SIRIM

Best Partner for Innovation

spinning towards

SUSTAINABLE PROGRESS

SIRIM

Annual Report 2018

ANNUAL REPORT

2018 contents

Chairman's Message p.10

President & Group Chief Executive's Report p.15

SIRIM INDUSTRIAL RESEARCH

SUBSIDIARIES

DEVELOPMENTAL AND BUSINESS UNITS & NATIONAL PROJECTS

CORPORATE

CALENDAR OF EVENTS

VISION

Best Partner for Innovation

MISSION

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

CORPORATE VALUES

- **Customer Focus**
  We focus on delivering excellence to our customers
- **Integrity**
  We practise the highest standards of integrity
- **Teamwork**
  We achieve success through dedication, commitment and teamwork

View our Annual Report and other information about SIRIM Berhad at

www.sirim.my/annual-report.html

SIRIM CULTURAL BELIEFS

Achieve Sustainability
I shape SIRIM for our sustainable future.

Lead Innovation
I drive innovation for market competitiveness.

Engage Teamwork
I embrace differences and build high performance teams.

Act Fast
I take ownership to exceed R2.

Deliver Excellence
I partner to deliver excellent service.

FUNCTIONS

- To enhance public and industrial welfare, health and safety
- To promote and undertake scientific industrial research:
  - > *Improving technical processes and methods*
  - > *Discovering new processes and methods*
  - > *Encouraging the utilisation of Malaysian products*
  - > *Adopting or adapting technology developed in other countries for use in Malaysia*
- To provide industrial extension and consultative services to assist industry in meeting standards
- To improve production processes and techniques

ROLES

- The champion of quality
- A national research and technology development organisation
- A vehicle for technology transfer

OBJECTIVES

- To innovate and develop processes, products and technologies for industry
- To promote standardisation and quality
- To provide technical services for industry and the public

BOARD OF DIRECTORS

ACADEMICIAN TAN SRI DR. AHMAD TAJUDDIN ALI
F.ASc, P.Eng

Chairman

Experience:

In addition to being Chairman of SIRIM Berhad, Academician Tan Sri Dr. Ir. Ahmad Tajuddin Ali holds directorship in other companies, including Linde Malaysia Holdings Berhad, Construction Industry Development Board (CIDB), Universiti Teknikal Malaysia Melaka (UTeM), Malaysian Industry-Government Group for High Technology (MIGHT), Aerospace Malaysia Innovation Centre (AMIC) and Northern Corridor Implementation Authority (NCIA).

He is also Pro-Chancellor of Universiti Tenaga Nasional (UNITEN), the Chairman of the Board of Trustees of Yayasan Khazanah, and a Member of the Board of Trustees of Mahathir Science Award Foundation, Yayasan Penyelidikan Antartika Sultan Mizan 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 Programme
- 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
- Doctorate in Nuclear Engineering, Queen Mary College, University of London
- First Class Honours in Mechanical Engineering, King's College, University of London

DATO' DR. IR. ANDY SEO KIAN HAW

Experience:

Besides being a Board Member of SIRIM Berhad, Dato' Dr. Ir. Andy Seo Kian Haw has been appointed as Chairman of its Nomination & Remuneration Committee and Member of its Investment Committee. Additionally, he is the Chairman of SIRIM STS Sdn Bhd, and a Board Member of SIRIM QAS International Sdn Bhd and SIRIM Tech Venture Sdn Bhd.

Qualifications:

- Honorary Fellow, Association of ASEAN Fellow Engineers Organization
- Honorary Member, ASEAN Engineer
- Fellow, Academy of Sciences Malaysia
- Registered Professional Engineer in Mechanical Engineering with Practicing Certificate, Board of Engineers Malaysia
- Registered ASEAN Chartered Professional Engineer
- Fellow, Institute of Engineers Malaysia
- Fellow, Institution of Engineering and Technology, UK
- Member, Malaysian Institute of Management
- Advisor, Technological Association Malaysia
- Honorary Doctor of Science, University of Hertfordshire, UK
- Strategic Management (Change Management) Executive Programme, IMD, Switzerland
- Executive Edge Strategic Management course, London Business School, UK
- Master of Business Administration majoring in General Management, University of Hull, UK
- BEM/IEM/EC PT 1 & 2 in Mechanical Engineering
- Production Engineering (with Distinction in Automation Technology), University of Hertfordshire, UK

BOARD OF DIRECTORS

DATUK DR. DAUD BIN MOHAMAD

(Director until 31 October 2018)

Experience:

Datuk Dr. Daud Mohamad is a Professor of Nuclear Engineering in the Faculty of Engineering of King Abdul Aziz University. He was instrumental in promoting nuclear power in Malaysia, resulting in nuclear being included in the National Energy Policy and the establishment of the Malaysian Nuclear Power Corporation.

He was also a Board Member of the Atomic Energy Licensing Board, Panel Member for Standing Advisory Group on Nuclear Applications (SAGNA), and Steering Committee Member of Education and Training on Radiation Protection and Waste Safety of the International Atomic Energy Agency (IAEA).

Qualifications:

- Attended management courses at Stanford University Management School, Harvard Business School and Princeton University
- PhD in High Level Radioactive Waste Management, University of Glasgow/ Scottish Universities Research Reactor and Environmental Centre, UK
- Master of Science in Isotope Hydrology, McMaster University, Canada
- Bachelor of Science (Hons) in Geology, Universiti Kebangsaan Malaysia

DATUK DR. HAFSAH HASHIM

Experience:

Besides sitting on the Board of SIRIM Berhad, where she is also Chairman of the Investment Committee and SIRIM Tech Venture Sdn Bhd, Datuk (Dr.) Hafsah Hashim also holds directorship in Johor Corporation, Serunai Commerce Sdn Bhd, Arab Malaysia Chamber of Commerce and Malaysia International Halal Foundation. She was the Chief Executive Officer of SME Corporation Malaysia (SME Corp. Malaysia) for nearly 14 years. Under her leadership, SME Corp. Malaysia formulated the internationally acclaimed SME Masterplan that 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:

As the Principal Assistant Secretary of the Government Investment Companies Division in the Ministry of Finance, Hawariiah Abdul Wahid 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 Programme/Project Malaysia 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 MOHD NASIR AHMAD

Experience:

Datuk Mohd Nasir Ahmad brings with him over 39 years of experience in the areas of finance, accounting and management, having started his career as a Trainee Accountant with Tenaga Nasional Berhad (TNB) in 1979 before moving on to hold various positions in the Finance Division.

Besides SIRIM Berhad, Datuk Mohd Nasir was appointed as Chairman/Independent Director of CIMB Group Holdings Berhad before being re-designated as Member of the Group's Audit Committee. He was the President of Malaysian Institute of Accountants from 2011 to 2013.

Qualifications:

- Fellow, Associate of Chartered Certified Accountants, UK
- Chartered Accountant, Malaysian Institute of Accountants
- Master of Business Administration (Finance), Universiti Kebangsaan Malaysia

BOARD OF DIRECTORS

SAJI M K RAGHAVAN

Experience:

Saji Raghavan has extensive experience in stakeholder management, business collaboration and start-ups.

He has served on the boards of several government linked organisations and trade chambers. Currently, he sits on the Energy Council of Malaysia (ECOM) committee and on the board of AuditXPRT Asia, as well as sitting on the main board and four subsidiary boards of SIRIM.

Qualifications:

- Attended management courses at INSEAD and Oxford
- Master of Business Administration, Ohio University
- Bachelor of Engineering (Hon) Mechanical, Universiti Teknologi Malaysia

DATUK SYED HISHAM SYED WAZIR

Experience:

Datuk Syed Hisham Syed Wazir possesses extensive experience in leading automotive, oil & gas, equipment, manufacturing & engineering, aerospace and technology businesses.

He currently serves on the Board of SIRIM Berhad, Bermaz Auto Berhad and SIRIM QAS International Berhad. He has also previously held directorships at various organisations, including UMW M&E Sdn Bhd, UMW Oilfield International (L) Ltd, Perodua Engineering Manufacturing Sdn Bhd, MK Automotive Industries Ltd and Toyota Capital Malaysia Sdn Bhd.

Qualifications:

- Fellow, Institute of Motor Industry (FIMI), UK
- Master of Business Administration, Ohio State University, USA
- Bachelor of Science in Mechanical Engineering, Plymouth University, UK
- Ordinary National Diploma in Engineering, Hastings College of Further Education, UK

MANAGEMENT COMMITTEE

The people powering our strategy

From left to right:

Ir. Dr. Mohamad Jamil Sulaiman
Vice President, SIRIM Industrial Research

Dr. Norlinda Mohd Zawawi
Managing Director, SIRIM STS Sdn. Bhd.

Mohd Azanuddin Salleh
Managing Director, SIRIM QAS International Sdn. Bhd.

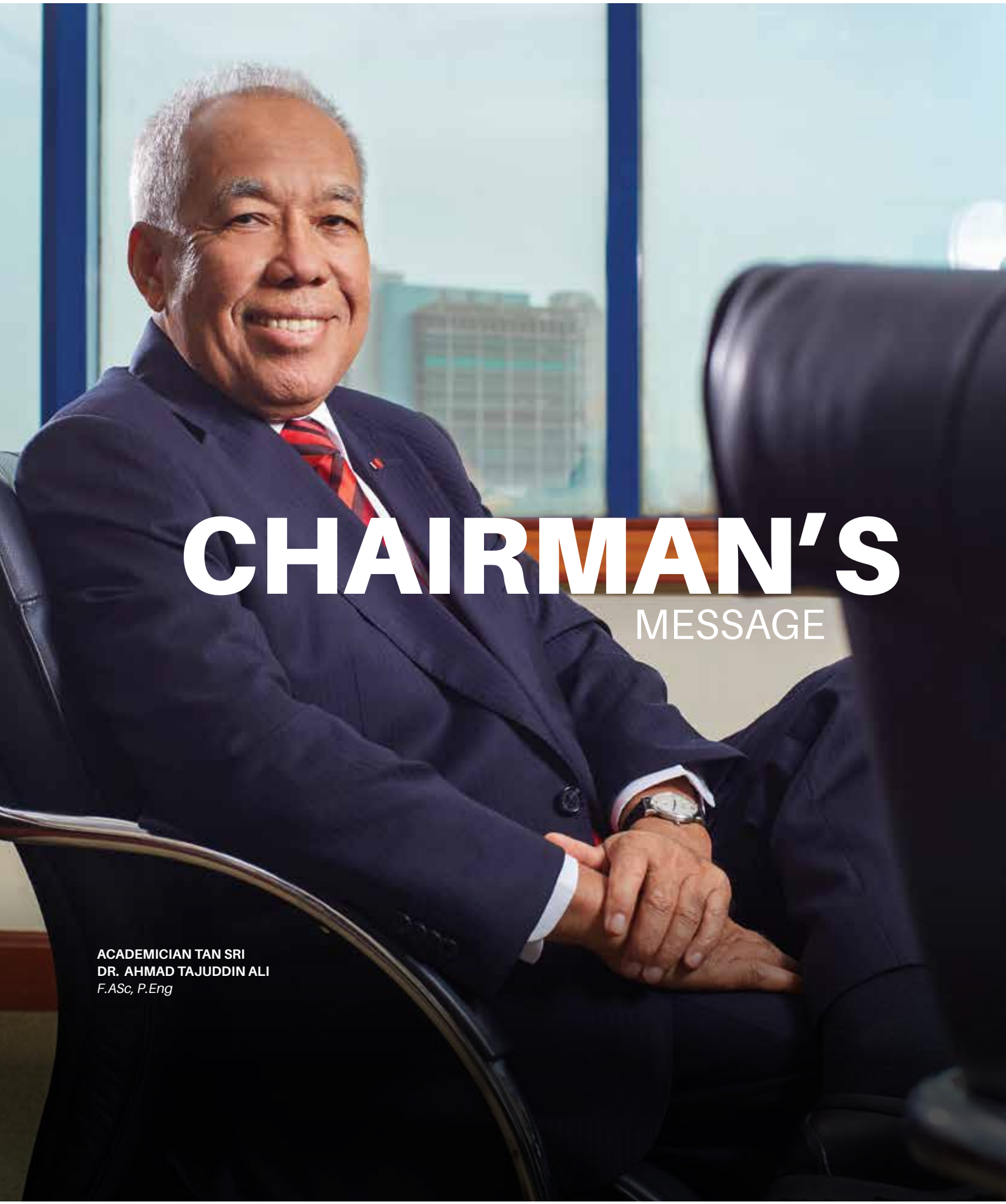
Prof. Ir. Dr. Ahmad Fadzil Mohamad Hani, F.ASc, FIEM
President and Group Chief Executive

Sabarina Harun
Vice President, Group Finance

Goay Peck Sim
Vice President, Group Strategic Planning

Nik Juliah Nik Jaafar
Vice President, Group Human Resource

MANAGEMENT COMMITTEE



CHAIRMAN'S MESSAGE

ACADEMICIAN TAN SRI
DR. AHMAD TAJUDDIN ALI
F.ASc, P.Eng

CHAIRMAN'S MESSAGE

YAB Tun Dr. Mahathir Mohamad, Prime Minister, at SIRIM's booth during the launch of Industry4WRD

SIRIM'S ROLES IN DEVELOPMENTAL & STATUTORY ACTIVITIES FOR THE COUNTRY

SIRIM plays a significant role in the development of technology and innovation for industries through SIRIM Industrial Research Centre (SIRIM IR). Our SIRIM-Fraunhofer Programme, which was implemented in 2015, has benefited various industries in the manufacturing sector. One of the projects won the National Energy Award 2018 and was first runner-up for the ASEAN Energy Award: Off Grid Thermal.

For statutory roles, the National Metrology Institute of Malaysia (NMIM) continues to provide its services as the primary calibration and measurement body for Malaysia. In recognition of its efforts, NMIM has received an international award among Countries and Economies with Emerging Metrology System (CEEMS) for excellent achievements in Legal Metrology in developing countries from the International Committee of Legal Metrology (OIML). In order to enable NMIM to aim for even greater achievements in 2019 and beyond, we will intensify our endeavours to obtain proper government funding.

> ***SIRIM plays a significant role in the development of technology and innovation for industries through SIRIM Industrial Research Centre.***

CHAIRMAN'S MESSAGE

Launch of Gulf Conformity Marking Scheme by SIRIM QAS International

MAJOR CHANGES IN SIRIM

2018 has recorded many significant milestones in the annals of SIRIM's history with its transfer from the Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC) to the Ministry of International Trade and Industry (MITI).

SIRIM was established in 1975 with the amalgamation of the Standards Institution of Malaysia (SIM) and National Institute for Scientific and Industrial Research (NISIR). Subsequently, SIRIM was placed under the Ministry of Science, Technology and Environment (MOSTE), currently known as MESTECC, until October 2018.

Under MITI, SIRIM continues its roles and functions to assist the industry in technology adoption and development, conformity assessment, industry standard development, calibrations and measurements as well as trainings and consultation. Aligning to the roles and functions of MITI, SIRIM Berhad shall strengthen its relationship with other departments and agencies within MITI by promoting and contributing our expertise in industrial development and trade access to rapidly grow the manufacturing sector, especially in realising Malaysia's Industry4WRD aspirations.

> ***"Under MITI, SIRIM continues its roles and functions to assist the industry in technology adoption and development, conformity assessment, industry standard development, calibrations and measurements as well as trainings and consultation.***

CHAIRMAN'S MESSAGE

At international level, SIRIM Berhad has handed over the secretariat of The World Association of Industrial and Technological Research Organizations (WAITRO) to Fraunhofer of Germany after 16 years at the helm, effective from November 2018. WAITRO is an independent, non-governmental and not-for-profit association established in 1970 to promote and encourage cooperation among industrial and technological research & development organisations (RTOs). SIRIM Berhad would like to thank all the international members of WAITRO for the support and cooperation given during our tenure as WAITRO Secretariat.

FINANCIAL PERFORMANCE

SIRIM Group's financial position in 2018 improved tremendously compared to 2017, with a 5% increase in revenue and 79% increase in profit after tax (PAT). The increase in PAT was contributed by the commendable performance of SIRIM QAS International and cost control measures by SIRIM Berhad. Therefore, I would like to personally congratulate SIRIM staff members for delivering excellent services and their commitment in meeting customers' expectations.

SIRIM'S 10Y STRATEGIC PLAN

SIRIM Berhad has started implementing our SIRIM 10Y Strategic Plan 2018 -2027, with the new vision to become the 'Best Partner for Innovation' charting our transformation journey towards a 'New SIRIM'.

5%
increase in revenue

79%
increase in profit after tax (PAT)

CHAIRMAN'S MESSAGE

To change an organisation in any significant or lasting way, we need to change the values and beliefs that lie at the core. Changing organisational culture is definitely not easy and takes considerable time and effort.

Our long-term aspirations are to become the global brand for conformity assessment and calibration services, and a national hub for Industry 4.0 on Smart Manufacturing and Technology-Based Entrepreneurship Development. In Research & Innovation, we aspire to be among the top 25 Global Innovative Research Institutions. To achieve these aspirations, SIRIM has embarked on a Culture Transformation Programme called ALEAD (Achieve Sustainability, Lead Innovation, Engage Teamwork, Act Fast and Deliver Excellence).

THE WAY FORWARD

For 2019, SIRIM will continue to pursue its key strategies of competitiveness to increase business growth and productivity, strengthen linkages and collaboration with government and industry as well as striving for a high performance culture amongst the people in SIRIM.

With the recent launch of the Industry4WRD policy by MITI, SIRIM is expected to play a bigger role in readiness audit and technology uptake. In this context, SIRIM will continue to enhance its capability and competency to bridge the industry's gaps with the establishment of the new Centre of Excellence for Smart Manufacturing in Bukit Jalil. SIRIM will also explore new business growth areas in Aerospace, Rail, Medical Devices as well as Sustainable Environment.

In the area of Standard Research and Development, SIRIM plans to develop about 20 SIRIM Industry Standards in 2019 with a focus on Industry 4.0 and Sustainable Consumption and Production. As SIRIM IR continues to take on a prominent role in enhancing industries' technological and innovation capabilities, we look forward to strengthening its financial performance to ensure that we are well-equipped for this purpose.

> ***"Our accomplishments to date would not have been possible without the overwhelming support and commitment from the leadership and staff of the MoF, MITI, MESTECC, MEA, MED and all of their agencies."***

ACKNOWLEDGEMENTS

Our accomplishments to date would not have been possible without the overwhelming support and commitment from the leadership and staff of the Ministry of Finance Incorporated (MoF), MITI, MESTECC, Ministry of Economic Affairs (MEA), Ministry of Entrepreneur Development (MED) and all of their agencies. On behalf of the SIRIM Berhad Board of Directors, I would like to extend our sincerest appreciation to all industry players from the public and private sectors, as well as the public for supporting SIRIM as the 'Best Partner for Innovation'. My heartfelt thanks to all.

We also bid a fond farewell to Datuk Dr. Daud Mohamad, who was a SIRIM Berhad Board Member from 2017 to 2018. On behalf of the Board, I would like to express our gratitude for his contributions and wish him the best in all future endeavours.

We welcome the appointment of YBhg Datuk Dr. Hafsah Hashim as a new Board member of SIRIM Berhad, effective 15 February 2018. With her valuable experience as the former Chief Executive Officer of SME Corp. Malaysia, we are confident that she will guide SIRIM Berhad to greater success in supporting the technological innovation and development of Malaysia's Small and Medium Enterprises (SMEs).

Finally, to all SIRIM Berhad Management and staff members, I am greatly pleased by your commitment and dedication in driving our 10Y Strategic Plan initiatives towards success. I look forward to your unwavering support in realising the aspirations of the 'New SIRIM'.

Thank you.

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

PRESIDENT & GROUP CHIEF EXECUTIVE'S REPORT

PROF. IR. DR. AHMAD FADZIL MOHAMAD HANI
F.ASc, FIEM

PRESIDENT & GROUP CHIEF EXECUTIVE'S REPORT

INTRODUCTION

2018 was an exciting year for SIRIM Group with the challenges and opportunities presented due to changes in the country's political and economic landscape. We continued our journey towards the goal of being strong and commercially sustainable, as outlined in our SIRIM 10Y Group Strategic Plan 2018-2027. Initiatives on building a solid operating and business model were conducted, focusing on people, processes, systems and infrastructure.

It was a momentous milestone when SIRIM was transferred to be placed under the supervision of the Ministry of International Trade and Industry (MITI) in October 2018. As MITI is the pivot of industry growth, trade and investment, it is a natural home for SIRIM, as industries and their growth are the raison d' etre for our existence.

We are looking forward to aligning and adapting to a new environment as we believe our strong fundamentals in technology and quality, and reciprocal relationship with the industries can prove to be beneficial to further enhance our industry competitiveness and Malaysia as a whole.

PRESIDENT & GROUP CHIEF EXECUTIVE'S REPORT

VALUE CREATION FOR SUSTAINABILITY AND COMPETITIVENESS

We are pleased to inform that SIRIM Group has ended the year with satisfactory results. This is despite the challenging environment, especially with the change in the operating processes of undertaking Government projects. The Group's Profit Before Tax (PBT) is RM13.7 million, which was made possible with the revision of our strategy to focus on bottom-line profit from mid-2018. This entailed implementing stronger controls on expenses and costs.

At Group level, we continued to inculcate a new cultural belief that revolved around creating a high performance mindset and increasing operational performance. Through our newly set-up Group Performance and Management Office, the progress of all initiatives stipulated in SIRIM 10Y Strategic Plan are closely monitored to ensure the changes yield positive impacts to the business. This is extremely important to our future, not least in view of the ongoing reduction in government funding.

For the implementation of the SIRIM 10Y Strategic Plan, a mini action lab was conducted in February, gathering 51 members who conducted 21 syndications and developed a total of 58 three-feet plans. The SIRIM 10Y Strategic Plan consisted of eight Strategic Thrusts which translated into 24 Key Initiatives. Champions and Key Result Managers were appointed to drive the Strategic Thrusts and lead the Key Initiatives respectively. The progress of the three-feet plans' implementation were monitored through a system called the Performance Management & Delivery System.

During the year, we launched 39 new products and services related to conformity assessment, industrial research and measurement services. Our subsidiary, SIRIM QAS International, also established new testing laboratories for secondary battery, pre-mix and vehicle brake systems & components, as well as increasing Malaysia's presence in the Middle East by becoming a Gulf Cooperation Council (GCC) notified body through our Bahrain office. This initiative has been well received by the industries as it eases local industry players' entry into the Middle East market.

