. All festival celebrations, such as *Majlis Iftar, Sambutan Majlis Aidilfitri*, Chinese New Year, and Deepavali, were celebrated by distributing cookie baskets.

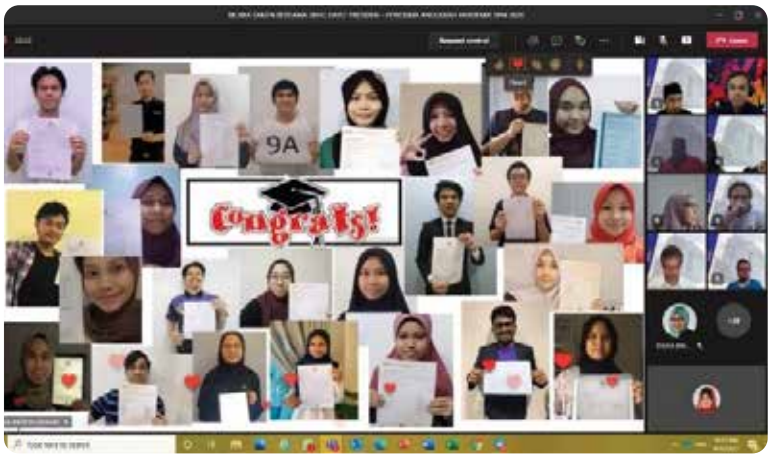
SYAWAL FOOD DISTRIBUTION FOR FRONTLINERS

GHR distributed a total of 18 food packs to SIRIM Group security personnel. GHR hopes this assistance provides benefits and encouragement to the frontliners currently facing the challenging COVID-19 crisis.

GROUP HUMAN RESOURCE DIVISION

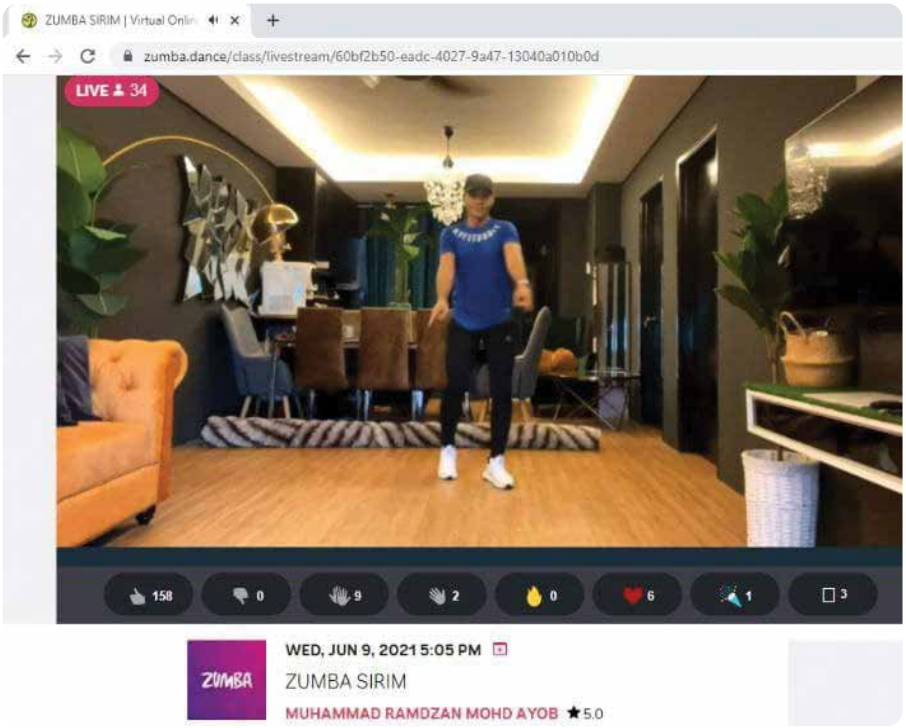
ANUGERAH PENCAPAIAN AKADEMIK TERBAIK 2021 (APAT)

GHR strongly believes that education is the foundation for success. Therefore, *Anugerah Pencapaian Akademik Terbaik 2021* was organised to recognise the academic achievement of future generations in SIRIM. A total of 16 nominees were selected as APAT recipients for 2021. All APAT recipients brought home a certificate of appreciation, a hamper worth RM150 and cash prizes ranging from RM200 to RM350. Congratulations to all recipients!



HEALTHY LIFESTYLE ACTIVITIES AND COOKING CLASS

To promote a healthy lifestyle among staff, GHR conducted weekly online Zumba and aerobic sessions. During the Movement Control Order (MCO), 11 sessions were conducted, with more than 550 participants in every session. Apart from online workout sessions, virtual cooking classes were also conducted on 10 March 2021 and 1 July 2021.