Other subsidiaries and business units within SIRIM have also achieved commendable results in their respective business segments. In the training and consultancy segment, we trained more than 14,000 industry personnel and developed new training modules on Industry 4.0. We have also trained about 900 entrepreneurs through innovative business courses on packaging, quality and technology enhancements. As for the calibration and measurement segment, we have increased our scope of measurement and calibration services by acquiring new technologies and developing new services.

Profit Before Tax (PBT) of
RM13.7 million

SIRIM Group's financial performance in 2018 is mainly contributed by a
strong PBT growth

Mini action lab for implementation of SIRIM 10Y Strategic Plan

PRESIDENT & GROUP CHIEF EXECUTIVE'S REPORT

During the year, six technologies were commercialised to local Small and Medium Enterprises (SMEs). These encompassed the delivery of micro grinding precision machines to *Institut Latihan Perindustrian (ILP)* branches, and the licensing of anti-acne and antifungal cosmetics, composite LPG cylinders and underwater fish attracting lamp LED (UFAL) to SMEs. We have also formulated a three-year plan on market expansion and product development for our subsidiary in medical devices to increase our presence in the country and ASEAN.

Another proud achievement for SIRIM in 2018 is the flagship SIRIM-Fraunhofer programme. An adaptation of Germany's Fraunhofer Institution industry collaboration model, this programme is aimed at assisting SMEs to embrace automation and technology interventions to improve productivity and business competitiveness. To date, a total of 110 SMEs have undertaken SIRIM's technology intervention programmes, which have subsequently contributed towards the improvement of their processes and productivity. Another 172 SMEs were also audited and recommended for technology intervention plans for productivity enhancement.

ENGAGING OUR CUSTOMERS AND STAKEHOLDERS

In early 2018, upon obtaining feedback from many of our stakeholders, especially state governments, SIRIM has enhanced its presence by upgrading five state offices to regional offices, headed by Regional Directors. Through the regional offices, SIRIM increased our engagement sessions with industry, state governments and agencies and business workshops, while also working together with other intermediary organisations in SME development.

Five core SIRIM Industry Engagement programmes were held last year in Seremban, Sibu, Ipoh, Sandakan and Kuala Terengganu to inform industries about our services and reach out to SMEs throughout the country. We have also worked together with the Sabah State Government to increase the participation of the state's SMEs in our SIRIM-Fraunhofer technology intervention programme to increase their productivity.

"With our new vision to be the 'Best Partner for Innovation', SIRIM has planned and implemented initiatives to align towards establishing the new SIRIM. "

SIRIM's innovation won the National Energy Award 2018 for Off-Grid Thermal

PRESIDENT & GROUP CHIEF EXECUTIVE'S REPORT

Winner

National Energy Award by MESTECC

1st Runner-up

ASEAN Energy Award for 'Off-Grid Thermal' product innovation

7 Silver Medals

International Invention, Innovation and Technology Exhibition (ITEX)

With our new vision to be the 'Best Partner for Innovation', SIRIM has planned and implemented initiatives to align towards establishing the new SIRIM. In line with the national aspiration to increase productivity through Industry 4.0, SIRIM has established a strategic collaborative model involving industries, technology service providers, regulators and universities to strengthen technological interventions to industry, especially SMEs, in pursuing Industry 4.0.

In line with MITI's initiatives in new potential growth areas such as aerospace, rail, medical devices and shipbuilding, SIRIM has also been engaging with industries to identify their needs and challenges; this will enable us in developing programmes and services to meet their needs. We conducted dialogues with the industry players in the aerospace, rail and energy and environment sectors to understand their challenges and aspirations for the future, and to discuss the roles to be played by SIRIM.

IMPLANTING INNOVATION INTO OUR CULTURE

As an organisation with a strong culture in driving innovation, SIRIM has continued to harness our competencies to support the national agenda in Science, Technology and Innovation (STI) development.

In 2018, through our 'Off Grid Thermal' product innovation, SIRIM was celebrated as the winner of the National Energy Award by the Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC) and the first runner-up for the ASEAN Energy Award. In addition, SIRIM was also awarded with seven Silver Medals at the International Invention, Innovation and Technology Exhibition 2018 (ITEX).

Corporate culture development programmes were successfully launched and implemented in 2018, focusing on Culture Belief Transformation, Leadership Assessment and Workforce Competency Development.

> ***"2018 has presented us with commendable successes and achievements to build a strong foundation towards realising our 10-year strategic aspirations and vision."***

ACKNOWLEDGEMENTS

In conclusion, 2018 has presented us with commendable successes and achievements to build a strong foundation towards realising our 10-year strategic aspirations and vision. I would like to thank all SIRIM staff for taking on these transformation challenges to deliver the expectations with strong commitment and dedication. The sustained efforts and contributions of our staff throughout this journey shall bring SIRIM to a higher level of success and recognition.

I would like to take this opportunity to also express my utmost appreciation to SIRIM Berhad Board Members for their direction-setting and advisory to steer this organisation forward, and the SIRIM Management team for their support and cooperation throughout this journey of transformation.

Thank you.

Prof. Ir. Dr. Ahmad Fadzil Mohamad Hani, F.Asc, FIEM
President & Group Chief Executive
SIRIM Berhad


INDUSTRIAL
RESEARCH
PIONEERING INNOVATIONS,
ADVANCING OUR INDUSTRIES

SUMMARY OF SIRIM INDUSTRIAL RESEARCH

Report by:
Ir. Dr. Mohamad Jamil Sulaiman
Vice President, SIRIM Industrial Research

SIRIM Industrial Research is at the front line of technological innovations for various industries. SIRIM believes that through technological advancement, industries will see an increase in sustainability and in turn boost the nation's economy. Under SIRIM Industrial Research, there are Industrial Centres of Innovation (IC-Innovation) and Technology Centres.

Our IC-Innovation and Technology Centres support the national industrial innovation ecosystem through research, development and new technological innovations that develop and sustain businesses and industries. We nurture Small and Medium Enterprise (SME) growth with solutions for technology penetration and upgrading, making us an ideal technology partner for SMEs.

The IC-Innovation are comprised of Energy Management, Smart Manufacturing, Sensor, Biomedical, Bio-Natural Gas and Nanotechnology. The Technology Centres are comprised of the Industrial Biotechnology Research Centre, Environmental Technology Research Centre and Machinery Technology.

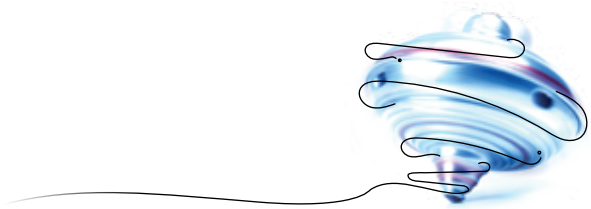
SIRIM Industrial Research has strengthen its role in enhancing SME productivity by positioning its technology and innovation services in multidimensional tiers; these include the optimisation of material, energy and labour usage, as well as the introduction of new technology, such as mechanisation and automation, to improve manufacturing processes. Hence, the SIRIM-Fraunhofer programme was set up to oversee the implementation and introduction of new technology programmes to maximise efficiency and delivery of SMEs.

In catalysing the growth of SMEs, the SIRIM Industrial Innovation Model, which features the enhancement of innovation services and networking with strategic partners, is adopted. This model focuses on applied research and is implemented throughout the value chain of services for SMEs. It allows SIRIM to recommend and provide solutions through technology adoption and uptake activities for the enhancement of SME productivity.

As a research and technology innovation arm, SIRIM Industrial Research will continue to create high value and provide new technologies to the industry to achieve world-class status and penetrate the global market.

SIRIM - FRAUNHOFER PROGRAMME

Report by:
Rosmina Mustafa
General Manager, SIRIM-Fraunhofer Secretariat



In 2018, SIRIM-Fraunhofer embarked on new main initiatives such as Industry 4.0 (I4.0) readiness assessment and i-coach programme.

For the I4.0 readiness assessment initiative, SIRIM Industrial Research (SIRIM-IR) collaborates with and seeks the expertise of Fraunhofer Institute in the development of criteria as well as the questionnaires and checklist for the assessment. By the end of 2018, 23 companies had been assessed by SIRIM. Upon completion of their assessments, the companies received reports on their readiness in adopting I4.0, recommendations and action plans to facilitate their transformation into an I4.0 organisation. Assessors from Fraunhofer Institute provide mentoring and coaching to SIRIM-IR assessors on the techniques of assessing, the questionnaires and identifying interventions for the companies to adopt I4.0.

Another new initiative introduced in 2018 was a coaching programme or i-coach, whereby companies are coached by qualified SIRIM-IR coaches on technology management and idea management. The coaches were trained by Fraunhofer Institute and are able to assist a company in developing its strategies and action plans for new product development using tools imparted by Fraunhofer Institute. To nurture the growth of SMEs, it is important to equip them with greater understanding of technology management, innovation, new product development and market competitiveness to enable them to move further forward.

Technology and Market Radar proved to be another attractive programme for the SMEs. It is a business intelligence tool developed to assist SMEs in identifying relevant technology and market trends, which is an important pre-requisite for making strategic decisions on technology investments for their future market growth and expansion. The current Technology and Market Radar focuses on technology topics of Industry 4.0, Renewable Energy and Food Processing. The non-technical radar focused on Economic, Social, Environmental and Political trends.

FACTS AT A GLANCE

23
companies were assessed for Industry 4.0 readiness

528
companies have been audited

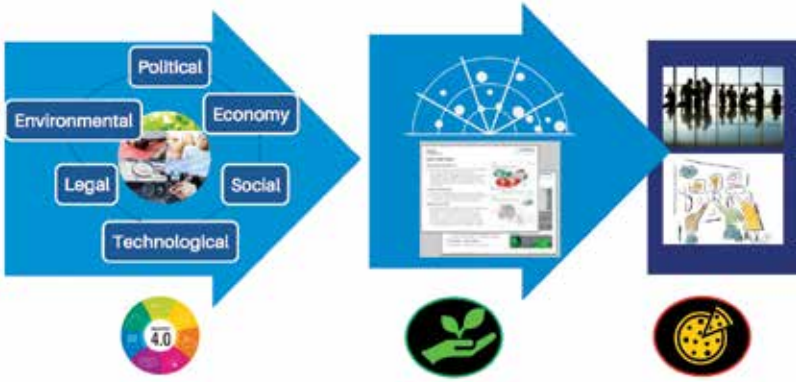
1,159
companies have benefited from technology intervention projects towards productivity improvement

Making Technology Investment Decision through Technology & Market Radar (TMR)

Collection of trends

Assessment and display of relevant trends in consolidated overview and detailed profiles

Identification of opportunities and challenges for SMEs



Industry 4.0

Renewable Energy

Food Processing

Benefits to SMEs

- SMEs and Research Institution will be equipped with methodology for prudent investment
- Comprehensive due diligence exercise prior to investment process
- Investment risks can be acknowledged earlier and analysed further for mitigation action plan
- SMEs may have better ground to adopt selected niche technologies

SIRIM - FRAUNHOFER PROGRAMME

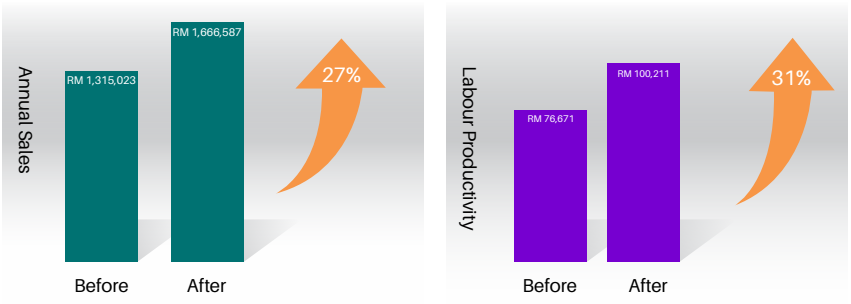
"The SIRIM-Fraunhofer programme has been recognised as one of the key government initiatives to embrace technology in catalysing the growth of SMEs since its inception in 2015."

The SIRIM-Fraunhofer programme has been recognised as one of the key government initiatives to embrace technology in catalysing the growth of SMEs since its inception in 2015. Driving its objectives through technology penetration and upgrading, SIRIM-IR is at the forefront of spearheading and delivering projects of calibre to fulfil its aim. Leveraging on the Fraunhofer Model's experience in spearheading innovation and technology development in German industries, SIRIM placed the SIRIM Industrial Innovation Model (SIIM) based on two significant features – enhancement of innovation services and strengthening of networks with strategic partners. The programme comprises four main activities: Implementation of Innovation Management/Technology Audit, Technology Uptake, Nurturing the Growth of Small and Micro Enterprises and Cross-cutting Programmes.

The response by Malaysian SMEs has been tremendous whereby, since its introduction, 528 companies have been audited and 1,159 companies have benefited from technology intervention projects towards productivity improvement. These include projects involving mechanisation and automation, technology enhancement, localisation of technology, packaging and labelling, training and consultancy for standard compliance and technical advisory for exporters. With these technological upgrades, the key outcomes include increased productivity, innovation of new products and processes, reduced rejection rates and market expansion. Beneficiaries are from various industry sectors which include food and beverages, machinery and equipment, medical devices and healthcare, electrical and electronics, automotive, material-based and consumer products. 2018 also saw increased participation from the oil and gas and agro-based industries.

An impact analysis carried out on SMEs which have undergone the projects has shown that the companies have recorded significant increase in labour productivity and sales as a result of higher output and the introduction of new products.

Impact Analysis



- SIRIM-Fraunhofer Programme increases sales through increase of output
- The programme improves labour productivity in terms of output and efficiency

The SIRIM-Fraunhofer programme will continue playing a vital role in the improvement of SME productivity through the implementation of its various initiatives, including the readiness assessment and intervention for I4.0 adoption among SMEs.

ENVIRONMENTAL TECHNOLOGY RESEARCH CENTRE

Report by:
Isnazunita Ismail
General Manager, Environmental Technology Research Centre

ACHIEVEMENTS IN 2018:

The Environmental Technology Research (ETRC) has expanded its services to cater for the business needs of the plastic-related and plastic waste recycling industry. Among other services offered are compliance testing for meeting the regulatory requirement imposed by European Commission on the restriction of hazardous substances. The implication is not only to the electrical and electronic industry but also the plastic manufacturers. To support Malaysia's roadmap 'Towards Zero Single-Use Plastics 2018-2030' for packaging and packaging waste, ETRC has established a testing facility for biodegradation and compostability, and the latter is supported by the introduction of disintegration testing to differentiate compostable materials from non-compostable packaging materials. Issues of plastic pollution from illegal operations of plastic recycling plants led to the freeze on approved permits (APs) to import used plastic. The government has yet to approve any plastic waste import licence for any company since it was frozen in July last year. Previously, there were 114 companies holding plastic waste APs but only eight really complied with the conditions stipulated. However, all of these companies need to reapply according to the new procedures. ETRC recognises the need to assist the National Solid Waste Management Department (JPSPN) in evaluating the AP application and has developed a toolbox for assessing the capacity of machines used in plastic recycling factories.

Our environmental services cover from land to sea. The newest from the shelf is on the application of environmentally friendly geotextile bags as submerged wave-breakers in tackling coastline erosion.

FACTS AT A GLANCE

20,000
SMEs are expected to adhere to RoHS requirements

RESTRICTION OF HAZARDOUS SUBSTANCES (RoHS)

The European Union (EU) took the lead with the Restriction of Hazardous Substances (RoHS) or Directive 2002/95/EC in 2002, which restricted the use of six hazardous materials in electrical and electronic products for the EU market beginning 1 July 2006. Thirteen years later, the Directive 2015/863 (or RoHS 3) was published, adding four more restricted substances (phthalates) to the original six. RoHS essentially targets the design stage of the product lifecycle with an aim to decrease the product's environmental impact by minimising or eliminating the use of harmful materials.

Maximum levels allowed for the 10 restricted substances according to RoHS

Lead (Pb)	< 1000 ppm	Introduced under RoHS
Mercury	< 100 ppm	Introduced under RoHS
Cadmium (Cd)	< 100 ppm	Introduced under RoHS
Hexavalent Chromium (Cr Vi)	< 1000 ppm	Introduced under RoHS
Polybrominated Biphenyls (PBB)	< 1000 ppm	Introduced under RoHS
Polybrominated Diphenyl Ethers (PBDE)	< 1000 ppm	Introduced under RoHS
Bis (2-Ethylhexyl) phthalate (DEHP)	< 1000 ppm	Introduced under RoHS 3
Benzyl butyl phthalate (BBP)	< 1000 ppm	Introduced under RoHS 3
Dibutyl phthalate (DBP)	< 1000 ppm	Introduced under RoHS 3
Diisobutyl phthalate (DIBP)	< 1000 ppm	Introduced under RoHS 3

"To support Malaysia's roadmap 'Towards Zero Single-Use Plastics 2018-2030' for packaging and packaging waste, ETRC has established a testing facility for biodegradation and compostability."

ENVIRONMENTAL TECHNOLOGY RESEARCH CENTRE

The introduction of RoHS has resulted in a significant ripple effect across the globe. Within the Asian region, countries like Singapore, China, India, Japan, South Korea and Vietnam have already followed suit with RoHS-like regulations; and Malaysia is not far behind. RoHS compliance needs to be an integral part of a product – from product design to the development of the product. Therefore, manufacturers of electrical and electronic products and suppliers of various components, parts and materials including those from the plastic industry will also be affected. In Malaysia, approximately 20,000 Small and Medium Enterprises (SMEs) are expected to adhere to RoHS requirements.

ETRC provides a testing facility for non-destructive and confirmatory testing of RoHS, which features cutting-edge equipment such as:

(a)

X-Ray Fluorescence (XRF) spectroscopy screening for five substances, specifically lead (Pb), mercury (Hg), cadmium (Cd), total chromium (Cr) and bromine (Br) in uniform materials found in electrotechnical products. The XRF spectroscopy provides information on the total quantity of each element present in the sample but does not identify compounds or valence states of the elements;

(b)

Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES), to determine the levels of cadmium, lead and chromium in electrotechnical products. It covers three types of matrices namely polymer or polymeric work pieces, metals and alloys and electronics. The ICP-OES provides the highest level of accuracy and precision for concentrations of lead, cadmium and chromium in the range of 10 mg/kg;

(c)

UV Spectroscopy, which utilises a colorimetric method to confirm the presence of hexavalent chromium;

(d)

Combustion Ion Chromatography (IC), which is an analytical technique used to screen the total bromine in homogeneous materials found in polymers and electronics. This method reduces the amount of testing and shortens the time required to determine if the screened product contains a higher value of a certain substance than permitted;

(e)

Gas Chromatography coupled with Mass Spectrometry (GC-MS), which is used to determine the phthalate plasticisers in polymers of electrotechnical products. The phthalate compounds are determined using soxhlet extraction of polymers with separation by the GC-MS qualitatively and quantitatively using selective ion monitoring.

DISINTEGRATION TEST FOR PLASTIC MATERIALS

Disintegration test is a method of determining the degree of disintegration of plastic materials when subjected to a laboratory-scale composting environment. After characterising the test material, biodegradability is determined, preferably in a laboratory aerobic controlled composting test (according to the standard test method ISO 14855) which is based on the evolution of carbon dioxide. The laboratory tests are then followed by investigating the degree of disintegration of the materials in a composting facility and later analysed for the quality of compost produced. This method simulates an intensive aerobic composting process and requires the use of a synthetic solid waste (made of sawdust, rabbit food, starch, sugar, urea, oil, etc.) inoculated with mature compost taken from a commercial composting plant. Pieces of a plastic material are composted together with these synthetic wastes.

ENVIRONMENTAL TECHNOLOGY RESEARCH CENTRE

At the end of the test, the degree of disintegration is determinated by sieving the final compost in order to recover the non-disintegrated residues of the test material. The weight loss of the material is considered as disintegrated material. The quality of the compost produced is then subjected to a plant toxicity test according to the standard method OECD TG208 in order to ensure the compost produced will not hinder plant growth and is safe to be returned to the environment.

ETRC's biodegradation and compostability testing facility is available commercially, with clients from packaging, plastics and export industries. In addition to testing plastic/bioplastic formulations or end products, the facility can be modified to examine the degradation of other biomass in media such as soil or aquatic environments.

MACHINE ASSESSMENT OF PLASTIC RECYCLING PRODUCTION CAPACITY

Machine Assessment of Plastic Recycling Production Capacity is one of the mandatory evaluations required by JPSPN for local companies applying for APs to import plastic waste from abroad under Custom Code H.S. 3915. The assessment will measure the true capacity of production machines used by companies in producing recycling plastic pellets in kilograms per month or tons per year.

The companies which received APs from JPSPN are allowed to import up to maximum capacity of plastic waste stated in the report assessment, excluding 30% capacity from local sources, imposed by the local government. From 1 May 2019 onwards, the assessment report produced from SIRIM Berhad is only accepted by JPSPN for the recycling plastic waste companies applying for APs under Custom Code H.S. 3915.

> ***"The National Coastal Erosion Study (NCES) that was carried out in 2015 found that 15.3% of the country's coastline is experiencing erosion."***

Figure 1: The biomass plate before and after it is manually cut to smaller pieces

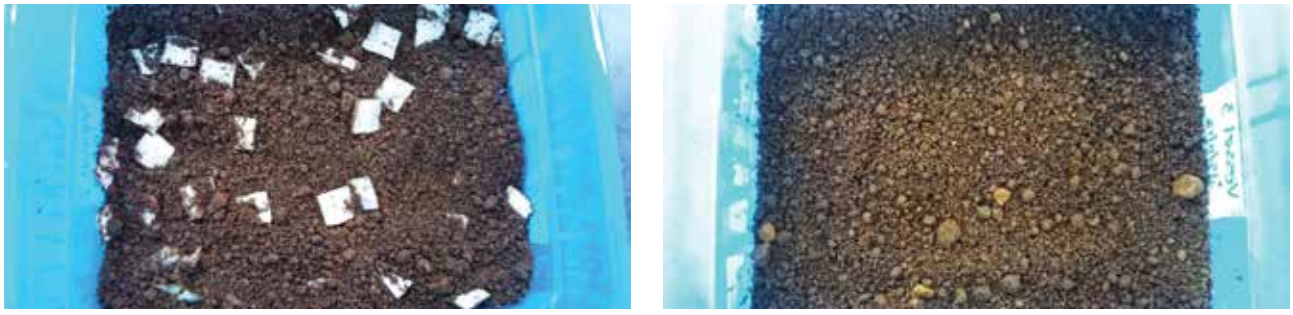


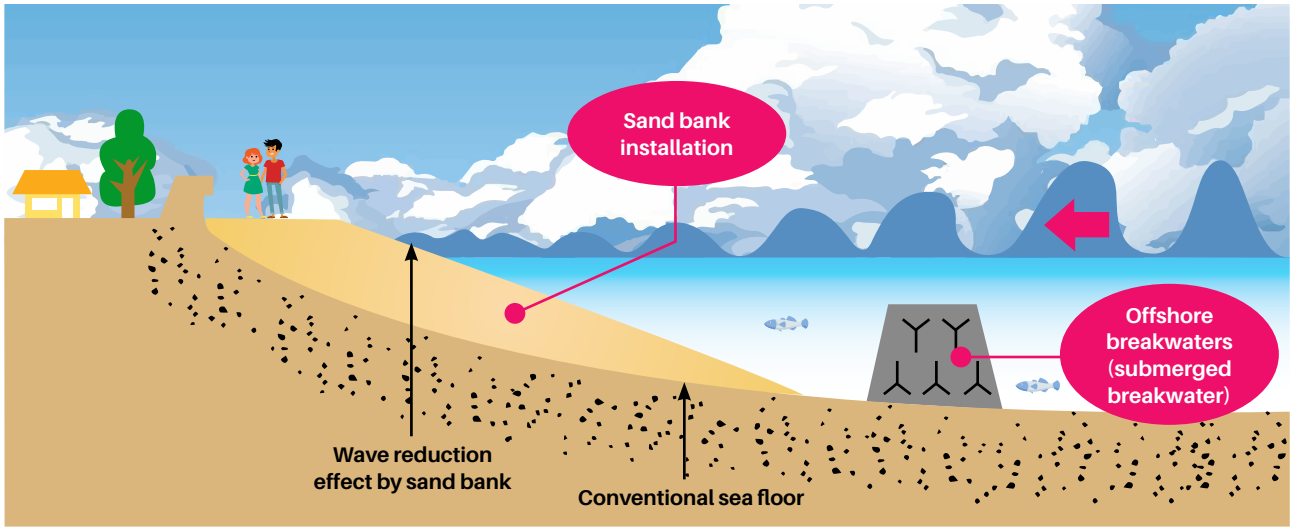
Figure 2: The biomass plate before and after 90 days of incubation

ENVIRONMENTAL TECHNOLOGY RESEARCH CENTRE

SUBMERGED WAVE-BREAKERS FOR COASTAL EROSION CONTROL

The National Coastal Erosion Study (NCES) that was carried out in 2015 found that 15.3% of the country's coastline is experiencing erosion. The total length of Malaysia's coastline is 8,840km, comprising 3,772km in the peninsula, 3,753km in Sabah, 1,234km in Sarawak and 81km in Labuan. A total of RM90 million was allocated under the Rolling Plan Three of the RMK 11 for coastal erosion control project to examine and address the issue of coastal erosion as a whole.

A small-scale project on erosion control using submerged wave-breakers has been carried out by SIRIM Berhad at Pantai Puteri, Malacca and launched in July 2018. This project that stretched for 100m was carried out under the MOSTI Social Innovative (MSI) programme. The submerged wave-breaker was deployed at the coordinates of Lat 2°13'50.37"N; Long 102° 8'43.72"E; and ended at the coordinates of Lat 2°13'47.60"N; Long 102° 8'45.43"E.

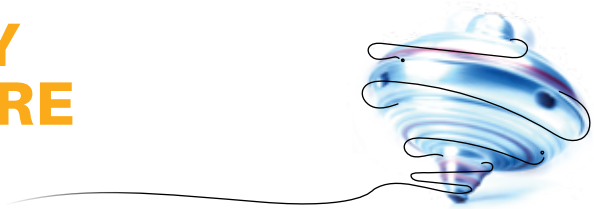


The Pantai Puteri beach has been traditionally a popular beach for recreational activities with a 4km stretch of coastline facing the Straits of Malacca. It still remains as an important local tourism spot. The area is characterised by numerous developments related to industry and tourism such as oil refinery, cargo jetty, power stations, resorts, hotels, condominiums, etc. The beach, however, is classified as critically eroded by the Federal Government, especially on certain spots along the beach. The erosion and steepening slopes occurring in recent years had caused the loss of rows of casuarina trees planted alongside the beach.

Winds and movements of the waves cause non-stop sand movement. The installation of geotextile bags as submerged wave-breakers reduces the impact of strong waves hitting hard onto the beach. The bags were filled with sand sucked from the sea floor and arranged at the pre-identified location. These geotextile bags are made from a inorganic, environmentally friendly material that enables the growth of algae and thus create food chains for attracting fishes surrounding the area. Another research study has shown that this geotextile surface allows gentle coral reefs and marine organisms to grow and survive to form a new ecosystem. Sand that rolls up in the waves washes up in a gradual pattern from one area and accumulates further up, expanding the coast in a process that is also known as beach nourishment.

INDUSTRIAL BIOTECHNOLOGY RESEARCH CENTRE

Report by:
Dr. Ahmad Hazri Ab Rashid
General Manager, Industrial Biotechnology Research Centre



FACTS AT A GLANCE

5

cosmetics products developed by the researchers were successfully commercialised to local cosmetics entrepreneurs

ISO

The centre successfully maintained its

ISO 9001

certification after being audited by SAI Global

The Industrial Biotechnology Research Centre (IBRC) consists of two sections:

i) The Cosmetics and Natural Products section (CNP)

The CNP is a one-stop centre for research & development in natural products, covering the development of new active ingredients as well as skincare and cosmetics formulation and production based on Good Manufacturing Practices (GMP) regulations for market access. The value chain of natural product 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.

ii) The Bio-Process section (BP)

The BP focuses on the industrialisation of bioproducts and biological processes through the utilisation of microbial, fermentation and enzyme technologies. Some of the bioproducts that have gone through our industrialisation process include animal vaccines, microbial enzymes such as phytase, microbial metabolites such as citric acid and natural vinegar.

The IBRC offers solutions for products' regulatory needs. Our experienced analysts provide accredited testing services according to international standards. We cater to clients who market a wide range of products, including traditional medicine, medical devices, cosmetics, fabrics, food, beverages, chemical disinfectants and biofertilisers. Our tests comply with ISO/IEC 17025, which assures that our facility is fit for internationally recognised testing protocols and staff competency, and is thoroughly assessed periodically. Our toxicology lab is compliant with the Principles of Good Laboratory Practices (GLP), which was developed by the Organisation for Economic Cooperation and Development (OECD) countries and is considered to be the highest laboratory compliance programme. The tests are shown below.

Microbiology and Molecular Biology – pharmaceuticals, medical devices, food, fertilisers and chemicals such as disinfectants

Toxicology – pharmaceuticals, medical devices, cosmetics, chemicals and food

Bioasssay – skincare and other topical products

Material characterisation and chemical analysis for pharmaceuticals, cosmetic products and traditional medicine

INDUSTRIAL BIOTECHNOLOGY RESEARCH CENTRE

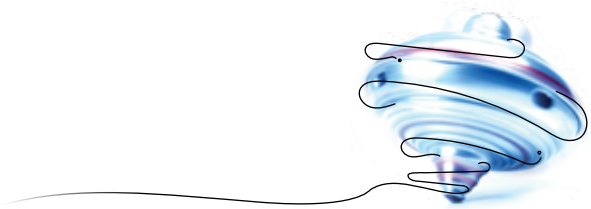
The Industrial Biotechnology Research Centre (IBRC) is an active participant in conducting commercial biotechnology projects together with local organisations and Small and Medium Enterprises (SMEs) for the production of bio-based products from renewable resources that hold great potential value for industries in many sectors, including chemicals, wellness and healthcare. In 2018, a total of five technical papers and two book chapters were published, while one patent was filed. Additionally, three industry standards on herbal processing were published in 2018. IBRC was also directly involved in the research & development as well as commercialisation activities of cosmeceutical products. A total of five cosmetics products developed by the researchers were successfully commercialised to local cosmetics entrepreneurs.

> ***"To continually stay competitive in the area of technical testing services, the centre increased the scope of its ISO 17025 accreditation testing from Standards Malaysia for toxicology, microbiology and material characterisation testing."***

In 2018, the centre successfully maintained its ISO 9001 certification after being audited by SAI Global. To continually stay competitive in the area of technical testing services, the centre increased the scope of its ISO 17025 accreditation testing from Standards Malaysia for toxicology, microbiology and material characterisation testing. The IBRC also applied for OECD Good Laboratory Practice (GLP) compliance in the area of toxicology to the National Pharmaceutical Regulatory Agency and Standards Malaysia. The IBRC Cosmetics production plant maintained its accreditation for Good Manufacturing Practice (GMP) and the Halal manufacturing of cosmetics.

SYSTEM DESIGN CENTRE

Report by:
Suhaimi Mahmood
General Manager, System Design Centre



FACTS AT A GLANCE

29

engineers and researchers have delivered many commercial and research projects, and taken part in commercialisation activities of SIRIM Berhad

SDC is moving towards the certification of

ISO 9001: 2015

The year 2018 was another meaningful one for the System Design Centre (SDC) in Bukit Jalil. Comprising three sections, namely the Intelligence System & RFID Section (ISRS), Industrial Automation & Robotics Section (IARS) and Plant Design Section (PDS), SDC played an important role in providing services in automation, mechanisation, robotics application, plant & engineering design, embedded/electronic design, software application and RFID solutions to various sectors.

SDC also provides engineering solutions ranging from small to medium-sized production systems for:

1. **Customising** automated machines, manufacturing equipment and systems
2. **Designing** pilot plants based on specialised processing requirements
3. **Retrofitting** existing production machines and equipment for productivity and product quality improvement
4. **Embedded** solutions for monitoring and detection systems

STRATEGIC AND DEVELOPMENTAL ACTIVITIES

SDC has been actively involved in the development of the National Policy of Industry 4.0 (I4.0) Framework coordinated by the Ministry of International Trade and Industry (MITI) through participation in the Technical Working Group on technology and standards at the Ministry of Science, Technology and Innovation (MOSTI). I4.0 is the evolution to cyber-physical systems, representing the fourth industrial revolution on the road to an end-to-end value chain with Industrial Internet of Things (IoT) and decentralised intelligence in manufacturing, production, logistics and the industry.

In addition, SDC has also contributed to the following:

1. **Lead** I4.0 Technical Working Group at SIRIM and MOSTI in the area of Autonomous Robots, System Integration and Simulation
2. I4.0 **Readiness** Assessment and Technology audit under SIRIM-Fraunhofer

SDC also plays an important part in planning and executing the proposed National Centre of Excellence on Smart Manufacturing and Retrofitting Small and Medium Enterprises (SMEs) towards becoming I4.0-ready by engaging and collaborating with various stakeholders and industry partners.

In addition to this, SDC has contributed towards the development of the Technology Audit Portal which facilitates the process of technology audits from application to closing. The Portal provides access to data repository and information related to the technology audit.

Starting from the successful re-certification of ISO 9001:2008 on the Provision of Commercial Contract Development and Engineering Services in Advanced Manufacturing, SDC is now moving towards the certification of ISO 9001:2015.

> ***"ISRS has been actively involved in both commercial and research activities through collaborations with various government agencies, industries and communities to provide embedded system and IT solutions to increase productivity and market needs."***

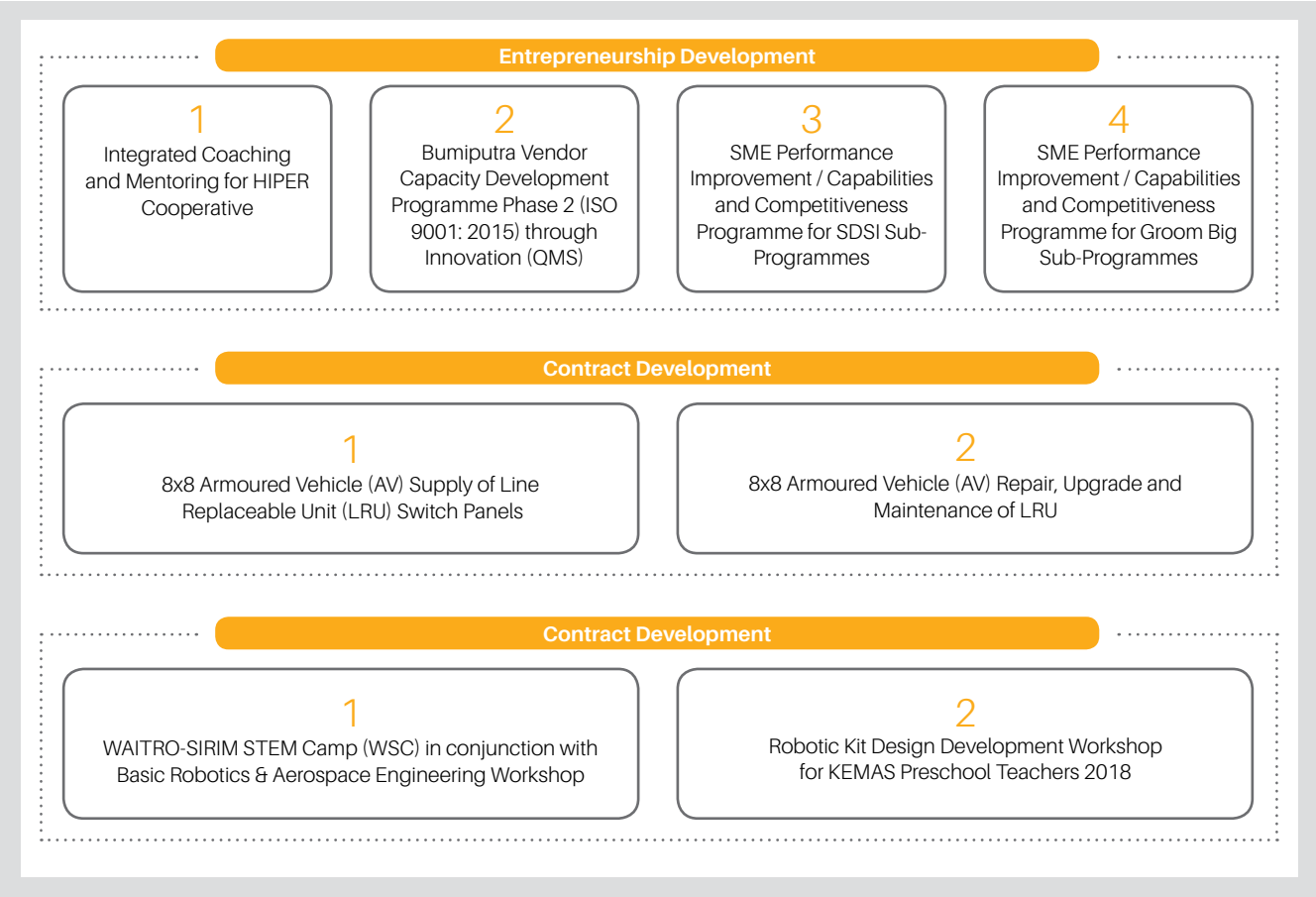
SYSTEM DESIGN CENTRE

INTELLIGENCE SYSTEM AND RFID SECTION (ISRS)

The ISRS played active roles in offering embedded design and RFID solutions to various sectors.

ISRS has been actively involved in both commercial and research activities through collaborations with various government agencies, industries and communities to provide embedded system and IT solutions to increase productivity and market needs. With a total of 29 engineers and researchers, ISRS has delivered many commercial and research projects, and taken part in commercialisation activities of SIRIM Berhad.

Some of the commercial projects which contributed to the target achievements are:



The WAITRO-SIRIM STEM Camp (WSC) in conjunction with Basic Robotics & Aerospace Engineering Workshop was organised on 20-21 November at Park Royal Hotel Penang with participation from 10 primary schools. Thirty participants attended the three-day programme, which was aimed at providing awareness and increasing students' interest in STEM. Participants were trained in intelligent and robotic systems and applied the knowledge by developing their own robotic application and aeroplane model from polystyrene.

ISRS was also involved in the Robotic Kit Design Development Workshop for KEMAS Preschool Teachers 2018 held on 27-28 November at Tamu Hotel KL. The objectives were to provide hands-on training and awareness for instructors to develop a robotic teaching kit to help preschool children develop their convergent and divergent thinking skills, creativity, innovativeness and interest in STEM, primarily robotic technology. The workshop produced various working robot prototypes, including colourful animal replicas. The project team successfully produced a patented electronic module platform on 'A Method and System for Programming a Robot Using a Card – PI2018003053' for the development of preschool robotic kit.

SYSTEM DESIGN CENTRE

Research & Development Projects

A research & development project entitled 'Building Our Robotic Competitiveness in Medical and Healthcare: Development of Robots for Assisted Recovery and Rehabilitation' to develop robotic arms, legs and exoskeletons for rehabilitation has been successfully completed. The project has successfully produced a patented electronic module on 6-Axis Modular Motion Controller for ME Systems and sensor modules for any development of robots.

INDUSTRIAL AUTOMATION AND ROBOTICS SECTION (IARS)

The IARS delivered four SIRIM Industrial Innovation Fund (SIIMF) projects:

i. Application of Material Handling & Vision Detection Systems for Glass Bottle in the Production of Sparkling Fruit Juice for MGV Industries Sdn. Bhd.

Project Background:

MGV Industries Sdn. Bhd. (MGV) had successfully installed and commissioned a new sparkling fruit juice line in glass bottles in June 2017 at its GMP-compliant factory in Gong Medang Besut, Terengganu.

Based on actual records of commercial-scale production from June 2017 to date, the proven capacity of the above key machineries is 6,000 bottles per hour. However, the company was facing a serious bottleneck issues at two processes which eventually caused production down time and reduced efficiency.

The first bottleneck occurred at the conveyor system that transports the bottles along the production line.

The second problem was the inconsistency in identifying and removing defective bottles from the processing line. Originally, the tasks were performed manually.

Project Objectives	Project Output	Project Outcome
• To reduce bottle rejection rate, caused by friction, from 5% to 0.1% • To reduce the percentage of defective bottles being passed to filling, from 2.5% to less than 0.05%	• A pressure-less conveyor system • A vision system to perform quality inspection on empty bottles prior to filling	• The productivity has increased to 95%

ii. Improved Production Capacity of Coated Groundnuts through Automation Process For Deqyoung Vision Enterprise

Project Background:

DeqYoung Vision Enterprise manufactures a popular local snack – coated groundnuts. Among the popular coatings are cheese, honey, spicy and a special coating blend.

The company has seen the demand for its products rise at the average rate of 15-20% (especially for the honey-coated nuts) since 2012. Its daily production capacity is 200kg.

Project Objectives	Project Outcome
• To identify the production requirements and problems • To provide effective solutions in order to increase production capacity • To provide advisory services in relation to the production process flow which will fulfil all Halal and MeSTI requirements	• The company was able to increase its production capacity as expected

SYSTEM DESIGN CENTRE

iii. Development of Jacketed Cooker & Sterilisation System for Rahman Food Enterprise

Project Background:

Rahman Food Enterprise is a manufacturer of soy bean drinks and other types of non-carbonated beverages. The company had issues pertaining to its soy bean drink production.

The soy beans were cooked using a conventional method which is very labour intensive. Thus, the company was not able to process the beans in large batches due to the long hours of cooking and the need for constant human intervention during the process. Besides that, the capacity of one batch is very limited due to the size of cooking pot.

Since the process of pouring the soy milk into the bottles is done at room temperature, the soy milk needed to undergo a cooling process after the cooking stage in order to reduce its temperature. This was originally achieved by letting the soy milk cool down naturally in large containers. This was another contributing factor for the low productivity rate.

Project Objective

- To design and develop one unit of jacketed cooker and one unit of jacketed cooling tank for soy milk drink production

Project Outcome

- Elimination of labour intensive processes such as the cooking and cooling processes. This has tremendously increased the productivity rate

iv. Design and Development of Testing System for Leakage and Flow Rate Test on Water Heating System for Thermo Integra Sdn. Bhd.

Project Background:

Thermo Integra Sdn. Bhd. is a local company that manufactures water heating systems and water heating related products. Among its popular products are Instantaneous Hand Wash, Multi-Point Water Heater and Electric Shower.

The company needed an automatic testing system that could increase its testing efficiency in two testing departments: Leak Test and Flow Rate Test. Originally, all tests were carried out manually and test data were not recorded.

Project Objectives

- To develop one Leak Test System
- To develop one Flow Rate Test System

Project Outcome

- Eliminated labour intensive processes
- Increased efficiency while recording all test data onto the server

PLANT DESIGN SECTION (PDS)

1. Upgrading the liquid detergent production facility – Kazaza Int. Berhad
2. Design and development of inline flame arrester – Midas Utara Eng Sdn Bhd
3. Increased productivity efficiency for liquid detergent products – Desans Solutions Sdn Bhd

MOVING FORWARD

1. In 2019, SDC will continue to act as a backbone for I4.0 and will merge with ICI Industrial Design to become ICI Smart Manufacturing. With the formation of ICI Smart Manufacturing to optimise internal resources, our provisions will be more comprehensive, covering the core technical pillars in I4.0 to deliver the smart solutions to the industry.
2. SDC will continue to support MITI's Industry4WRD initiative to provide solutions to local industries in Malaysia applying the 11 technology pillars.
3. SDC shall continue to play its part for I4.0 as a key member in planning and executing the I4.0 policy and initiatives to achieve the TN50 aspiration towards becoming a high income nation by 2050.

MACHINERY TECHNOLOGY CENTRE

Report by:
Md Nizam Abd Wahab
General Manager, Machinery Technology Centre

The Machinery Technology Centre (MTC) started off in 2018 by improving its operational excellence through the re-certification and upgrading of its Quality Management System (QMS) to ISO 9001:2015. This was achieved by consolidating common procedures for the 'Provision of Engineering Services in the Area of Machinery Technology' for the Foundry Technology Section (FTS) and Machine Design Section (MDS). The improved QMS was audited and verified for conformance to the requirement of ISO 9001:2015 by SAI Global International on 22 March 2018 and subsequently awarded the Compliance Certificate on 16 April 2018.

MTC business was supported by 45 technical and 15 supporting staff and by its two main core business sections, i.e. FTS and MDS.