GROUP HUMAN RESOURCE DIVISION

SIRIM DEVELOPMENTAL TRAINING ACHIEVEMENT

SIRIM Developmental Training was designed to improve the staff's level of awareness, enhance skill in one or more areas of expertise and boost the staff's motivation to perform their job well. As of 31 December 2021, a total of 49 in-house Developmental Training sessions related to core, shared, and general competencies were conducted. This resulted in 3,668 participants in courses of various developmental areas, as follows.

CORE COMPETENCIES	SHARED COMPETENCIES	OTHER COMPETENCIES
Business Acumen (4)	Planning & Organising (10)	General (1)
Professionalism (18)	Problem Solving (3)	
Customer Relation Management (2)	Project Management (3)	
Teamwork & Leadership (3)		
Quality (5)		

SIRIM TALENT MANAGEMENT PROGRAMME (STaMP)

SIRIM Talent Management Programme (STaMP) is an annual process for managing talent and organisational capability, ensuring the availability of successors to support the company's business needs. The programme drives the development of key talent within the company using a customised and individual approach to ensure that every talent has a personalised plan of action for success.

GROUP HUMAN RESOURCE DIVISION

As of 2021, STaMP has 159 talents that were developed exclusively, whereby 71% of them attended the development and functional training identified in their Individual Development Plans. From the implementation of STaMP, 36% of the talents have been promoted to new roles. Various programmes and initiatives were implemented to nurture the leadership potential of STaMP's talents:

- Teh Tarik Session with MC Members
- Sharing Session by Board of Directors and Motivational Talks by speakers such as Ustaz Shamsul Debat and Pencetus Ummah Azman Shah Alias

A Live Telecast by our board member Datuk (Dr) Hafsah Hashim was organised on 26th November 2021. It was an informative session focused on the topic of being a leader in an uncertain world.

Teh Tarik Session with Dr Zanariah Ujang was held on 1 November 2021 at VIP Cafeteria, Block 5.

This two-hour programme featured a famous motivator speaker from Pencetus Ummah, PU Azman. This is a three-part session in a series of motivational programmes from Group Human Resource.

SIRIM PROGRAMME ON ACCELERATED CAREER ENHANCEMENT (SPACE)

SPACE is a personalised programme to enrich the career path of selected talents. The SPACE programme was kickstarted on 17 December 2020 with the enrollment of 15 candidates. The first batch of candidates has completed their assessments and is currently undergoing identified development programs based on their assessment results. The development programme was designed to be completed in 18 months. In addition, a few initiatives, such as a motivational talk, were held to further enhance the candidates' leadership skills and motivate them to think more clearly, see opportunities, and move forward with action.

A motivational talk was organised on 25 August 2021 by Group Human Resource (GHR) titled "Magnet Diri, Cipta Pengaruh Luar Biasa dan Berjaya bersama Amin Idris" via Teams Meeting. The online event saw 153 participants from SIRIM Talent Management Program (STaMP) and SIRIM Accelerated Career Development Program (SPACE).

GROUP HUMAN RESOURCE DIVISION

SIRIM ENGAGEMENT SESSION WITH PHD STUDENTS

Engagement sessions between the President and Group Chief Executive Officer of SIRIM and PhD students studying part-time/full-time under the sponsorship of SIRIM and their own funding were held tri-monthly in 2021. The session is intended to be a sharing platform to address concerns and boost motivation to ensure the successful completion of their studies.

Engagement Session with the President	Engagement Session with GHR
25 June 2021	21 – 22 April 2021
7 October 2021	6 May 2021
	29 – 30 July 2021

SIRIM Scholastic Retreat Programme on 24 March

GROUP FINANCE DIVISION

Group Finance Division is responsible for all financial and fiscal management aspects of SIRIM's operations. The core functions of the group are carried out via its two departments: the Strategic Finance & Operations Department, which handles strategic and tactical planning for project funding, and the Asset Management Department, responsible for monitoring and managing SIRIM's business assets including buildings, plant machinery and equipment tools for enhanced productivity and efficiency savings.

REPORT BY:

SABARINA HARUN
VICE PRESIDENT
GROUP FINANCE

Highlights of 2021

- **Approval by MOF as An Approved Research Institute**

SIRIM Berhad received approval from the Ministry of Finance (MOF) on 31 March 2021 as an Approved Research Institute for five years, starting from 31 March 2020 until 29 September 2025, under Section 34B of the Income Tax Act 1967.