During the course of its operations in 2018, 29 services related to its core activities were transferred to a mixture of industries, subsidiary companies and government training outfits. Out of these, 21 services, ranging from machining to fabrication services, were for commercial entities, whilst the rest were programmes developed to improve vendors' manufacturing capabilities through manufacturing process enhancement.

Eight programmes offered were statutory in nature, with MTC as the Technology Expert for government agencies. Three services involved Perak Entrepreneur Skill Development Centre (PESDC) and vocational training colleges, and five services were for the pilot production of preparatory test samples for the quality control of production parameters of locally produced components for a SIRIM subsidiary testing company.

Three major industrial engagement programmes were also undertaken in 2018 with emphasis on vendor development and a workshop on the emerging rail industry. A total participation of approximately 50 industry players were recorded for the programmes. The programmes executed were:

FACTS AT A GLANCE

29
services related to its core activities were transferred to a mixture of industries, subsidiary companies and government training outfits

3
major industrial engagement programmes were undertaken in 2018

A total participation of approximately
50
industry players were recorded for the programmes

1. MITI-SIRIM Vendor Competitiveness Development Programme ICC Convention 2017 held at SACC, Shah Alam on 14 March 2018
2. Kick-Off Programme for Bumiputra Vendor Capacity Development Phase 2 at Seminar Room, Block 25, SIRIM HQ on 15 March 2018
3. Workshop on Rail Industry held at SIRIM, Rasa, Hulu Selangor on 7 May 2018

MACHINERY TECHNOLOGY CENTRE

MTC's statutory role was also emphasised in the development of three major Technical Framework studies involving the following government agencies related jobs:

1. Malaysian Investment Development Authority (MIDA) in its Technical Working Group (TWG) Productivity Linked Incentives Bil 1/2018 – Initiative Under Chapter 3, Malaysia Productivity Blueprint (MPB)
2. Ministry of Science, Technology and Innovation (MOSTI) in its Technical Working Committee National Centre of Excellence (CoE) on Smart Manufacturing
3. Centre for Instructor and Advanced Skill Training (CIAST), Ministry of Human Resource Development in its TVET Instructor Profile Development Workshop - TVET Instructor eProfiling Development Project RMK 11

MTC was involved in an interesting scientific project, taking on the role of agent for the 'Design, Development, Installation and Commissioning of Tiltable Platform for the Electromagnetic Compatibility Test Chamber' for the commissioning and project sign-off of Malaysia's own micro satellite development under the government space agency outfit, ANGKASA.

MTC engineers were also busy throughout 2018 undertaking 32 Technology Audits and the subsequent Technology Uptakes under the SIRIM-Fraunhofer initiatives.

> ***"2018 also saw a significant increase in new services being offered to TVET-related programmes."***

Effort was also spent on the delivery of KPI set under the Ministry of International Trade and Industry's (MITI) Bumiputra Vendor Capacity Development Programme, which involved 15 vendors and five anchor companies. The favourable intermediate result from the delivery of the aforementioned Vendor Development Programme, as attested by MITI during the monthly reporting by MTC, resulted in the extension of the original programme to incorporate Phase 2 with additional funding and scope.

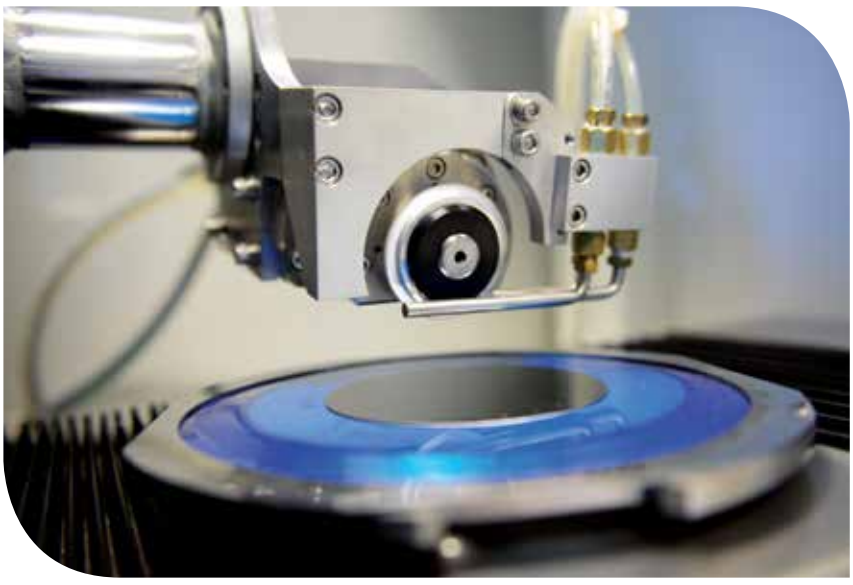
2018 also saw a significant increase in new services being offered to TVET-related programmes. Four programmes were developed to meet the requirement of this new segment of the industry ecosystem. Hands-on training programmes on the use of precision and CNC-based machines were offered. Clients included federal and state-funded vocational colleges such as Kolej Vokasional Sungai Buloh and PESDC.

There was also fresh interest from Small and Medium Enterprises (SMEs) from the machining and fabrication sector in the retrofitting of machining centres to meet the requirements for Automation, Mechanisation and the elements of Industry 4.0.

Several enquiries were received from the rail industry-related companies such as SMH Rail Sdn Bhd and Rolling Stock Consultants Sdn Bhd, especially in the areas of Maintenance, Repair and Overhaul (MRO) of railway-related products.

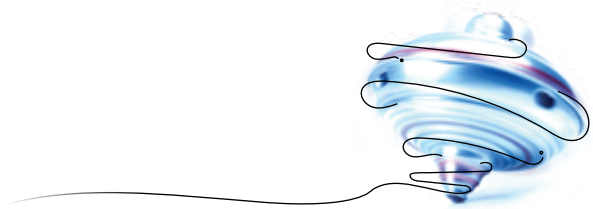
The feather in the cap for MTC's 2018 performance was the knowledge dissemination through 13 publications at national and international conferences which were either presented or published. Five were presented at international conferences in Hokkaido, Japan, and Aceh, Indonesia. The paper entitled 'Investigation into Mesh Size Effect on Finite Element Analysis of an Assembled Structure with Bolted Joints' by Ir. Rohaizat Omar, which was presented in Aceh, Indonesia, on 2 & 3 May 2018, was awarded The Best Paper at the 2018 International Conference on Science, Engineering & Technology.

MTC contributed one patent to the Patent Grant pool for SIRIM IR. The patent is for 'Seaweed Culturing System' Reference Number AN: PI 2013701388, FD: 06.08.2013.



IC INNOVATION - SENSOR

Report by:
Hamidah Sidek
Director, IC Innovation in Sensor



The Industrial Centre of Innovation (ICI) in Sensor was established in 2017, focusing on developing products and services through sensor technology in the areas of biosensors, photonics and integrated sensing systems.

Projects for Year 2017

- Smart LED Street Lighting System for Market Expansion
- Solving an Industry-Wide Problem: Industrial Inspection on Kelulut Products
- Enhancing Company's Productivity and Workplace Safety
- Light Alarm Triggering System (LATte)
- Design Enhancement of Underwater Fish Attracting LED Lamp (UFAL) and Development of its Optimal Usage Efficiency for the Aquaculture Industry

Projects for Year 2018

- Integrated Smart-Manhole Management System
- Enhancing Halal Pastille Production Productivity through Automation Process and Quality Control System Development
- Thongs (Capal) Manufacturing Process Improvement for Quality Improvement and High Production Output
- Enhancement of Islamic Clock with Intelligent and Educative Features for Muslim Family Lifestyles
- Spurring SSL/LED SME Innovation through Best Lighting Project Management Practice
- A Modular Microfluidic System for Rapid Serotype-Specific Detection of Dengue Virus Infection
- Retrofit Programme to Equip SMEs Towards Industry 4.0
- QR Crypto System

Projects for Year 2019

- Capacity Building Programme on IoT Technology Application for Smart Farming
- Improvement of LED Lighting Manufacturing Process Flow to Improve Product Quality and Reliability
- Design & Optimisation of Low Intensity & High Intensity Obstruction Lighting Product
- Optimising the Practices in the Banana Tissue Cultivating Chain Process for Productivity Improvement
- Development of IoT System Towards industrial Aquaponics Product Improvement
- Productivity Improvement of Airtight Plastic Container Through Production Enhancement
- Product Cert Encryption and Monitoring System
- Solving Industry - Wide Problem; Advancing Malaysia's Poultry Industry Production for Food Security - Addressing Technological and Innovation Gaps for Growth and a Sustainable Future - Broiler Farm Monitoring System

IC INNOVATION - SENSOR

FACTS AT A GLANCE

3

awards won at the SIRIM Invention, Innovation & Technology Expo 2018

PATENT

Industrial Design

- Application for registration of an Industrial Design (18-01203-0101) – Lamp (Fish Attractor)

Copyright

- Kelulut Integrated Information System (KIIS)

Publications

- Impact of Additive Ratio on Microstructural and Optical Properties of Organic-Inorganic Matrix. INTERNATIONAL JOURNAL OF LATEST TRENDS IN ENGINEERING AND TECHNOLOGY p-ISSN : 2319-3778
- PEGYLATED PAMAM ENCAPSULATED InP/ZnS QUANTUM DOT AND THE CELLULAR UPTAKE STUDY, Vo. 26, No. 2018, doi: 10.21908/jit.2018.5. Journal Industrial Technology

Awards

Gold Award
– Innovative Sensing Material for Minimising Cation Interference in Ammonium Detection
– Third INNOCOM 2018

Silver Award
– Underwater Fish Attracting LED Lamp (UFAL)
– ITEX 2018

Silver Award
– Light Alarm Triggering System (LATte)
– ITEX 2018

Silver Award
– Kelulut Integrated Information System (KIIS)
– ITEX 2018

COMMERCIALISATION

MYC 2018

- Design Enhancement of Underwater Fish Attracting LED Lamp (UFAL) and Development of its Optimal Usage Efficiency for the Aquaculture Industry signed with Alion Nation Solution Sdn Bhd.

New Collaborators

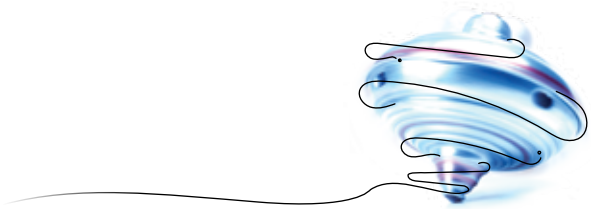
- One Team Networks Sdn Bhd
- KPNK Automotive Industries Sdn Bhd

New Growth Areas

- Intelligent sensor network supporting smart industry, infrastructure and track & trace solutions
- Specialised solid state lighting and precision farming
- Smart sensor system based on optoelectronic sensing for healthcare applications
- Smart packaging and labelling for product safety and security

IC INNOVATION - BIOMEDICAL

Report by:
Dr. Kartini Noorsal
Director, IC Innovation in Biomedical



FACTS AT A GLANCE

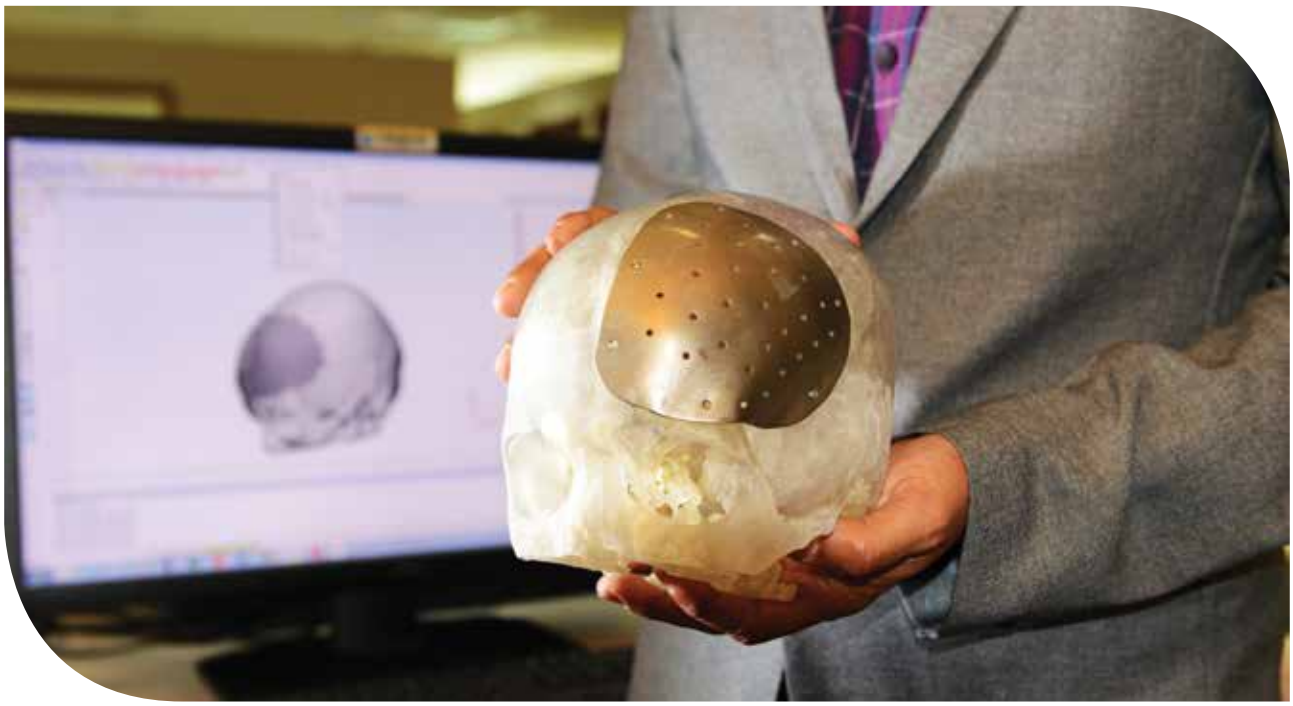
121,000
contributions from Biomodelling & Craniofacial Services and ISO 17025 testing services

26
small and medium companies were audited to enhance their productivity and quality

ICI Biomedical secured funding for
6
new projects from SIIMF

- The Industrial Centre of Innovation (ICI) in Biomedical initiates and delivers innovative applications and solutions within the medical sector. These include bioceramics for both dental and orthopaedic applications, wound management products, 3D metal printing for cranio, maxillofacial, dental and hip and knee replacements, and micro production of carbon fibre. 2018 has been a very challenging year for ICI in Biomedical; we focused on specific areas of high relevance for the industry, international research organisations, universities and business entities. The business activities include Technical Services & Consultancy, contract research, marketing & business development, technology transfer & commercialisation, and non-government industrial research.
- Technical Services & Consultancy: In 2018 ICI Biomedical achieved 121,000 contributions from Biomodelling & Craniofacial Services and ISO 17025 testing services. We offered 10 ISO/IEC 17025 accredited chemical and physical tests beginning in the first quarter of 2018. Other scopes of thermal, sterility and biomechanics testing will be offered in Q3 this year.
- ICI Biomedical managed to obtain the ISO/IEC 17025 accreditation on 27 April 2018 under Advanced Materials Testing Laboratory within the field of chemical and physical testing and SAMM no 875.

IC INNOVATION - BIOMEDICAL



Metallic implant such as craniofacial for orthopaedic applications

Projects

Local Proprietary Formulation of Polyacrylonitrile for Carbon Fibre Lightweight Tanks

Intermediate grade fibre with tensile strength of 4000 MPa, high stiffness, low weight, high chemical resistance, high temperature tolerance and low thermal expansion. These properties have made carbon fibre very popular in civil engineering, military, motorsports and biomedical applications (prosthetic limbs).

Customisation of Biomedical Implant Through Additive Manufacturing Technology (KNEE)

- Under the Ministry of International Trade and Industry's (MITI) RMK 11 High Value Added and Complex Product Development Programme
- 3D printed metallic implants include cranio, maxillofacial, dental, total hip arthroplasty and total knee replacement

Transferred to local manufacturers under MITI's Market Development Programme.

Transforming Local Dental Labs through Innovation and Digital Technology Adoption to Enhance Efficiency and Productivity

- Develop a new digital workflow starting from the capturing of patient data to clinical input to the dental workplace
- Integrate 3D printing technology to the production stage where dental appliance manufacturers can accurately and rapidly produce crowns, bridges, stone models and a range of orthodontic appliances through the concept of mass customisation
- Reduce the lead time by 30% to 50%

Pilot Scale Development of Antimicrobial Bio-composite Membrane for Dentistry and Orthopaedics

A barrier membrane used to cover bone defect sites to enhance new bone ingrowth while preventing ingrowth of fibrous tissue into the grafted site.

IC INNOVATION - BIOMEDICAL

Non-government industrial research: Completed one Development MITI project, while one Dasar Sains Teknologi Inovasi Negara (DSTIN) Project and one SIRIM Industry-Wide Problem project are still ongoing until May 2019.

Other projects include the customisation of Biomedical Implant through Additive Manufacturing Technology (KNEE), Local Proprietary Formulation of Polyacrylonitrile for CF Lightweight Formulation, Transforming Local Dental Labs through Innovation and Digital Technology Adoption to Enhance Efficiency and Productivity and Pilot Scale Development of Antimicrobial Bio-composite Membrane for Dentistry and Orthopaedics.

Throughout 2018, ICI in Biomedical also successfully organised international conferences and workshops such as the 24th SIRIM-WAITRO International Conference 2018 (SWIC 2018) from 21-22 November 2018 in Penang and the 2nd SIRIM Invention, Innovation & Technology Expo (SI2TE) 2018 from 17-18 April 2018 in Kulim.

Elsewhere, ICI in Biomedical secured funding for six new projects from SIRIM Industrial Innovation Model Fund (SIIMF) and one SMART Fund Project in 2018. The projects were the Development of Automatic Defect Inspection System for Ultra Clean Easy, Design and Plan Layout for the Development of Automated Systems for Ice-cream Cup Production, Development of Semi-automatic Production System for Manufacturing Respiratory Products, Improved Paddy Drying System by Optimising Efficient Energy Usage through High-tech Paddy Drying Fan and Time Management, Development of Automated System for Bottling of Traditional Massage Products, Increasing the Capacity and Quality of Pet Litter Production Through Pellet Processing System and Pilot Scale Development of Antimicrobial Bio-composite Membrane for Dentistry and Orthopaedics.

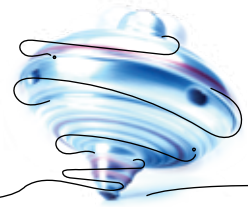
In addition, ICI in Biomedical published seven refereed/STI publications and filed two new patents in 2018, namely the Method for Preparing Antimicrobial Bio-composite Membrane for Bone Defect Treatments and Antimicrobial Bio-composite Membrane Composition for Bone Defect Treatments.

> ***"ICI in Biomedical secured funding for six new projects from SIRIM Industrial Innovation Model Fund (SIIMF) and one SMART Fund Project in 2018."***

One of the major events of the year, SiT2E 2018 received up to 250 innovation submissions from primary and secondary schools as well as institutes of higher learning and local research institutes from across the country

IC INNOVATION - NANOTECHNOLOGY

Report by:
Dr. Mohd Radzi Mohd Toff
Director, IC Innovation in Nanotechnology



FACTS AT A GLANCE

Under SIRIM-Fraunhofer programme, there were

15 *technology uptake projects approved and*

30 *technology audits performed for SMEs*

111

requests for technical services from SMEs and universities

Debuting in 2018, the Industrial Centre of Innovation (ICI) in Nanotechnology has been focusing on nanotechnology and its industrial applications through the embedment of knowledge and value-adding enhancements to the industry.

ICI in Nanotechnology has the role of providing innovative nanotechnology solutions to Small and Medium Enterprises (SMEs) through customised technology intervention for productivity improvement, which also aims to boost technology penetration of SMEs; conduct market-driven research & development in line with national nanotechnology focus areas; provide nanomaterials and nano-based products characterisation, nanosafety testing and consultancy; as well as supporting and collaborating with National Nanotechnology Centre (NNC) and NanoMalaysia Berhad (NMB) in developing the homegrown nanotechnology industry. Such collaboration is vital to ICI in Nanotechnology since NNC serves as the National Focal Point for the coordination of research, development and all related activities of nanotechnology in Malaysia, while NMB is a commercialisation arm under Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC) that acts as a business entity entrusted with nanotechnology commercialisation activities.

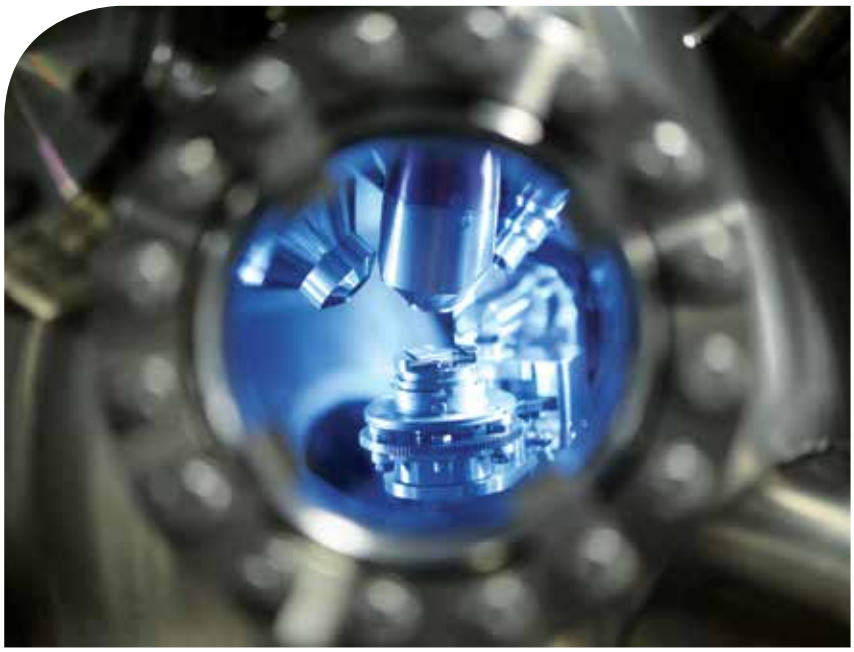
Key Activities in 2018

In line with the Centre's role, there was one project under the Ministry of Science, Technology and Innovation's (MOSTI) grant, namely Science Fund, which was carried out in 2018. The project financed under the Science Fund was 'Low Pressure Storage System Using Amine Functionalize Multiwall Carbon Nanotube as Absorbent Materials for Natural Gas Storage'. A new proposal for Smart Challenge Fund was approved in late December 2018 and carried out in 2019. The amount approved for the Smart Challenge Fund project titled 'Manufacturing Process of Producing Current Collector Using Local Carbon Materials for Light Rail Transit (LRT) Application' is RM0.675 million. One of the main purposes of the project is to improve methods of producing Carbon-Copper (C-Cu) composites for electrical and electronic applications to produce environmental friendly C-Cu products using local carbon material.

Under SIRIM-Fraunhofer programme, there were 15 technology uptake projects approved and 30 technology audits performed for Small and Medium Enterprises (SMEs). The audits were carried out by 13 qualified technology auditors from ICI in Nanotechnology. As a result, various technology interventions such as technology enhancement, innovative processes and automation have been adopted by those SMEs, improving productivity in their processes.

"ICI in Nanotechnology has the role of providing innovative nanotechnology solutions to the SMEs through customised technology intervention for productivity improvement."

IC INNOVATION - NANOTECHNOLOGY



In terms of research and technical services, ICI in Nanotechnology has carried out market-driven research & development in advanced materials and nanotechnology to deliver outputs and products for future commercialisation. In the year 2018 alone, as many as 111 requests for technical services and consultancy were received from SMEs and universities. This allowed the Centre to participate in testing contracts and provide characterisation services for ceramics, metal, composites and polymers utilising high-end equipment such as the XPS, XRD, FESEM, TEM, VPSEM, BET and materials processing facilities.

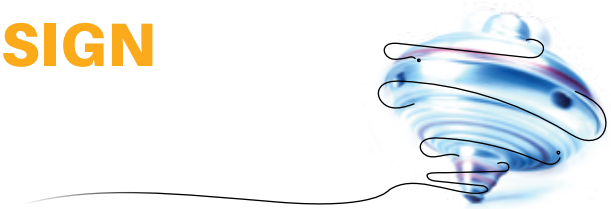
ICI in Nanotechnology aims to increase awareness and collaboration among industry partners, academia, research institutions and Government agencies on its technological capabilities and facilities through participation in technology exhibitions and the organisation of seminars, workshops and training programmes. Through these ventures, contract research & development, consultancy, training and technical service projects can be undertaken by ICI in Nanotechnology in the near future.

In the long term, the visibility of ICI in Nanotechnology can also be enhanced by having highly trained personnel as an expert panel for grant proposal evaluation involving Smart Challenge Fund, ASEAN Science & Technology Innovation Fund and other nanotechnology-related project proposals under NNC.

A vital marker of the ICI in Nanotechnology's contribution in the nanotechnology sector is found in its active calendar of events, in which ICI in Nanotechnology was involved as both organiser and participant. Among the industrial engagements, workshops and seminars were the Business Networking Session with Petronas Cari Gali in Terengganu, Forum between Petronas & NACE International in Kuala Lumpur, SIRIM Industry Dialogue with Aerospace Industry in Shah Alam, Nanotechnology Roadmap Workshop in Putrajaya and Symposium on Nanomaterials for Innovative Products in Kedah.

IC INNOVATION - INDUSTRIAL DESIGN

Report by:
Dr. Mohd Shahrul Azmi Mohamad Yusoff
Director, IC Innovation in Industrial Design



The Industrial Centre of Innovation (ICI) in Industrial Design grew tremendously last year through its two core activities, i.e. services and contract research. Capitalising on the additive manufacturing facilities at SIRIM Bukit Jalil, the service reach extended beyond industry. Grassroots events such as the Kiddo AM holiday programme helped the general public to understand the value chain of industrial design right up to batch manufacturing activities. The AM Lab also hosted participants from around the world, such as the Sudan training programme, which will be a yearly event going forward. This helps ICI in Industrial Design to transfer its knowledge to other nations as part of the country's competency-building initiative.

As one of the key pillars of Industry 4.0 (I4.0), simulation has been an established competency for ICI in Industrial Design. Throughout 2018, efforts were made to widen the scope of this service. With the SIRIM-Fraunhofer funding, a new technology service was introduced through the Predictive Maintenance awareness programme. Industry players were introduced to the I4.0-based maintenance strategy via awareness workshops and focused group discussions. Currently, ICI in Industrial Design is in the final stage of establishing locally predictive maintenance designed tools for field trial.

Among the many projects completed in 2018 was the design and development of a Pre-Commercialised Prototype of a Computerised Scalp Analysis and Treatment System for T-Biomax Sdn Bhd. Our product development team helped the company, T-Biomax Sdn. Bhd., to transform the conceptual design idea of a scalp analysis and treatment device into reality. The device was digitally modelled in Computed Aided Design (CAD) software, analysed in Computer Aided Engineering (CAE) software and physically 3D-printed using Additive Manufacturing (AM) technology for form, fit and function tests prior to mould design and fabrication. Technology uptake projects for the Small and Medium Enterprises (SMEs) continue to dominate the strategic development projects within ICI in Industrial Design.

In 2018, numerous technical publications were published, including Mno Sensor Empirical Curve-Fitting Determination of Acoustic Attenuation Coefficient for Pipeline Monitoring, X-Type Tilted Quadrotor Flight Dynamic Modelling, A Parallel Spatiotemporal Saliency and Discriminative Online Learning Method for Visual Target Tracking in Aerial Videos, Pulse Pressure Osmotic Dehydration (Ppod) Method for Salted Egg Manufacturing Using 3D-Printed Polymer Pressure Chamber, Design and Fabrication of Patient Specific Orbital Floor Implant Using 3D Metal Printing, The Role of TRIZ in Fourth Industrial Revolution, Komposite Polimer, Pemprosesan & Aplikasi and Study on the Effect of NaOH Concentration Treatment on Kenaf Fibre and Placement of Winding Angle on Tensile Properties of Kenaf Fibre Reinforced Epoxy Composites.

Under the SIRIM-Fraunhofer programme, a total of nine technology uptake projects were approved and 26 technology audits were performed for SMEs.

FACTS AT A GLANCE

9
technology uptake projects were approved

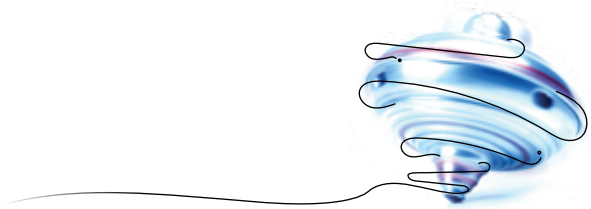
26
technology audits were performed for SMEs

> ***"Among the many projects completed in 2018 was the design and development of, a Pre-Commercialised Prototype of a Computerised Scalp Analysis and Treatment System for T-Biomax Sdn Bhd."***

The Computerised Scalp Analysis and Treatment System transformed conceptual design idea into reality

IC INNOVATION - BioNG

Report by:
Azhar Abdul Raof
Director, IC Innovation in BioNG



FACTS AT A GLANCE

BioNG

can be used as a transportation fuel in the form of compressed gas or liquefied gas

The SIRIM Industry Standard for BioNG (Specification for use as vehicle fuel) has been developed and is expected to be published

in **Q3 2019**

INNOVATIVE SOLUTION PROVIDERS

Thanks to its expertise and skills in biogas production and gas storage, the Industrial Centre of Innovation (ICI) in Bio-Natural Gas (BioNG) develops innovative solutions to reduce carbon emission for society's needs. BioNG is one of the solutions. BioNG is a renewable natural gas which is produced from bio-waste, chemically similar to conventional natural gas and fully interchangeable. Like conventional natural gas, BioNG can be used as a transportation fuel in the form of compressed gas or liquefied gas. Unlike biodiesel, BioNG is a second-generation biofuel with a significantly low carbon footprint. BioNG from waste has *physical (calorific)* and high *intrinsic (bio)* value. This intrinsic value (bio, green, sustainable and renewable) can be *verified* and *monetised* in the market. It can be used to support *carbon offset programmes* in any sector.

> ***"In pioneering the BioNG sector, SIRIM is involved across its entire value chain – from purification and production to distribution, utilisation and standards development as well as the testing and verification process."***

IC INNOVATION - BioNG

BioNG has various applications – for electricity or heat generation on demand or for vehicle fuel

2-stroke engine

Sparked ignition engines

Compressed ignition engine

Generator set

Achievements

The successful operations of the BioNG production plant in Tawau, Sabah, marks the first commercial scale engineering, procurement, construction and commissioning (EPCC) by SIRIM engineers and researchers. We are also moving a step closer to ensuring that the industry has its own standards that help codify best practices, methods and technical requirements to create a safe and sustainable environment for the community. The SIRIM Industry Standard for BioNG (Specification for use as vehicle fuel) has been developed and is expected to be published in Q3 2019.

Challenges

It is not hard to produce BioNG, but it is difficult to make the product economically attractive. Product pricing remains a challenge because the local market for conventional natural gas is distorted by subsidies. However, once the subsidy rationalisation programme is complete, the playing field will be levelled and the prices will be determined by the market. At that point BioNG will be as competitive as conventional natural gas. Besides that, as the source of BioNG is remote from locations of use, lack of distribution infrastructure makes it inaccessible to many users.

Milestones

Delivering solutions for a sustainable, affordable and safe fuel to industry is our priority. We are leveraging on our seamless composite cylinder technology to safely transport compressed BioNG via a virtual pipeline system (VPS). VPS is an alternative mode of distribution for compressed gas with no pipeline access. Creating an ecosystem for the BioNG industry to flourish is a milestone toward which we are aspiring. Among others, we have been in talks with stakeholders on the standard and regulation aspects of the industry. We have also identified several gaps that need to be addressed.

IC INNOVATION - ENERGY MANAGEMENT

Report by:
Mohd Fauzi Ismail
Director, IC Innovation in Energy Management

The Industrial Centre of Innovation (ICI) in Energy Management has achieved several key milestones in promoting and championing sustainable energy and energy management for Malaysian industries. Pioneering Solar Thermal for Industrial applications, ICI in Energy Management successfully commissioned and handed over its first industrial scale solar thermal plant in Malaysia that also bagged the National and ASEAN Energy Awards in 2018. It also delved deeper into the Cleaner Production consultancy and audit at Sime Darby Plantation Oil Mill in Tanah Merah, Negeri Sembilan. There was a breakthrough in the commercialisation of the research & development of the MYLIPOS battery for the Solar Street lighting project for Taman Tasik, Section 7 in Shah Alam by Majlis Bandaraya Shah Alam (MBSA). As a technology developmental agency for Small and Medium Enterprises (SMEs), ICI in Energy Management has also carried out 24 Technology Audits on various industry sub-sectors from the SIRIM-Fraunhofer SME Development Programme.

> ***"There was a breakthrough in the commercialisation of the research & development of the MYLIPOS battery for the Solar Street lighting project for Section 7 Lake Garden in Shah Alam by Majlis Bandaraya Shah Alam (MBSA)."***

SOLAR THERMAL PLANT HANDOVER CEREMONY

On 24 September 2018, SIRIM and the United Nations Industrial Development Organization (UNIDO) successfully commissioned and handed over the first industrial scale solar thermal demonstration plant in Malaysia. The plant was designed to replace 80% of electricity for hot water supply used for the scalding process in chicken processing. The project was estimated to reduce 69 tonnes of carbon dioxide and resulted in RM50,000 of annual savings to the company, PPNJ Poultry and Meat Sdn Bhd.

The handover ceremony was graced by the Secretary General of the Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC), Datuk Seri Dr. Mohd Azhar Hj Yahaya, who represented MESTECC Minister, Yeo Bee Yin. Also present were the Chairman of Board of Directors of Pertubuhan Peladang Negeri Johor, Dato' Haji Saipolbahari Suib and President and Group Chief Executive of SIRIM, Prof. Ir. Dr. Ahmad Fadzil Mohamad Hani.

SIRIM and UNIDO have thus far successfully trained 167 professionals in expert training, 339 industry players in user training and over 630 people in the awareness programme on solar thermal technology. SIRIM has to date completed another three projects at Muslim Kitchen Sdn Bhd in USJ, Selangor Syarikat Aameen Sdn Bhd in Teluk Intan, Perak, and De Baron Hotel Sdn Bhd in Langkawi, Kedah.

FACTS AT A GLANCE

ICI in Energy Management has carried out

24

Technology Audits on various industry subsectors

RM50,000

of annual savings to PPNJ Poultry and Meat Sdn Bhd

SIRIM and UNIDO have thus far successfully trained

167 *professionals in expert training,*

339 *industry players in user training and over*

630 *people in the awareness programme on solar thermal technology*

IC INNOVATION - ENERGY MANAGEMENT

NATIONAL ENERGY AWARD 2018 & ASEAN ENERGY AWARD 2018

ICI in Energy Management, through its PPNJ Demonstration project submission, won a prestigious National Energy Award, under MESTECC, in the Off Grid Thermal category. At ASEAN level, the project won first runner-up in the same category. This was the first ever award won by the SIRIM team for the excellent application of green technology in industrial applications.

CLEANER PRODUCTION CONSULTANCY AND AUDIT

Historically, SIRIM under the ICI in Energy Management has had a good working relationship with the Department of Environment, Putrajaya in promoting cleaner production (CP) to the industries in Malaysia, especially the Small and Medium Enterprises (SMEs), since 2008. CP is a proactive approach in managing raw materials, products and utilities at the source to minimise the generation of industrial waste. Since 2014 the project approach has been more sector-specific with the aim to establish green industry practices among the industries in Malaysia and eventually lead to environmental legislation compliance. The activities include capacity building, hands-on CP audits, CP option project implementation, the development of green industry practice manual & guidelines handbook, and CP programme dissemination to similar industry premises. SIRIM has been the consultant for projects in the rice processing industry in 2014-15 and chicken slaughtering & processing industry in 2016-17. For 2018-19, SIRIM was given the task to implement the green industry practice programme for the crude palm oil mill processing industry.

The Tanah Merah palm oil mill in Negeri Sembilan, a mill under Sime Darby Plantations Sdn. Bhd, was selected as the host-factory for the CP programme. SIRIM has conducted a two-day training for the mill operators on the CP concept and approach. The training modules include the audit methodology, case studies, hands-on audit and group exercises. Besides that, CP option projects will also be implemented to improve mill operations and minimise the generation of industrial waste. Two projects have been identified: design and construction of sterilisation condensate holding pit and installation of a boiler header blowdown automation system. Both projects will commence in 2019.

SIRIM LITHIUM-ION BATTERY TECHNOLOGY

Lithium-ion batteries are the leading rechargeable battery technology for powering a wide range of mobile electronic gadgets. Today, lithium-ion batteries are used as energy storage for stationary applications and they will continue to find a diverse range of applications to power. Realising the importance of this technology, the ICI in Energy Management has embarked on a research & development effort to build its own energy storage technology. Today, it has successfully developed the SIRIM Lithium-Ion Battery technology from lithium iron phosphate cathode, which has excellent electrochemical and thermal stability. The MESTECC has provided funding through the Dasar Sains, Teknologi dan Innovasi Negara (DSTIN) flagship programme to develop a prototype of an energy storage system for stationary applications and to test its performance in the intended environment. As a result, the SIRIM Lithium-Ion Battery technology was successfully developed as energy storage for solar powered streetlights, power source for the Automatic Identification System for marine vessels and power backup for telecommunication towers.

> ***"Historically, SIRIM under the ICI in Energy Management has had a good working relationship with the Department of Environment, Putrajaya in promoting cleaner production (CP) to the industries in Malaysia, especially the Small and Medium Enterprises (SMEs), since 2008."***

IC INNOVATION - ENERGY MANAGEMENT

The ICI in Energy Management at SIRIM Kulim designed and fabricated an innovative solar powered streetlight with built-in lithium-ion battery and composite pole. The solar panel mounted on top of the pole collects solar energy during the day and stores it in a battery to power the LED lamp at night. The lithium-ion battery is encased within a custom fabricated composite pole which provides a safe environment for the battery to operate. The lightweight composite pole is extremely strong and can be easily carried to remote areas, making it a handy solution for the installation of solar powered streetlights. The lithium-ion battery does not require maintenance and lasts much longer compared to the lead acid battery. This innovative streetlight has attracted the interest of MBSA as the municipal plans to transform Shah Alam into a low-carbon city. The solar power streetlight is the perfect choice since it does not emit carbon and uses green energy. SIRIM Berhad was awarded the contract to supply 99 units of solar powered streetlights to be installed at Taman Tasik, Section 7, Shah Alam.

SIRIM, in collaboration with Teraju Tri-Tech Sdn Bhd, has developed the anti-piracy automatic identification system (APAIS). The APAIS system consists of an encrypted automatic identification system transceiver and electronic management system. It uses GPS coordinates and exchanges data on vessel position with nearby ships and base stations on the coast. This tracking system needs reliable power. Solar modules are used to power this system during the day but during the night they are switched off. This is where SIRIM plays an important role in offering the SIRIM Lithium-Ion Battery technology as a solution to power this system.

The energy storage system developed from the SIRIM Lithium-Ion Battery technology as power backup for the MAXIS telecommunication tower has caught the attention of Department of Irrigation and Drainage Selangor (JPS). JPS approached ICI in Energy Management in SIRIM Kulim seeking a reliable cordless energy storage to power the control for the tidal gate system. The tidal gates are currently solar powered with lead acid as their storage battery. JPS is keen to explore the possibility of replacing this battery with lithium-ion battery. A location study at Sungai Kelang has been conducted to determine the energy requirements for the tidal gate control system. SIRIM Lithium-Ion Battery can be custom designed and fabricated with larger backup energy storage and JPS has expressed interest in installing this technology at its site.

SIRIM Lithium-Ion Battery for solar powered streetlights.

SIRIM Lithium-Ion Battery for the APAIS system

SIRIM solar powered streetlights with built-in lithium-ion batteries and composite poles installed at Taman Tasik, Section 7, Shah Alam

GO AUTO AND SIRIM INKED STRATEGIC PARTNERSHIP COLLABORATION

Go Automobile Manufacturing Sdn Bhd (GAM), the manufacturing arm of Go Auto Group of Companies, and SIRIM Berhad signed a Memorandum of Understanding to form a long-term strategic collaboration and partnership between both parties on 14 August 2018 in Shah Alam.

IC INNOVATION - ENERGY MANAGEMENT

Signing on behalf of GAM was Dato' SM Azli SM Nasimuddin Kamal, Executive Director of Go Auto Group, and on behalf of SIRIM was Prof Ir. Dr. Ahmad Fadzil Mohamad Hani, President & Group Chief Executive of SIRIM.

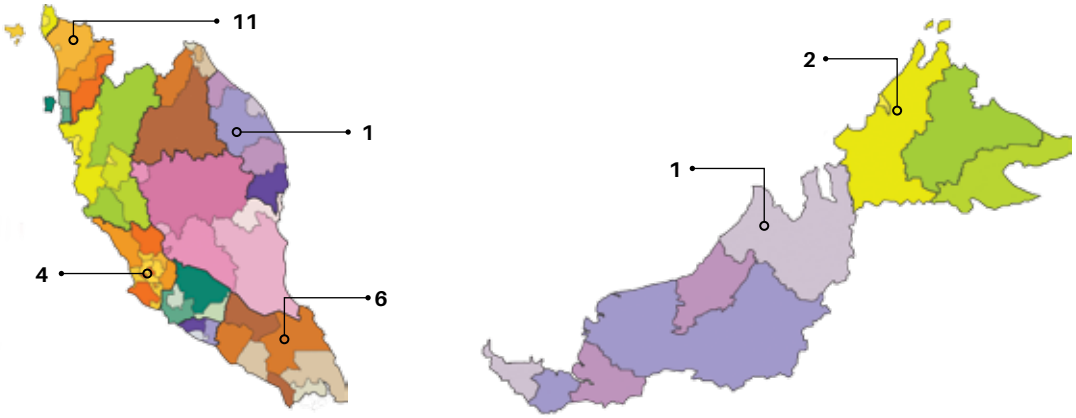
The essence of the strategic collaboration encompasses four main areas, which are development and improvement of products, technology, people and market or industry. Through this collaboration, GAM will be given access to the research facilities of SIRIM, whereas both parties will be cooperating in technical expertise, technology transfer and technical training with the aim of being able to execute project(s) or product(s) under this partnership.

Among the areas of collaboration are the development and improvement of the capability and capacity of lithium-ion based rechargeable batteries to replace lead-acid batteries in the automotive market, development of green vehicle technology which includes batteries for bicycles and motorcycles, and development of sodium-ion batteries as an alternative to lithium-ion batteries. Other areas include Rapid Prototyping and 3-D printing for MARA TVET students and Vehicle Type Approval Testing Facilities in e-mobility as mandated by the Road Transport Department (JPJ) and Ministry of International Trade and Industry (MITI).

> ***"The essence of the strategic collaboration encompasses four main areas which are development and improvement of products, technology, people and market or industry."***

TECHNOLOGY AUDITS

As at 31 December 2018, our qualified auditors have performed 24 technology audits at various location in Malaysia. Our customer location profile as shown in the map below exhibits that most of our customers are concentrated in the northern region, followed by the southern, and central and east coast regions and East Malaysia. In terms of the audit breakdown percentage, the regions contributed 50%, 46% and 5% respectively.



IC INNOVATION - ENERGY MANAGEMENT

Our customers represent a diverse range of industrial segments that include food and beverages (F&B), poultry, wood furniture, textiles and metals. The number of audited companies for each industrial segment is tabulated in the table below. The F&B industrial segment was the largest contributor at 67%, while the remaining percentage came from the other three industrial segments.

Industrial Segment	No. of Companies	Products
F&B	16	*Dried noodles, non-carbonated drinks, chicken & beef burgers, chicken & meat balls, jelly, fruit drinks, flavoured milk*
Machinery & electronics	*2*	*Cables and electrical products, automated machines & tester machines*
Furniture	*3*	*Sofas, beds, couches, saw milling*
Poultry	*2*	*Processed chickens*
Textiles	*1*	*clothes*
Total	***24***	

The technology audit provides companies with understanding of their strengths and weaknesses in technology management and the potential areas for productivity improvement. We continue to explore potential technology uptake projects that will contribute to the productivity improvement. Among the areas identified for potential projects are mechanisation and automation of manual process steps, fuel savings in regards to energy efficiency, alternative processes using renewable energy-based solutions, minimisation of waste via recycling and efficient operations and systems.