- **Zakat Perniagaan Submission**

Submission of Zakat Perniagaan SIRIM Group of Companies for the Year 2021 to Lembaga Zakat Selangor (MAIS) on 24 February 2022 by Tan Sri Dr. Ir. Ahmad Tajuddin Ali, FASc.

GROUP FINANCE DIVISION

Highlights of 2021

- **Transfer Pricing Awareness and Updates Virtual Briefing**

Virtual Briefing by SALIHIN Tax Advisory Sdn Bhd regarding Transfer Pricing Awareness and Updates: Understanding Transfer Pricing Fundamentals, Documentation and Best Practice for Top Management, SUBs and SBUs on 23 September 2021.

- **Replacement and Upgrading Works**

Replacement and upgrading works of the Water-Cooled Chiller System for the Administration Building and Auditorium at SIRIM Berhad Kulim by Asset Management Department (AMD), Group Finance, from 17 January 2021 to 7 June 2021.

GROUP DIGITALISATION & INFORMATION TECHNOLOGY

SIRIM's digitalisation strategy targets to provide best-in-class digital services, leverage capabilities and technologies (from internal and external parties) that add value for our customers and stakeholders, and improve our internal efficiencies for the benefit of our employees. The focus of Group Digitalisation & Information Technology (GDIT) to date has been on facilitating digital innovation, strengthening our team capabilities delivering on several key project launches, along with keeping the lights on with day-to-day IT operations.

REPORT BY:

Ts. TENGKU INTAN NARQIAH BINTI TENGKU OTHMAN
CHIEF DIGITAL & INFORMATION OFFICER, DIGITALISATION & INFORMATION TECHNOLOGY

START SMALL, SCALE FAST

In 2021, GDIT witnessed an increase in digitalisation adoption, which was reflected in the rise in cloud services consumption. The utilisation of GDIT resources was stretched, with an average of two digitisation activities completed weekly throughout the year. At the same time, GDIT has been vigilant in cybersecurity monitoring efforts through the deployment of new cybersecurity tools and systems.

New Innovations

- **2** Platforms (CODELAB and Payment Gateway)
- **10** Application systems
- **38** Rapid development workflow systems / API
- **10** Dashboards
- **2** Chatbots
- **2** New SOPs

Strengthening Systems

- Upgraded SIRIM network bandwidth
- Staff augmentation services
- Cybersecurity tools and systems deployment
- **19** Enhancement existing systems

GROUP DIGITALISATION & INFORMATION TECHNOLOGY

SIRIM has simultaneously embarked on the development of a few major IT projects to accelerate the improvement of SIRIM's customer and employee experiences:

Customer Analytics and Knowledge Portal (CAKNA)

Customer Analytics and Knowledge Portal (CAKNA) will be SIRIM's new Customer and Partner Relationship Management system. Customers using this new portal will have a single point of contact and view of their status of services and purchases. At the same time, internally, SIRIM can view customer profiling and increase customer experience by offering more tailored services.

MyFAST

MyFAST will be the new integrated financial and accounting system for SIRIM and its group of companies, replacing the legacy financial system and a few in-house related financial modules.

MyHR

MyHR will be the new integrated HR System for SIRIM and its group of companies, replacing the legacy HR system and a few in-house related HR modules.

SIRIM Resource Management System

SIRIM Resource Management System will be the new fully integrated project management system with MyFAST for effective monitoring of the project deliverables, resources management and costing, aiming to replace the in-house Project Monitoring System and outdated e-timesheet system.

Codelab

Codelab is a new Application Programming Interface (API) platform implemented to migrate traditional application architecture into Microservices, enabling flexibility, speed and resilience in integration systems between cloud-to-cloud or internal systems.

GROUP DIGITALISATION & INFORMATION TECHNOLOGY

SIRIM HACK – INSPIRE CREATIVITY, FOSTER INNOVATION

Despite facing project management and technical challenges, especially in harmonising data and integrating all major systems, GDIT continued carrying out two SIRIM Hackathon events, now known as SIRIM Hack. Both events were successfully conducted 100% online during the Movement Control Order and were aimed to continuously excite SIRIM's employees with the adoption of digital technology as well as to develop many SIRIM Digital Citizen accelerators. More than 15 workflow automations and 12 dashboards were successfully developed and implemented by SIRIM Digital Citizens, resulting in process efficiencies and better monitoring.

CHANGE MANAGEMENT – ADOPTING AND REALISING THE BENEFITS OF DIGITAL TECHNOLOGY

CHANGE MANAGEMENT			
15	84	20	9
PROJECTS	POSTERS	VIDEOS	SURVEYS

The inception of change management activities was initially aimed at improving communication and awareness of new digital technology. However, it showed that new demand for activities is required to address employee resistance and concerns towards the new business processes introduced by digitalisation, and the need to understand the benefits and advantages of investing in new digital technologies.

Hence, while proactively deploying digital tools and developing many workflow automation, GDIT strived to keep track of the investment made. For example, the adoption of a secured electronic signature, SIRIMSign, has significantly shown an achievement of RM1.3 million in productivity gained per year since its implementation in 2020. With all the positive feedback received and the above said accomplishments, GDIT looks forward to continue providing valuable support to enable SIRIM to march forward in achieving its vision and mission.

6.0 EVENTS IN 2021

EVENTS IN 2021

5 JANUARY

SIRIM Established Strategic Partnership with KPower

SIRIM Tech Venture Sdn Bhd completed a share sale agreement for its subsidiary, GranuLab Malaysia Sdn Bhd, with KPower Berhad to enhance commercialisation activities in the field of medical devices.

15 FEBRUARY

Interview at #TraXX FM Radio on Solar Thermal Drying Technology for Marine Products

Mohd Fauzi Ismail and Nik Marzuriani Nik Mohamed from SIRIM Industrial Research were interviewed by #TraXX FM's DJ Kong Eu and #IkonSiarawan RTM finalist, Frisca Freddy on Solar Thermal Drying Technology for Marine Products.

5 MARCH

Malaysia Chosen to Spearhead Asia-Pacific Legal Metrology Forum (APLMF)

The National Metrology Institute of Malaysia (NMIM), a national measurement laboratory under SIRIM Berhad, has been appointed as the President and Secretariat of the Asia-Pacific Legal Metrology Forum (APLMF) for a period of two years.

EVENTS IN 2021

31 MARCH

End of term of service for SIRIM President and Group Chief Executive

Datuk Ir Dr Ahmad Fadzil Mohamad Hani ended his term of service with an outstanding leadership which moved SIRIM beyond boundaries.

1 APRIL

New President & Group Chief Executive of SIRIM

Dato' Dr Ahmad Sabirin Arshad, an aerospace engineering expert was appointed as the new President and Group Chief Executive for a term of two years.

9 APRIL

MoU with MTIB and MTC

SIRIM STS Sdn Bhd, a subsidiary of SIRIM Berhad, signed an MoU with Malaysian Timber Industry Board (MTIB) and Malaysian Timber Council (MTC) for cooperation, especially in regard to technical training for local SMEs in the wood sector.

EVENTS IN 2021

23 AUGUST

SIRIM STS Sdn Bhd, Universiti Teknologi Malaysia (UTM) Ink MoU to Form Strategic Partnership in Professional Training

SIRIM STS Sdn Bhd and Universiti Teknologi Malaysia (UTM) developed training modules for certified professional programmes and selected research areas, making UTM the first public university to offer SIRIM Certified Quality Professional (CQP) to its master's students.

6 SEPTEMBER

SIRIM Tech Venture Sdn Bhd and Malaysian Investment Development Authority (MIDA) signed MOU to establish joint venture

SIRIM Tech Venture Sdn Bhd established a joint venture with the Malaysian Investment Development Authority (MIDA) through a Memorandum of Understanding (MoU). The MoU was developed with the aim of fostering long-term business cooperation.

30 OCTOBER

SIRIM Berhad Launched the Medical Device Innovation Centre (MDIC)

SIRIM Berhad launched the Medical Device Innovation Centre (MDIC) to enhance research and development (R&D) capabilities for the local medical device industry.

EVENTS IN 2021

21
NOVEMBER

Launching Ceremony of the National-Level MSMEs Digitalisation Empowerment Programme 2021

Prime Minister, Dato' Sri Ismail Sabri Yaakob visited SIRIM booth at the launching ceremony of the National-Level MSMEs Digitalisation 2021 in Bera, Pahang.

18
DECEMBER

SIRIM Flood Relief Programme

SIRIM Flood Relief Programme was established to provide assistance to staffs affected by floods. Guest houses and solar homes were also used as temporary accommodation centres.

23
DECEMBER

Flood relief assistance for staffs affected by floods

Senior Minister and Minister of International Trade and Industry, Datuk Seri Mohamed Azmin Ali visited the houses affected by floods and helped in the cleaning process.

SIRIM

SIRIM Berhad
1, Persiaran Dato' Menteri
P.O. Box 7035, Section 2
40700 Shah Alam, Selangor,
Malaysia

+603-5544 6000

+603-5544 6694

web@sirim.my

www.sirim.my