> *"The technology audit provides companies with understanding of their strengths and weaknesses in technology management and the potential areas for productivity improvement."*

SUMMARY

The overall achievements in sustainable technology applications and commercialisation in various industries and projects mark the beginning of more interesting years ahead. ICI in Energy Management will continue to build on current successes to further entrench its interest to be the 'Best Partner for Innovation', especially in sustainable energy and energy management services and project consultancy.

SUBSIDIARIES

SYNERGISING STRENGTHS,
BETTERING OUR FUTURE

SIRIM QAS INTERNATIONAL SDN BHD

Report by:
Mohd Azanuddin Salleh
Managing Director, SIRIM QAS International Sdn Bhd

FACTS AT A GLANCE

700
Product Certification licences

16,000
test reports

600
management system certificates

The year 2018 saw SIRIM QAS International assisting more than 10,000 customers to boost their market competitiveness, penetrate the global market and achieve business sustainability through its certification, inspection and testing services. There were almost 700 Product Certification licences and 16,600 test reports issued that year. Meanwhile, 600 organisations were certified under various management system certification schemes.

A key highlight in 2018 was the 30th IQNet General Assembly, which SIRIM QAS International hosted for the first time since we became an IQNet member in 2006. Through IQNet, we have partners in 34 countries that recognise our management system certificates and provide us with access to more than 22,000 auditors worldwide. The IQNet General Assembly, which is an annual gathering of IQNet Partners for networking and knowledge sharing on management system certifications, was attended by almost 60 delegates from 27 IQNet Partners from around the world.

IQNet certificate presentation to Lembaga Tabung Haji during 30th IQNet General Assembly, Kuala Lumpur

FACILITATING TRADE

In 2018, SIRIM QAS International was recognised by the GCC Standardization Organization (GSO) as a Notified Body. As a GSO Notified Body, we are authorised to provide product certification services under the Gulf Conformity marking system for Low-Voltage Electrical Equipment and Appliances. This means that manufacturers of electrical products can obtain the G Mark from SIRIM QAS International to gain market access to the Gulf Cooperation Council (GCC) countries.

Prior to being accepted as a GSO Notified Body, SIRIM QAS International had to undergo a stringent audit for ISO/IEC 17065 accreditation by the GCC Accreditation Centre. This accreditation is a testament that our capabilities are at par with other foreign Conformity Assessment Bodies (CABs) in the world.

Another service newly offered by SIRIM QAS International to facilitate trade is our Market Access services, whereby our experts can guide exporters and importers in complying with the relevant legal, product safety and performance requirements related to their products.

> ***"Prior to being accepted as a GSO Notified Body, SIRIM QAS International had to undergo a stringent audit for ISO/IEC 17065 accreditation by the GCC Accreditation Centre."***

SIRIM QAS INTERNATIONAL SDN BHD

Besides that, SIRIM QAS International can now issue the CB Test Report and CB Test Certificate for electromagnetic compatibility (EMC) testing under the IECEE CB Scheme. This can be used as a basis for certification in numerous countries, thus enabling manufacturers to avoid being subjected to high costs and delays due to multiple testing and approval procedures for adherence to the certification criteria in different countries.

G Mark

Market Access

EMC CB Test Report & Certificate

INNOVATING FOR CUSTOMER COMPETITIVENESS

The year 2018 saw SIRIM QAS International introducing a suite of new certification services as innovative solutions to enable our customers to compete globally. Independent assessment of the conformity of a process or product to a particular standard ensures that our customers perform to a high level of excellence.

The new ISO 18295:2017 Customer Contact Centre Certification Scheme was well received by organisations keen on enhancing customer experience with their customer contact centres. SIRIM QAS International also introduced the Auto Service Management System Certification for MS 2697:2018 and MS 2696:2018 standards for the benefit of the automotive aftermarket businesses, which include repair, service and spare parts businesses.

Visit by FMM to test laboratories

For the education sector, SIRIM QAS International introduced the ISO 21001:2018 Educational Organisations Management Systems (EOMS) Certification Scheme, which is applicable to formal education providers, including institutions of higher learning, and the ISO 29993:2017 Learning Service Provider (LSP) Certification Scheme, which focuses on the quality of learning services outside formal education, such as in-company training.

As for the tourism industry, SIRIM QAS International offered the MS 2610:2015 Muslim Friendly Hospitality Services Certification Scheme, which provides an independent assurance to Muslim travellers that the hospitality products and services provided are Shariah-compliant. Meanwhile, organisations wishing to demonstrate the efficacy of their professional security operations to their stakeholders were offered the ISO 18788:2015 Security Operations Management System (SOMS) Certification Scheme.

Customer Contact Centre ISO 18295

Auto Service MS 2696 & MS 2697

Learning ISO 21001 & ISO 29993

Muslim Friendly Hospitality MS 2610

Updates & Networking Session for Sarawak region

SIRIM QAS INTERNATIONAL SDN BHD

> *"SIRIM QAS International had aggressively reached out to new customers in 2018 to promote its services through social media platforms, seminars, update sessions and advertisements."*

We also offered the Good Manufacturing Practices (GMP) certification to cosmetics manufacturers who wish to demonstrate that their facilities meet the operational and environmental conditions specified in the ISO 22716:2007 standard to produce safe and quality cosmetics.

Besides that, 2018 saw SIRIM QAS International taking over from SIRIM Berhad the material integrity and analysis services, which include failure investigations, on-site inspections and laboratory testing. This complements the existing services of SIRIM QAS International, especially engineering inspection.

SIRIM QAS International expanded our range of testing services with the introduction of brake testing for vehicles weighing less than five tonnes and pre-mix bitumen testing to assess the quality and endurance of surfaced roads.

We will continue to innovate and roll out new services to meet changing industry needs. Those in the pipeline encompass mobile testing units for consignment testing of electrical appliances and Malaysian Sustainable Palm Oil (MSPO) Supply Chain certification, as well as a new test facility for external cladding systems for buildings. We also expect to establish a complete infrastructure for Photovoltaic (PV) Module testing in 2019.

Besides that, SIRIM QAS International also regularly has stakeholder engagements to foster better relationships with our stakeholders and to understand their requirements and challenges so that we can further improve our existing services and innovate new services to cater to changing industry needs. These include regular meetings with trade associations, regulatory bodies and government agencies.

In addition, SIRIM QAS International had aggressively reached out to new customers in 2018 to promote its services through social media platforms, seminars, update sessions and advertisements.

PETRONAS Refinery & Petrochemical Corporation Sdn Bhd (PRPC) was the first organisation certified to ISO 45001, ISO 18788 and ISO 29993 by SIRIM QAS International

SIRIM QAS INTERNATIONAL SDN BHD

SAFEGUARDING CONSUMERS

While helping our customers strive for business sustainability, we also remained steadfast in our role to safeguard consumer interests in the areas of product quality and safety. Indeed, we are mindful that the work we do has a real impact on people's lives, be it in terms of quality, safety or environmental sustainability. SIRIM QAS International continues to play a pivotal role in ensuring the safety of Malaysian consumers through our Product Certification Scheme. To continuously maintain public confidence in the SIRIM Product Certification Scheme, we introduced a new SIRIM label with a QR code feature for motorcyclist helmets. This will enable consumers to check the authenticity of the SIRIM label affixed on a motorcyclist helmet, thus giving them the assurance that they are purchasing a SIRIM certified helmet which complies with the MS1 Malaysian standard.

Announcement of SIRIM label with QR code for motorcyclist helmet

> ***"SIRIM QAS International continues to play a pivotal role in ensuring the safety of Malaysian consumers through our Product Certification Scheme."***

Visit by Suruhanjaya Tenaga to Photovoltaic Module testing laboratory

In the interest of consumer safety, Suruhanjaya Tenaga has been encouraging manufacturers and importers of domestic gas cooking appliances to test, certify and label these appliances with the SIRIM-ST label. Similarly, the Ministry of Domestic Trade and Consumer Affairs is also encouraging manufacturers and importers of secondary batteries to come to SIRIM QAS International for testing and to obtain the necessary certification.

Moving forward, SIRIM QAS International expects the year ahead to be a challenging one. However, by focusing on creating value for customers through better customer service and innovative solutions to help them compete globally, we are confident of weathering the economic headwinds of 2019 and delivering yet another solid performance.

SIRIM STS SDN BHD

Report by:
Dr. Norlinda Mohd Zawawi
Chief Executive Officer, SIRIM STS Sdn Bhd

MALAYSIAN STANDARDS DEVELOPMENT ACTIVITIES

The Standards Department of SIRIM STS Sdn Bhd (SSTS) was appointed as one of the Standards Development Agencies (SDAs) by the Department of Standards Malaysia to oversee standardisation activities across the board. This includes developing Malaysian Standards (MS), managing MS development infrastructure, managing Malaysia's participation at international standards bodies such as ISO and IEC, promoting the implementation of MS by organising events such as seminars and workshops, and sales of standards.

In 2018, there were 16 new MS developed and 55 revised, making a total of 71 MS submitted to the Department of Standards Malaysia. A total of 89 published MS were confirmed in 2018 with another 58 withdrawn for various reasons. As of August 2019, there are 4,130 MS published on behalf of the Department of Standards Malaysia.

Standards Department managed 320 Technical Committees (TCs) and Working Groups (WGs) which reported to 18 Industry Standards Committees (ISCs) across industry sectors. One hundred and ninety-one of these TCs and WGs functioned as National Mirror Committees (NMCs) responsible for managing international standardisation activities, including reviewing and voting on documents issued by ISO and IEC. In 2018, Standards Department conducted 415 meetings to deliberate inputs for MS as well as responses on international documents.

INTERNATIONAL STANDARDISATION ACTIVITIES

Standards Department managed Malaysia's participation in international standardisation activities at ISO and IEC through various TCs and WGs as a participating member (P-member) or an observer member (O-member). Its active participation culminated in 2,135 votes on documents issued by the committees, as reflected in the table below:

Membership Type	P-member	O-member	Total
ISO	115	100	**215**
IEC	38	71	**109**
ISO/IEC JTC	18	8	**26**
Total	171	179	**350**

Committee	No. of Documents Voted
ISO	1,493
IEC	642
Total	**2,135**

Besides this, the Standards Department of SSTS managed the Ninth Meeting of IEC/TC 115 on High Voltage Direct Current (HVDC) Transmission for DC Voltage Above 100kV in Kuala Lumpur from 12-16 November 2018. There were 44 participants from 11 member countries of IEC/TC 115.

PROMOTIONAL ACTIVITIES ON AWARENESS OF STANDARDS

A total of 28 seminars, workshops and national consultation sessions were organised by Standards Department, where six seminars and four national consultation sessions were managed on behalf of Department of Standards Malaysia. These seminars were attended by 2,121 participants across the board, including government agencies and industries.

FACTS AT A GLANCE

16
new MS developed

55
MS revised

71
MS submitted to the Department of Standards Malaysia

SIRIM STS SDN BHD

SALES OF STANDARDS

Standards Department is an appointed sales agent for MS and other standards, including International Standards (e.g. ISO, IEC & ITU) and Foreign Standards (e.g. British Standards & Australian Standards). Apart from that, the department also sells Codes, Association and Organisation standards (e.g. NFPA, AASHTO, ASTM & AIAG) and SIRIM Industry Standards (SIS), including SIRIM ECO standards.

A total of 14,299 copies of MS were sold including 6,902 copies sold online. The number of international and foreign standards sold was 883.

SIRIM Standards Store, which is the platform to facilitate online purchases of standards, in particular SIS, has recorded 231 copies of standards sold in 2018.

FACTS AT A GLANCE

14,299
copies of MS sold

"The SIRIM Library Membership Scheme sees a membership of 342 companies, organisations and government agencies reaping the benefits of access to the most comprehensive collection of International, Foreign, Association and Malaysian Standards."

Roadshow on ISO scuba diving standard & awareness ratings on safety standard, training standards and dive centre standards

WORLD TRADE ORGANISATION/TECHNICAL BARRIERS TO TRADE (WTO/TBT) ENQUIRY POINT AND TECHNICAL LIBRARY

The National World Trade Organisation/Technical Barriers to Trade (WTO/TBT) Enquiry and Notification Point circulated more than 3,065 notifications throughout the year from other WTO member economies through the SIRIM Export Alert System, presenting more than 500 subscribers with timely notifications on proposed changes to regulations and standards of foreign countries.

On the home front, five notifications on new regulations and one notification on corrigenda to Malaysian technical regulations have been forwarded to WTO; these were on food regulations – feeding bottles and teats, approval for sale of food, kelulut honey or stingless bee honey, supplemented food (Food Safety and Quality Division, Ministry of Health) and drug-medical device and medical device-drug combination products (National Pharmaceutical Regulatory Authority, Ministry of Health). Additionally, 12 local and foreign enquiries were received and responded accordingly.

The SIRIM Library Membership Scheme sees a membership of 342 companies, organisations and government agencies reaping the benefits of access to the most comprehensive collection of International, Foreign, Association and Malaysian Standards.

SIRIM STS SDN BHD

SIRIM INDUSTRY STANDARDS (SIS)

Consultancy services on the development of industry and organisation standards, a service which was undertaken by the department in 2018, saw collaborative efforts in industry standards development for organisations such as Public Works Department, Nano Verify Sdn Bhd and Demi Idaman Sdn Bhd.

Overall, there were 11 SIRIM Industry Standards (SIS) developed in 2018, as listed below:

No.	Standard No.	Title
1	SIRIM 16:2018	Best practices in implementing energy management for Small and Medium Enterprises (SMEs)
2	SIRIM 17:2018	Specification for unplasticised poly(vinyl chloride) (PVC-U) inner spiral rib pipes and fittings for rainwater piping systems
3	SIRIM 21:2018	Specification for fineness and marking of gold bullion
4	SIRIM 22:2018	Good practices for the handling and processing of shrimps
5	SIRIM 23:2018	Requirements for key processes for organisations performing remanufacturing
6	SIRIM 24:2018	Guidelines on quantification of material and cost based on the material flow cost accounting (MFCA) concept for manufacturing organisation
7	SIRIM 25:2018	Specification for recycled paper pallets
8	SIRIM 26:2018	Kod amalan pemprosesan surimi, otoshimi dan produk berasaskan surimi dan otoshimi
9	SIRIM 27:2018	Kod amalan baik bagi pembuatan dan pemprosesan ikan kering masin
10	NVSB 02:2018	Surface properties testing of products containing nanomaterials - Requirements
11	NVSB 03:2018	Electrical properties testing of products containing nanomaterials - Requirements

MARKET ACCESS CONSULTANCY

Engaging companies with knowledge and support to reduce barriers to market access is one of the Standards Department's initiatives on market access consultancy. This service guides companies on product compliance with standards requirements, ensuring product acceptance by regulators and consumers. There were five companies that applied for the Market Access Consultancy programme and three companies agreed to participate in the programme.

Under the SIRIM-Fraunhofer programme, a training session on SIRIM/MOA 1:2017, Good practice for primary processing of post-harvested herbs, was held on 27 September 2018 in Penang for members of the Traditional Malay Medicine Manufacturers Association (Purbatama). Another training session under the same programme featuring SIRIM MOA 1:2017, and SIRIM MOA 2:2017, Good practice for the production of herbal extracts – Aqueous and/or ethanolic extraction, was conducted from 13-14 November 2018 in Shah Alam for Dewan Perniagaan Perubatan Tradisional Malaysia. Twenty-four companies attended these two training sessions.

" This service guides companies on product compliance with standards requirements, ensuring product acceptance by regulators and consumers. "

SIRIM STS SDN BHD

TRAINING ON STANDARDS IMPLEMENTATION

Two training sessions on Standards Implementation were conducted in 2018.

A training session on halal food packaging, which was based on MS 2565:2014, Halal packaging – General guidelines, was held on 4 December 2018 for Politeknik Sultan Haji Ahmad Shah, Pahang.

Four training sessions on MS 2697:2018, Motor vehicle aftermarket – Repair, reuse, recycle and remanufacture (4R) for parts and components – Code of practice and MS 2696:2018, Motor vehicle aftermarket – Service and spare parts (2S) – Code of practice, in collaboration with the Malaysia Automotive Institute (MAI), were held for the motor vehicle aftermarket industry, including workshop and authorised treatment facilities.

STANDARDS CONSULTANCY SERVICES

Standards Department has also developed the Audit Checklist for Certification Schemes for ASEAN Good Aquacultural Practices (ASEAN GAqP) for the Department of Fisheries.

TRAINING AND CONSULTANCY DEPARTMENT ACHIEVEMENTS FOR 2018

In 2018, the Training and Consultancy Department (TCD) of SSTS successfully organised 815 training courses for 822 organisations, involving a total of 14,591 participants. Of these organisations, 199 were made up of SMEs. In terms of guidance and consultation, TCD has secured 60 new consulting or collaborative projects.

TCD continues to focus on core guidance and training services related to quality, technology and best practices. These include guidance and training for Standards Based Management Systems such as ISO 9001, MS 1900, MS 2300, MS 2400, ISO 14001, ISO/IEC 17025, ISO/IEC 17020, ISO/IEC 17021, ISO 15189, ISO 13485, HACCP, ISO 22000, ISO 27001, ISO 50001, ISO 55001, TS 16949, OHSAS 18001, Integrated Management System, GMP, GHP and Halal (MS 1500).

Besides that, TCD also offers guidance and training for Tools, Techniques for Quality and Best Practices such as TQM, 5S, Green 5S, 7 QC Tools, SPC, ICC/QCC, 6 Sigma, Kaizen, Customer Service Management, TPM and Lean Management. TCD has also implemented technology-related training such as Certified Programme on API, Certified Welding Engineers-AWS, Certified Welding Inspectors-AWS and Certified Programme on NDT (approved by Jabatan Pembangunan Kemahiran).

Several new products and services were introduced in 2018. Among them are Personnel Certification programmes such as Certified MSPO Internal Lead Auditor; Lead Auditor courses such as ABMS Lead Auditor, ISO 45001 Lead Auditor and ISO 14001 Lead Auditor; AS 9100 and MS 2058. Through a smart partnership with Open University Malaysia (OUM), TCD has trained and qualified 14 Master of Quality Management OUM students for Certified Quality Manager and Certified Quality Professional.

A total of 36 organisations have been successfully guided towards obtaining various certifications and recognitions. Twenty-eight organisations were assisted for Standards Based Management Systems such as ISO 9001, ISO 27001, ISO 14001, ISO 55001, ISO 17020, SPK and GMP. Eight organisations have been assisted to achieve the Green 5S Recognition Scheme.

TCD has conducted ISO 17025 training in China and Uganda. In collaboration with the World Association of Industrial and Technological Research Organizations (WAITRO), TCD conducted ISO 17025 and Halal courses for organisations in Nigeria. TCD has also conducted training on ISO 15189 for participants from Sri Lanka.

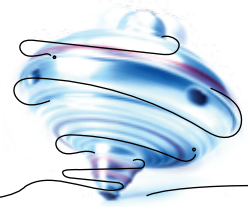
> ***"TCD continues to focus on core guidance and training services related to quality, technology and best practices."***

815
training courses organised for 822 organisations

14,591
total participants in training courses

SIRIM STANDARDS TECHNOLOGY SDN BHD

Report by:
Abdul Ghani Abdul Rahman
Chief Executive Officer, SIRIM Standards Technology Sdn Bhd



> ***"As an ISO 17025 certified lab, SST can offer a comprehensive and diversified range of calibration and measurement services and be a one-stop centre for our customers. SST serves approximately 3,000 companies on average per annum."***

Calibration & Measurement Fields

- *Electrical*
- *Dimensional*
- *Temperature*
- *Force and Pressure*
- *Mass and Volumetric*

SIRIM Standards Technology Sdn Bhd (SST) provides a wide range of services with full traceability to National and International standards to cater for a complete range of calibrations and measurements across five fields: electrical, force and pressure, temperature, dimensional and mass and volumetric.

In recognition of our quality system and competency, all our calibration service centres are accredited with ISO 17025 by the Department of Standards Malaysia. SST accredited labs are located throughout Malaysia: in Selangor, Johor, Penang, Sarawak and Pahang.

SST provides Innovative Business and Technology solutions to meet the needs of diversified market sectors such as Oil & Gas, Manufacturing, Aviation, Semiconductors/Electronics, Utilities, Education, Defence, Automotive, Telecommunications, Agriculture, Healthcare and Construction. As an ISO 17025 certified lab, SST can offer a comprehensive and diversified range of calibration and measurement services and be a one-stop centre for our customers. SST serves approximately 3,000 companies on average per annum.

FACTS AT A GLANCE

We serve approximately

3,000

companies on average per annum

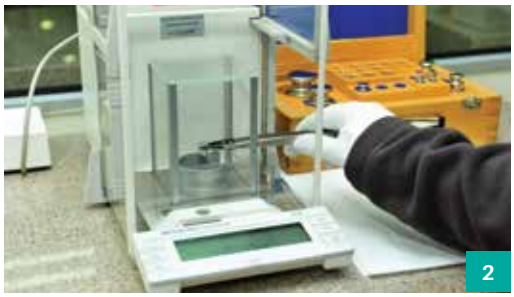
ACCREDITED LABS

In 2018, SST successfully renewed contracts with two major customers and obtained an extension of the ISO/IEC 17025. The Contract for Calibration Services with Malaysia Marine & Heavy Engineering (MMHE) has been extended for 3+2 years starting from 4 April 2018. Another two-year contract extension was successfully secured with Keysight Technologies for Repairs and Calibration Services starting from 1 July 2018.

During the year, Pahang Lab expanded its electrical calibration capability and obtained new scope in ISO/IEC 17025 Laboratory Accreditation by the Department of Standards Malaysia through the acquisition of a new standard equipment – Multifunction Calibration Fluke 5522A. Under the National Laboratory Accreditation Scheme (SAMM) on Electrical Calibration, the capability of Pahang Lab now covers the full scope from low to medium-end and on-site calibration.

SIRIM STANDARDS TECHNOLOGY SDN BHD

Moving forward, SST is currently implementing key strategies that focus on gaining a bigger market share and maximising revenue in calibration services as well as providing total solutions to our existing and potential customers. Among our key strategies are to expand our current product/business in the repairs and maintenance sector, align calibration capabilities with focused industrial sectors, i.e. Aerospace, Automotive, Rail and Oil & Gas, grow new revenue streams through contractual customers and forge strong, strategic partnerships with Original Equipment Manufacturers (OEM).



1. Electrical Lab 2. Mass and Volumetric Lab 3. Force and Pressure Lab 4. Temperature Lab 5. Dimensional Lab

SIRIM MEASUREMENTS TECHNOLOGY SDN BHD

Report by:
Zulkifli Mohd Sahalan
Chief Operating Officer, SIRIM Measurements Technology Sdn Bhd

> ***"Being the latest development in the calibration & measurement world, this investment will augur well in leading SMT into future profitable partnerships."***

SIRIM Measurements Technology Sdn Bhd (SMT) provides a wide spectrum of Calibration and Industrial Maintenance (IM) services to multiple industry players, focusing on electrical and electronic (E&E) markets. Serving from our headquarters in Shah Alam and sales & service centre in Penang, SMT also offers modern Radio Frequency (RF) and Electrical calibration, measurement and repair services within the Permatang Pauh Laboratory.

For 2018, SMT continued to invest extensively in extending and upgrading its current capabilities to better serve its customers. Arguably the only ISO 17025-certified RF lab in Malaysia with measurements up to 50GHz, SMT has also added new calibration systems for the PXI modular test instrumentation to cater to the demand throughout Malaysia and the region. Being the latest development in the calibration & measurement world, this investment will augur well in leading SMT into future profitable partnerships.

KEY ACHIEVEMENTS IN 2018

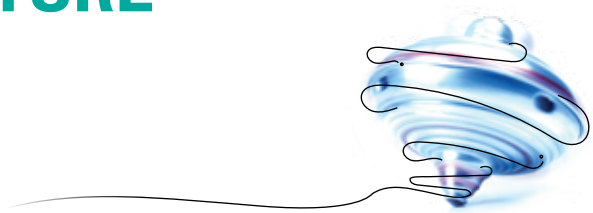
Motorola Solutions Penang continued its strong relationship with SMT through its contract for total solutions in E&E calibrations and repairs. This would be the penultimate year of services rendered, with both sides achieving mutual goals in meeting all assigned KPIs and cost-saving initiatives.

The contract with TMNet for comprehensive services and support for its IP Broadcast Centre entered its first full year of operations and served as a solid launch pad for SMT to expand further into the Industrial Maintenance segment.

New major calibration contracts were inked in 2018 with the Robert-BOSCH group to serve all its three sites in Malaysia and ecosystem vendors.

SIRIM TECH VENTURE SDN BHD

Report by:
Ajmain Kasim
Chief Executive Officer, SIRIM Tech Venture Sdn Bhd



SIRIM Tech Venture Sdn Bhd (STV) continues to position itself in the technology commercialisation fraternity by engaging and associating with various partners – from start-up companies and small and medium companies to some public listed and well known conglomerates in the market. While engaging in our mission of accelerating business commercialisation, many efforts has been conducted towards achieving the SIRIM 10Y Strategic Plan which, according to one of the strategic initiatives classified under ST2.2, would eventually position STV as the referral commercialisation hub for Malaysia.

The technology or product ready for commercialisation is evaluated and tagged into a 'Technology Docket', a virtual database that holds ready technologies or products to be offered to the potential technology taker for commercialisation pathways (Licensing, Outright Sale, Joint Venture or Strategic Alliances). Currently there are 13 technologies and products at various commercialisation stages and negotiations with potential technology takers. In 2018, STV carried out various efforts to increase the sources of the Technology Docket by conducting both internal and external means of technology scouting. External sources are mainly from academia, industry and IP owners, and include local and foreign sources. Our partners from academia include Universiti Multimedia (MMU), Universiti Teknologi Petronas (UTP), Universiti Teknologi Malaysia (UTM), Universiti Sains Malaysia (USM), Universiti Industri Selangor (UNISEL) and Management and Science University (MSU).

STV continues to provide services such as commercialisation, fabrication and testing of composite cylinders, business commercialisation and skills development in micro-precision grinding.

FACTS AT A GLANCE

13
technologies and products at various commercialisation stages and negotiations

We create value for our customers uniquely through commercialisation services that include the development of business plans covering aspects of market, financial and resources management. They also cover technology intelligence that encompasses:

1	2	3	4	5
Techno-economy analysis	Technology transfer for commercialised technologies	Technology Market Radar (TMR)	Technology scouting	Technology upscaling

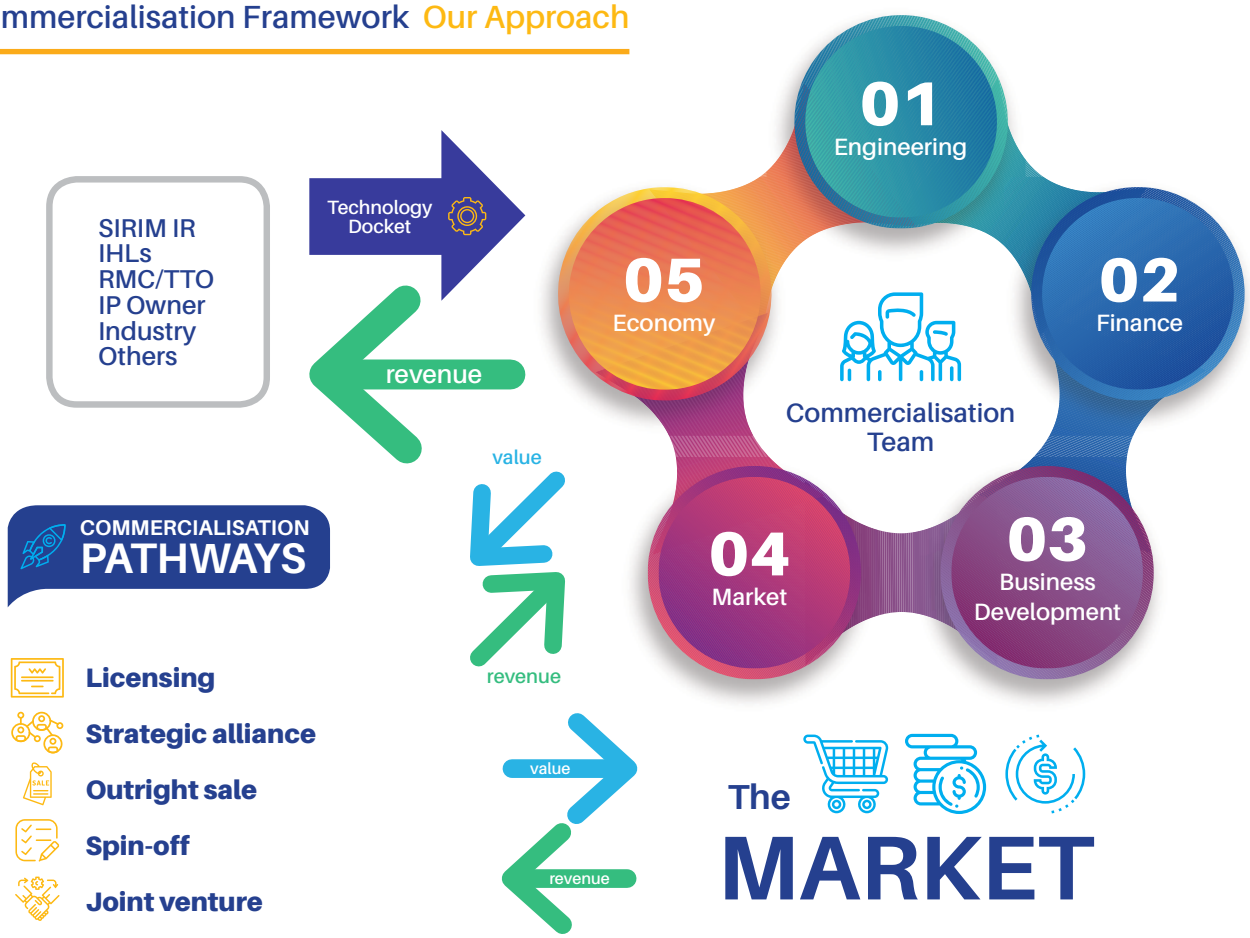
> ***"We create value for our customers uniquely through commercialisation services that include the development of business plans covering aspects of market, financial and resources management."***

SIRIM TECH VENTURE SDN BHD

As STV is in the second year of executing its mandate, we are focusing on the effective and efficient delivery of services, by putting proactive efforts in scouting and managing pre-Technology Docket initiatives, and conducting a verification of technology readiness through the criteria of Technology Readiness Level (TRL). TRL is a methodology of estimating technology maturity during the acquisition process.

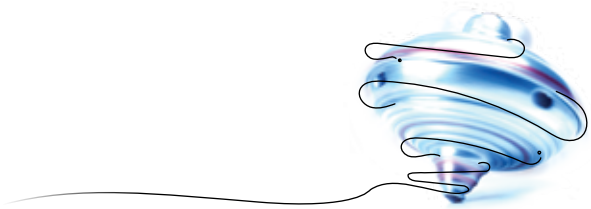
STV witnessed numerous achievements during the year. Among others, we successfully commercialised the Underwater Fish Attracting LED Lamp (UFAL) for aquaculture applications to Alion Nation Solutions Sdn Bhd. We also handled two other projects, namely the Composite LPG that touts a five-kilogram capacity and Anaerobic Digester with a capacity of 500kg/day.

Commercialisation Framework Our Approach



GRANULAB (M) SDN BHD

Report by:
Dr. Fazilah Fazan
Chief Operating Officer, Granulab (M) Sdn Bhd



Granulab (M) Sdn Bhd (GranuLab), a wholly-owned subsidiary of SIRIM Tech Venture Sdn Bhd (STV), was established in 2006 and is the sole synthetic bone graft manufacturer in Southeast Asia. The BioNexus Status Company (BNX 100217) has its manufacturing facility in Shah Alam, Selangor, which is GMP ISO 13485:2016 certified by BSI Netherlands and operates under the manufacturing licence A017866, producing high quality bone substitute materials. These products are used in Orthopaedic, Dental and Oral Maxillofacial surgeries through bone grafting procedures. The manufacturing facility has a capacity to produce up to 350kg of synthetic bone grafts per year. The types of bone grafts manufactured are based on Hydroxyapatite (HA), Tri-calcium phosphate (TCP) and Tetra-calcium phosphate, produced in various forms, shapes and sizes for clients, hospitals and patients.

GranuMaS® is a first-of-its-kind bone graft material and is certified CE by BSI with Halal recognition by Jabatan Kemajuan Islam Malaysia (JAKIM). With the growing need for customised products by surgeons for patient-specific applications, a product of GranuLab which has seen an increased demand is Synthetic Bone Construct (SBC). GranuLab is also continuing with its product development initiatives to bring new products into the market.

ABOUT GranuMaS®

GranuMaS® is an HA bone graft made of calcium phosphate, which is similar in nature to human bone mineral, and is a Class D medical device according to the Medical Device Act 2012. It is used for non-load bearing applications in Orthopaedic, ENT, Dental and Maxillofacial surgeries.

The production of GranuMaS® conforms to the ASTM F1185-88 Standard for composition of ceramic HA for surgical implants and ISO 13779 Standard for surgical implants from HA.

This product has been registered under the Approved Product Purchase List (APPL) in 2018, as required by the Ministry of Health Malaysia, with the signing of a central contract with Pharmaniaga for it to be used by the local hospitals. In view of this and the continuous engagement with hospitals and surgeons, the product has seen an increase in application among orthopaedic and dental surgeons in both government and private hospitals.

> ***"GranuMaS® is a first-of-its-kind bone graft material and is certified CE by BSI with Halal recognition by Jabatan Kemajuan Islam Malaysia (JAKIM)."***

GRANULAB (M) SDN BHD

GranuMaS® has also obtained Halal certification from JAKIM in January 2018 as consumer goods, which has added value to the quality of the product and increased its acceptance by surgeons and patients compared with products manufactured from animal bones or other forms. GranuMas® is produced in granules, cubes, chips and pins for various applications in orthopaedic and in dental surgeries.

Cubes

Chips

Pins

Granules

GranuMaS® used to treat cavity defect due to cysts

ABOUT SYNTHETIC BONE CONSTRUCT (SBC)

GranuLab has been in constant engagement with orthopaedic surgeons and clinical consultants in 2018 to facilitate the sharing of knowledge and ideas and explore other effective applications of our company's products to treat patients. This has resulted in the development of custom-made bone constructs for use by orthopaedic surgeons to treat segmental bone defects or injuries due to trauma, non-union cases or even diseased bones.

SBC is an osteoconductive and biodegradable product comprising more than 50% calcium phosphate materials, with the main compound being a combination of tri-calcium phosphate and tetra-calcium phosphate, which are highly resorbable in the human body. SBC's porous structure allows bone regrowth to take place in situ.

The original powdered state of SBC allows it to be formed into solids of various shapes and sizes using moulds, including discs as fillers of segmental bone loss or pellets, blocs and other bespoke shapes of various sizes and thicknesses. The surgeons have acknowledged the ease of use and effectiveness of this product in treating their patients in 2018.

ACCREDITATION

As an internationally recognised medical device manufacturer and distributor, the company ensures that it continues to maintain a high standard through accreditation and certification by international bodies. GranuMaS® underwent an annual audit for ISO 13485:2016 and CE Mark certification by BSI Netherlands, and successfully retained both certifications for 2018. This recognition allows the potential of market access and strategic expansion for GranuLab to the Asia Pacific and Middle Eastern regions.

GRANULAB (M) SDN BHD

Continuous Medical Education (CME) by GranuLab held at Hospital Queen Elizabeth, Kota Kinabalu

> ***"The year 2018 saw an increase in the number of hospitals that preferred GranuMaS® as their choice of bone grafts."***

PROMOTIONAL ACTIVITIES

In 2018, GranuLab participated in and organised various promotional initiatives, such as exhibitions, continuous medical education, continuous dental education and seminars, to engage with stakeholders, both from private and government hospitals, and introduce and share knowledge of both GranuMaS® and SBC.

GranuLab organised a series of 12 continuous medical education and continuous dental education activities in 2018. Some of the participating hospitals included Hospital Raja Perempuan Bainun, Ipoh, Hospital Sungai Buloh, Hospital Tuanku Ampuan Rahimah, Hospital Queen Elizabeth Sabah and Hospital Besar Kuching Sarawak. These were supported by surgeons who shared their experience on the use of our products in treating patients. GranuLab also set up an information counter to display and demonstrate the preparation and use of the products and to answer enquiries.

The year 2018 saw an increase in the number of hospitals that preferred GranuMaS® as their choice of bone grafts. Among the hospitals currently using GranuMaS® are Hospital Kajang in Selangor, Hospital Batu Pahat in Johor, Hospital Sultanah Nur Zahirah in Terengganu and Avisena Holding Hospital in Shah Alam.

SBC, which was introduced in mid-June 2018, also saw a steady growth in demand due to the continuous medical education activities and through our participation in promotional initiatives and continuous engagement with surgeons. Hospitals that have used SBC in their operating theatres with effective results include Hospital Shah Alam and Hospital Sungai Buloh, both in Selangor, and IIUM Medical Centre in Kuantan, Pahang.

In addition, GranuLab also participated in the following exhibitions: Malaysia – International Dental Exhibition and Conference (MIDEC) at KLCC and Malaysia Orthopaedic Association (MOA) with Paper Presentation in Penang.

INTERNATIONAL BUSINESS

In 2018, GranuLab obtained three licences from the Ministry of Health in Indonesia for GranuMaS® granules, cubes and chips in its effort to expand its market into Indonesia. GranuLab also engaged distributors in Indonesia to reach the local orthopaedic and dental surgeons effectively. Some of the promotional activities GranuLab participated in and organised in Indonesia were INDEM Dental Exhibition in Jakarta and MUKISIIHEX 2018.

Besides Indonesia, GranuLab also ventured into Brunei Darussalam with GranuMaS® and organised a continuous medical education activity at Hospital RIPAS Brunei for both orthopaedic and dental applications. After acquiring Halal status, GranuLab participated in various exhibitions in the Middle East such as the Arab Health Exhibition in Dubai with the intention of reaching out to the Muslim majority market. Discussions were held with potential distributors and surgeons participating during the event.

In 2018, GranuLab also held discussions with Malaysia External Trade Development Corporation (MATRADE) to seek its cooperation and advice with regards to international market access. Regular discussions were also held with Malaysia Medical Device Authority to keep updated on the latest regulatory requirements.

GranuLab participating in exhibitions in Dubai

DEVELOPMENTAL AND BUSINESS UNITS & NATIONAL PROJECTS

GROWING CAPABILITIES,
ELEVATING THE NATION

PACKAGING AND SECURITY DESIGN CENTRE

Report by:
Sulaiman Arshad
Chief Executive Officer, Packaging and Security Design Centre

The Packaging and Security Design Centre (PSDC) successfully executed the following business activities during the reporting period. The table below shows the business activities and section/department that contributed to each activity's successful completion.

Business Activity	Section/Department
Packaging Design (INNOPACK)	PDS
Green and Advanced Packaging (GreenBlue Packaging)	GAPS
BizTransformation	GAPS
Security Design (SecureDoc, SecureLabel, SecurePack)	LSDS
General Printing	LSDS
Special Projects – ECERDC-SIRIM, SIRIM Fraunhofer	Special Project, TOD

The achievements in 2018 are as below:

(a) Packaging design	(b) Security Design
RM4,834,546	**RM8,222,415**

2.1 INNOPACK programme

The INNOPACK programme focuses on entrepreneur packaging development – from basic labelling product surface treatment to complete design and printing of the packaging according to the requirements of local and international markets. PSDC assisted 800 small start-up companies in developing their brand, the registration of intellectual property, designing labels and improving product presentations. PSDC conducted trainings and innovatively produced new packaging designs for 200 entrepreneurs, successfully marketing their products in local hypermarkets. In furtherance, 20 entrepreneurs have entered the international market, mainly China, Middle East, Brunei and Singapore.

FACTS AT A GLANCE

assisted approximately
800
small start-up companies under the INNOPACK programme

84
companies benefited from the SIRIM-Fraunhofer programme

4
Malaysia Good Design Mark awards won from Malaysia Design Council

PACKAGING AND SECURITY DESIGN CENTRE

2.2 GreenBlue Packaging

The GreenBlue (GB) Packaging programme provides the solution for a rising number of consumers concerned about the conservation of the environment, bio-degradability and lowering their carbon footprint. The programme offers packaging that is easier to dispose of with green packaging materials as a substitute for the widely used non-biodegradable packaging such as food polystyrene containers, which contain toxic chemicals and are hard to dispose of. The GB materials offered by the programme are tested to comply with the relevant standards such as MS 1513 *Stacking test*, ASTM D4169-09 *Temperature – Environmental hazard test*, Commission Regulation (EU) No/2011 *Heavy metal tests*, EN 13432, ISO 14855-1 *Biodegradation test* and many others.

Major clients of the GB packaging include government agencies and local authorities such as the Ministry of Energy, Green Technology and Water, Majlis Bandaraya Shah Alam (MBSA) and Koperasi Petronas (KOPETRO). Additionally, PSDC aggressively promotes the GB packaging by distributing millions of GB packaging to local authorities and the general public, as well as participating in exhibitions and national expositions for widespread awareness of the importance of sustainable and green packaging for the environment.

2.3 Special Projects

The East Coast Economic Region and SIRIM (ECER-SIRIM) entrepreneur development programme is another dynamic initiative undertaken by PSDC. The programme is designed to focus on the development and enhancement of micro businesses by coaching and consulting especially in quality systems, management innovation, production and controls of the manufacturing processes. The programme modules include financial management, product costing, clean environment practices, production quality control, marketing, MeSTI and Halal certifications, support for human capital development, consulting and guidance on branding and labelling.

The ECER-SIRIM programme emphasises five economic sectors, namely F&B, herbal, cosmetics, textiles and crafts, and covers mainly Kelantan, Terengganu, Pahang and the district of Mersing, Johor. The target population for this programme is the B40 group. Since the programme was launched in 2013, the number of participating entrepreneurs has been steadily increasing to about 100 companies and the outcome of the programme showed that company sales have increased up to 73% per year.

Another special programme conducted by PSDC is SIRIM-Fraunhofer. This programme has developed new packaging design and development of product brands for 84 companies with 220 products for local and international markets, which include printing, food nutritional tests, trademark filing and supply of packaging related materials such as bottles, plastic trays and plastic containers.

2.4 Biz Transformation Hub Programme

In 2018, PSDC started a Biz Transformation Hub programme to serve the industry's human capital development needs. The programme is designed specifically to assist entrepreneurs in understanding and acquiring knowledge and skills in packaging, branding and labelling and how to increase the quality of their products. Entrepreneurs also will be guided through essential packaging and branding knowledge, as well as developing and improving the quality of their products to comply with the Labelling and Food Regulation Act and improve the marketability of the products. Among the programmes conducted during the year were Biz Transformation programmes for Lembaga Pertubuhan Peladang (LPP), Lembaga Nenas and AMEX Mall.

PACKAGING AND SECURITY DESIGN CENTRE

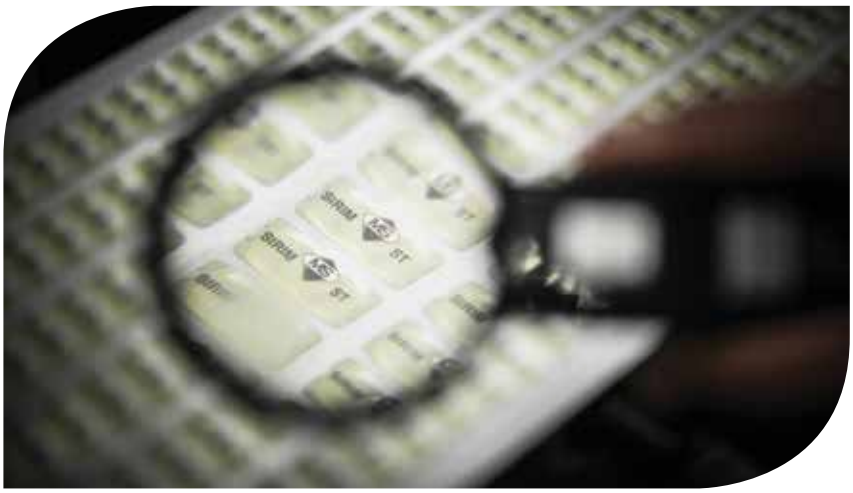
2.5 Security Design and Printing

The Security Design (SD) programme is one of the leading security design and printing related services on security labels, security packaging and security documents. The SD programme offers a variety of security solutions to safeguard products and high security documents against counterfeiting, piracy and tempering. The security document design also incorporates QR (Quick Response) Code and RFID (Radio Frequency Identification) applications as monitoring systems for authentication purposes with the aim to increase and enhance the organisation's processes and operations. Products and documents with security design features cover graduate certificates, academic transcripts, licences, premise stickers, parking coupons, security cards, medical supplies and product packaging.

In 2018, the SD business grew to RM8.2 million, including security labels, licences for city councils, academic certificates for higher learning institutions and product packaging for industry.

2.6 Other Activities and Achievements

The innovative and creative packaging designs by PSDC have been winning yearly awards since 2006. In 2018, PSDC won four prestigious Malaysia Good Design Mark awards from Malaysia Design Council. The winning designs are in the category of F&B packaging for lemongrass tea, tropical chocolate flavour, Korean chilli paste and Korean rice cakes.



PSDC has established itself as the leading Packaging and Security Design Centre in the region. Its key strength in delivering excellent projects lies in a team of highly creative designers with more than 150 man-years of experience in related areas. Hence, the INNOPACK programme will continue to develop more entrepreneurs, particularly those in the B40 category, and hold crucial business matching sessions with local and international supermarkets and hypermarkets. The GB packaging initiative will further collaborate with city councils and local authorities to promote the use of green and bio-compostable packaging at eateries, outlets such as food trucks, food stalls, food courts and restaurants. The ECER-SIRIM and SIRIM-Fraunhofer programmes will continue to assist companies and ensure that small and medium industries keep improving and growing to higher levels. The Biz Transformation programme will enlarge its business model and enhance its services on training and entrepreneur capability development through government agencies such as TEKUN, KBS, LPP, RISDA, higher education institutions and youth associations. Finally, the SD programme will grow its security design and printing for local authorities' licences, integrated advertisement systems and academic certificates. In 2019, the SD programme will enhance its collaboration with more industrial labelling and packaging.

"PSDC has established itself as the leading Packaging and Security Design Centre in the region."

NATIONAL METROLOGY INSTITUTE OF MALAYSIA

Report by:
Dr. Osman Zakaria
Senior Director, National Metrology Institute of Malaysia

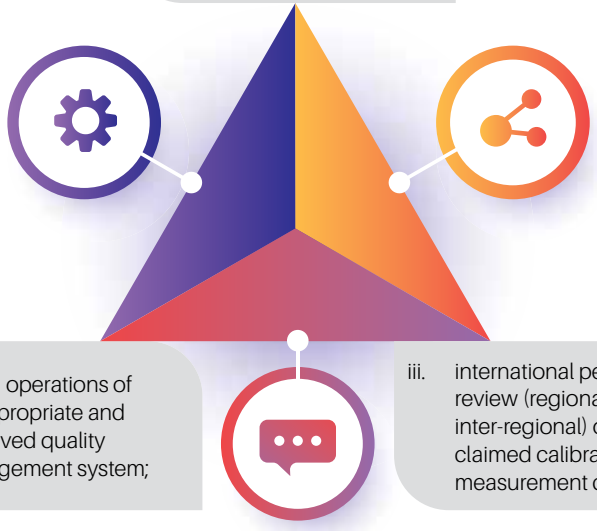
FACTS AT A GLANCE

NMIM has already approved more than
230
patterns

Metrology provides the technical infrastructure to eliminate technical barriers to trade (TBT) via recognition of national measurement standards and calibration certificates. Mutual recognition arrangement under the International Committee of Weights and Measures (CIPM-MRA) provides the recognition. Malaysia, through SIRIM-NMIM, signed the Metre Convention and became the signatory of CIPM-MRA in 2001.

The National Metrology Institute of Malaysia (NMIM) plays a very important role in ensuring the national metrology (science of measurement) infrastructure meets international standards and complies with global measurements. As a result of NMIM being a signatory to the International Committee for Weights and Measures-Mutual Recognition Agreement (CIPM-MRA), Malaysia's Calibration and Measurement Capabilities (CMCs) are internationally recognised after obtaining approval for the Peer Review processes. The three fundamental elements leading to approval of NMIM's CMCs are:

i. NMIM participation in reviewed and approved scientific comparisons;



ii. NMIM operations of an appropriate and approved quality management system;

iii. international peer review (regional and inter-regional) of claimed calibration and measurement capabilities.

> ***"Malaysia's Calibration and Measurement Capabilities (CMCs) are internationally recognised after obtaining approval for the Peer Review processes."***

NMIM received the 2017 OIML CEEMS Award for Excellent Achievements in Legal Metrology

NATIONAL METROLOGY INSTITUTE OF MALAYSIA

Pattern Approval

NMIM, as a Custodian of Weights and Measures, is responsible to conduct pattern approval of new instruments for trade purposes.

Pattern approval refers to the process in which the NMI examines the pattern (design) of an instrument to ensure that it is fit for use for trade or other legal purposes in such a way that it is expected to provide reliable measurement results within the maximum permissible error (MPE) over a range of operating conditions.

Pattern in relation to measuring instrument includes the design of the measuring instrument. On the successful completion of the evaluation, a Pattern Approval Certificate is issued, which means the instrument may be used for trade purposes.

NMIM has already approved more than 230 patterns thus far, including 52 in 2018.

NMIM continuously strives to provide measurement and calibration services to the stakeholders. Foreign facilities will only be recommended for no-capability fields of measurement. This is important as stakeholders should have easy access to global measurement systems and well accepted calibration certificates internationally as both are essential in ensuring local products and services are innovative and competitive in overseas markets.

Increase of CMCs

109 → 118

Programmes/Activities

Throughout 2018, NMIM organised Stakeholder Engagements with the Ministry of Health, Malaysian Society for Quality in Health, PETRONAS Production & Operations Management (POM) Malaysia Petroleum Management and National Sports Institute. NMIM also held a Metrololgy Lecture Series with German Malaysian Institute, Universiti Teknologi Malaysia, Universiti Putra Malaysia, Universiti Kebangsaan Malaysia, Malaysia France Institute and Universiti Pertahanan Nasional.

A total of four seminars were organised in 2018 such as Non-Contact Advance Technology & IOT Application with Region Suppliers, Importance of Accurate Measurement of Weighbridges in Trade & Enforcement, Thermal Characterisation of Ceramic & Glass with Nexus Analysis and National Young Professional 2018 with Department of Standards Malaysia.

List of Awards

- 2017 OIML CEEMS Award for **Excellent Achievements in Legal Metrology**
- **1 Gold** & **2 Bronze** Medals in MTE 2018
- The **Best Innovative Product Award** in ITEX 2018
- Appointment for **APLMF Presidency** and **Secretariat 2019~2021**

MALAYSIA DESIGN COUNCIL

Report by:
Associate Prof. Dr. Mohamad Hariri Abdullah
General Manager, Malaysia Design Council

THE MALAYSIA GOOD DESIGN AWARD (MGDA)

The Malaysia Good Design Award (MGDA) Recognition Ceremony 2017/2018 was held on 11 December 2018 at Seri Pacific Hotel, Kuala Lumpur, and officiated by Datuk Isham Ishak, the Chief Secretary of the Ministry of International Trade and Industry (MITI). MGDA recognises innovative and high quality designs within the nation's finished product manufacturing industry and the awards are given based on set evaluation criteria which are determined by a specially appointed committee of professional evaluators. MGDA is a symbol of design excellence that serves to elevate the image of Malaysian-made products in the international arena. The award also acts as a marketing tool to help increase sales, while enhancing the quality of life.

PROTON-DRB-HICOM U CONCEPT CAR CHALLENGE

PROTON-DRB-HICOM U Concept Car Challenge 2018 (PD3C) was organised by DRB-Hicom University of Automotive Malaysia (DRBHICOM U) with PROTON as the main sponsor and Malaysia Design Council (MDC) as the technical partner. The event, held at Dewan Canselor Sultan Haji Ahmad Shah, DRBHICOM U from 6-8 December 2017, saw 33 teams from 15 local institutes of higher learning vying for the main prize comprising RM7,000 in cash and a trophy. Other activities held throughout the event included the Car Modelling Challenge and Design Battle, which were open to all participants from institutes of higher learning. The main aim of PD3C was to instill a creative and innovative culture among students and lecturers from various institutions while providing the students with real-world exposure, knowledge and practical skills in the automotive industry.

PROJECT MSI17011

To improve the wellbeing of the disabled community, MDC has developed an MSI project under the name STANCE WHEEL. This is a tool for wheelchair patients to help ease their process of seeking treatment or hospitalisation. The project started in March 2018 and ended in August 2018 with the official handover ceremony being held at the Perlis Department of Health. A total of 10 units were distributed to 10 hospitals/clinics around the state of Perlis for their use. This product is based on a new concept that has not been released in the market, neither in nor outside the country. With its mobile concept built utilising simple technology, it is targeted to be a new product that can help specific groups not only at the hospital but also in other places such as nursing homes, disabled communities and related commercial sites.

FACTS AT A GLANCE

A total of
37
products from various categories were awarded the Malaysia Good Design Award

PD3C succeeded in attracting
33
teams from
15
local institutes of higher learning

A total of
10
units of wheelchairs were distributed to 10 hospitals/ clinics around the state of Perlis

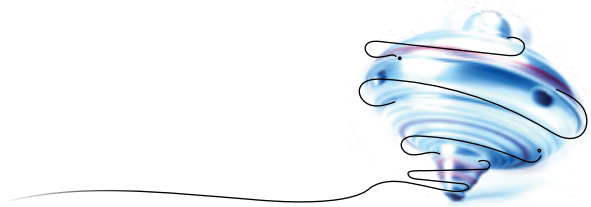
MALAYSIA DESIGN COUNCIL

Three series of prototypes have been developed, each distinguished by different characteristics and target groups, ranging from basic, upgraded and motor use models. To ensure that this design is protected, it has been registered under two categories: the overall design of the product under the name 'Industrial Design' and the product brand under the trademark 'Trademark'. This product fulfils the Medical Device Act as issued by the Medical Device Authority (MDA) and is approved to be supplied to medical institutions throughout Malaysia. Additionally, this product is targeted for commercialisation in 2019 through a qualified company appointed by the Ministry of Health. The product launching ceremony, which was inaugurated by the Deputy Minister of Health, Dr. Lee Boon Chye, was held on 19 December 2018 at the Ministry of Health, Putrajaya.

> ***"This product fulfils the Medical Device Act as issued by the Medical Device Authority (MDA) and is approved to be supplied to medical institutions throughout Malaysia."***

INTERNATIONAL ACTIVITIES

Report by:
Dr. Rohani Hashim
Secretary General, WAITRO



FACTS AT A GLANCE

SIRIM Berhad hosted the

24th

WAITRO Biennial Congress and General Assembly

The World Association of Industrial and Technological Research Organizations (WAITRO) has been focusing its activities on building cooperation and collaborations involving Research and Technology Organisations from different parts of the world over the last 48 years. For the past 16 years (2002-2018), SIRIM Berhad had played a big role in hosting WAITRO's Secretariat. It has been dedicating its resources to various initiatives and programmes aimed at bringing all-inclusive growth. During its final year of hosting the WAITRO Secretariat, SIRIM Berhad hosted the prestigious 24th WAITRO Biennial Congress and General Assembly.

As part of the 24th WAITRO Biennial Congress, the SIRIM-WAITRO International Conference (SWIC 2018) was organised on 21-22 November 2018 at The Park Royal Hotel, Penang, Malaysia. SWIC 2018 brought together decision-makers of WAITRO member organisations and non-members to share expertise and best practices as well as providing a global platform to enhance capabilities in STI, and promoted the forging of international strategic partnerships in order to enhance sharing of knowledge and resources. This conference gathered CEOs, directors, academia, researchers, scientists, businessmen and inventors, and offered an international platform for the dissemination of original and new ideas and practical development and advances in the fields of social sciences, humanities, economics, technology and innovations as well as related interdisciplinary topics.

SWIC 2018 addressed key issues faced in science and technological advancements to help develop a well-structured innovation environment for building knowledge societies and eventually knowledge-driven economies. The agenda included plenary and invited speeches, a business forum and exhibitions.

With the theme 'Global Collaboration for Innovation, Competitiveness and Sustainability', SWIC 2018 was an essential step forward towards achieving SIRIM's vision of transforming both the country and the region into knowledge economies.

SWIC 2018 offered an international platform for the dissemination of ideas

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION (UNIDO)

Report by:
Dr. Azmi Idris
National Project Manager

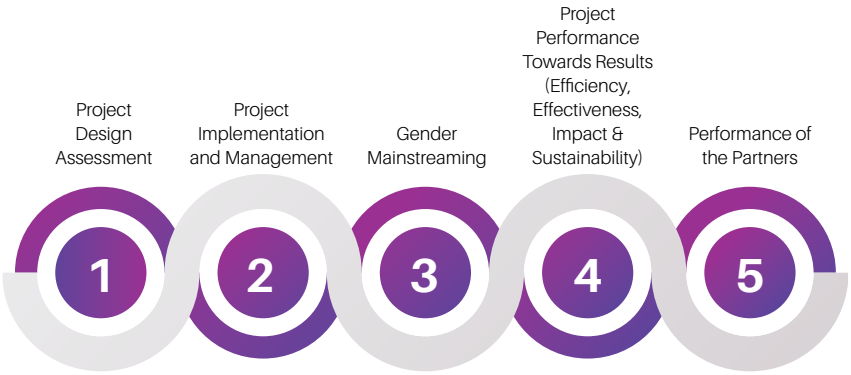
Activity Highlights for 2018

PROJECT MID TERM REVIEW

The project had its Mid-term Review (MTR) from June to August, and the mission in Malaysia was held from 23 July-4 August. The initial findings were presented to the stakeholders on 3rd August 2018.

The review was conducted by external consultants according to UNIDO evaluation policy and the UNIDO Evaluation Manual. The MTR included a desk review of existing project documents, interviews with a cross-section of project stakeholders in Vienna and Malaysia, and field visits to various stakeholders such as participating industries, ministries, associations and experts.

The MTR assessments covered:



FACTS AT A GLANCE

Certified Experts

25
candidates and
13
participants passed their final examinations and were certified as experts

Trainings in 2018

7
training sessions were organised in 2018

UNIDO CERTIFIED EXPERTS

The UNIDO Expert Training Programme had trained three batches of participants from 2016 till 2018. The programme aims to create a pool of certified experts in the fields of thermal energy efficiency and solar thermal technology and design.

The trainings were registered with Energy Commissions, and carried out by a UNIDO International Consultant (AEE INTEC) and local project team (Project Management Unit, PMU).

The evaluation process for the certified experts covers:

STAGE 1 - Evaluation criteria based on:
- Attendance and test on Course 1 (Energy Efficiency) and Course 2 (Solar Thermal Technology & Design)
- Energy audit report quality
- Participation in the working group during the training and energy audit

STAGE 2
- Final Examination (3 hours)

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION (UNIDO)

Successful candidates will obtain a certificate of qualification from UNIDO at the end of the project. In 2018, 25 candidates and 13 participants passed their final examinations and were certified as experts. The evaluations for 47 other participants are still ongoing.

The list of certified experts is published in the MAEESTA website for public reference: https://maeesta.com/

Project Progress for Year 2018

i. Regulatory Framework, Support Programme and Financial Incentive & Scheme

Beginning December 2018, the MAEESTA project had appointed a policy consultant from Universiti Teknologi Mara (UiTM) Shah Alam to lead the roadmap deployment plan activities, a document which lays out the mechanism on the deployment of the key recommendations in the solar thermal roadmap.

The roadmap deployment plan will focus on five focus areas: i) Financial, ii) Policy and Regulatory, iii) Technology and Research & Development, iv) Testing, Certification and Standardisation, and v) Awareness and Capacity Building.

The key recommendations will be discussed in depth by the stakeholders in the workshops and will be categorised into three phases for implementation: Phase 1 (2020-2022), Phase 2 (2023-2025) and Phase 3 (beyond 2025).

MAEESTA project will support the implementation of the key recommendations in Phase 1 during the project timeline.

The document is targeted to be completed by the end of September 2019.

ii. Awareness Raising and Capacity Building

MAEESTA had actively promoted the project to Malaysian industries and created local expertise in thermal energy efficiency optimisation and the application of solar thermal technology. Throughout 2018, a total of 280 participants attended the organised seminars and trainings.

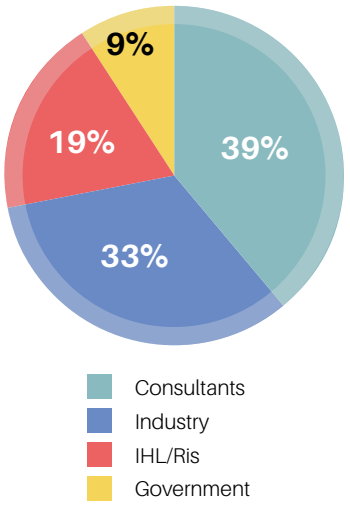
For Batch 3 of the expert training programme, 12 companies from industry completed their theoretical training in November 2018. The practical training is ongoing and the final energy audit report is targeted to be completed by the participants in February 2019.

In 2018, a total of one awareness seminar and seven training sessions were organised:

- 1 Awareness Seminar
- 4 One-day User Training
- 1 Expert Course 1 (Energy Efficiency)
- 1 Expert Course 2 (Solar Thermal Technology)
- 1 Extended Course (Solar Thermal Design) for certified experts

The percentage of the participants by categories is as follows:

Category of Participants



iii. Energy Efficiency (EE) and Demonstration Projects

MAEESTA project actively engaged with industries to garner awareness and carried out an energy audit for potential thermal energy optimisation and solar thermal integration.

Throughout 2018, four companies implemented the energy efficiency measures, mainly in their thermal energy equipment and processes:

No.	Companies	Subsector	Energy Efficiency Measures
1	Toyo Tires Sdn Bhd	Rubber	Heat recovery for boilers
2	JB Cocoa Sdn Bhd	Food	Optimisation combustion for boiler and roaster process
3	Top Glove Sdn Bhd	Rubber	Heat recovery from waste hot water
4	Perusahaan Perkayuan Wan Feng Sdn Bhd	Wood Products	Parameters optimisation for drying process

Thermal Energy Saving
28,832 MWh/year

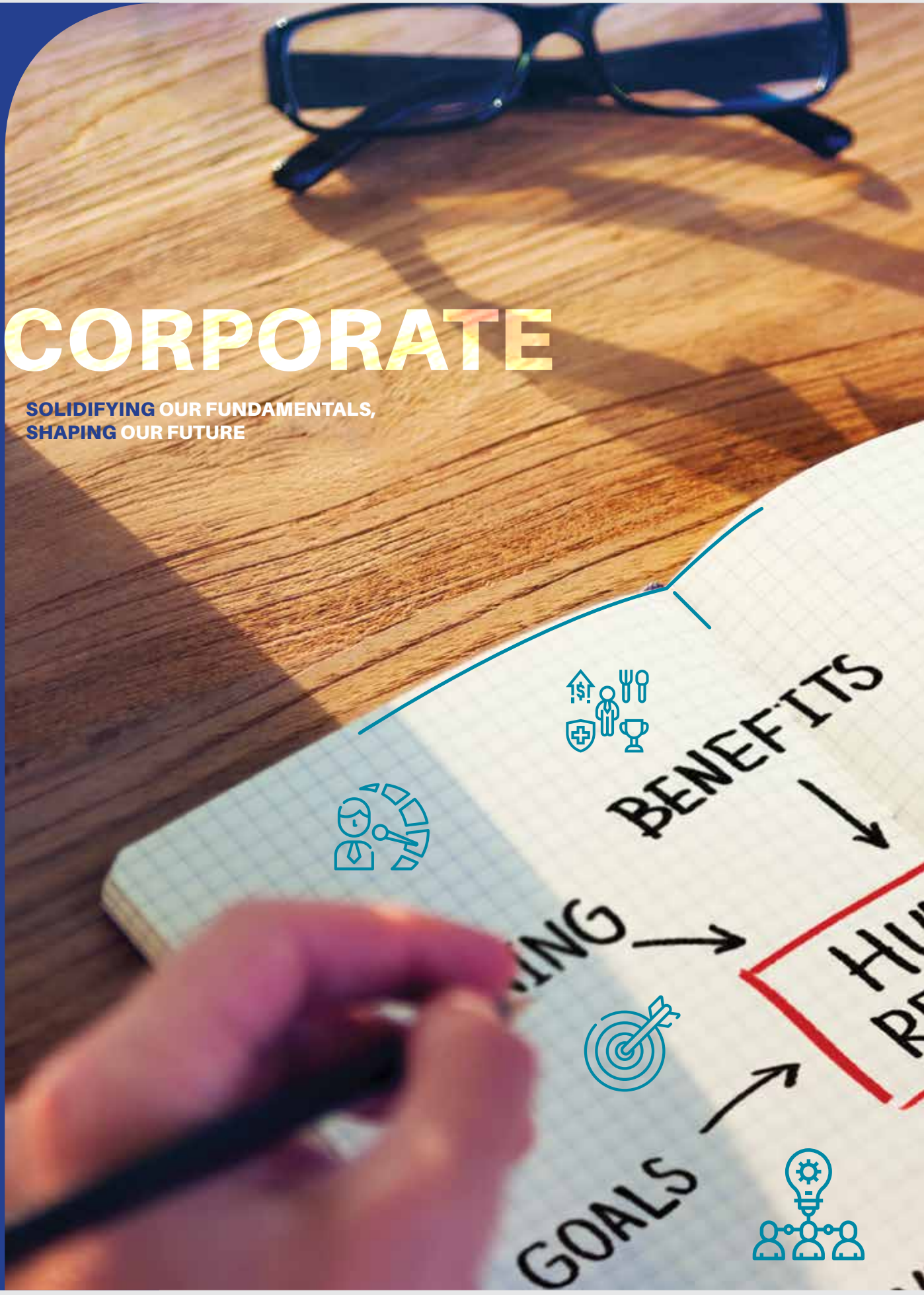
Thermal Energy Saving
MYR 4,088,673/year

Lifetime CO_2 Reductions
147,889 tonnes

The lifetime CO2 reduction is calculated based on the lifespan of the technology used, i.e. 15 year

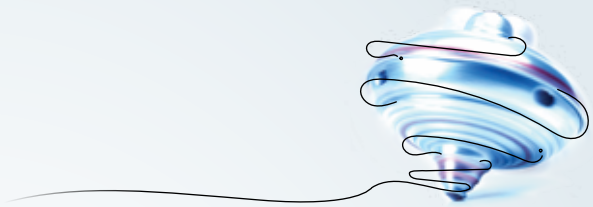
CORPORATE

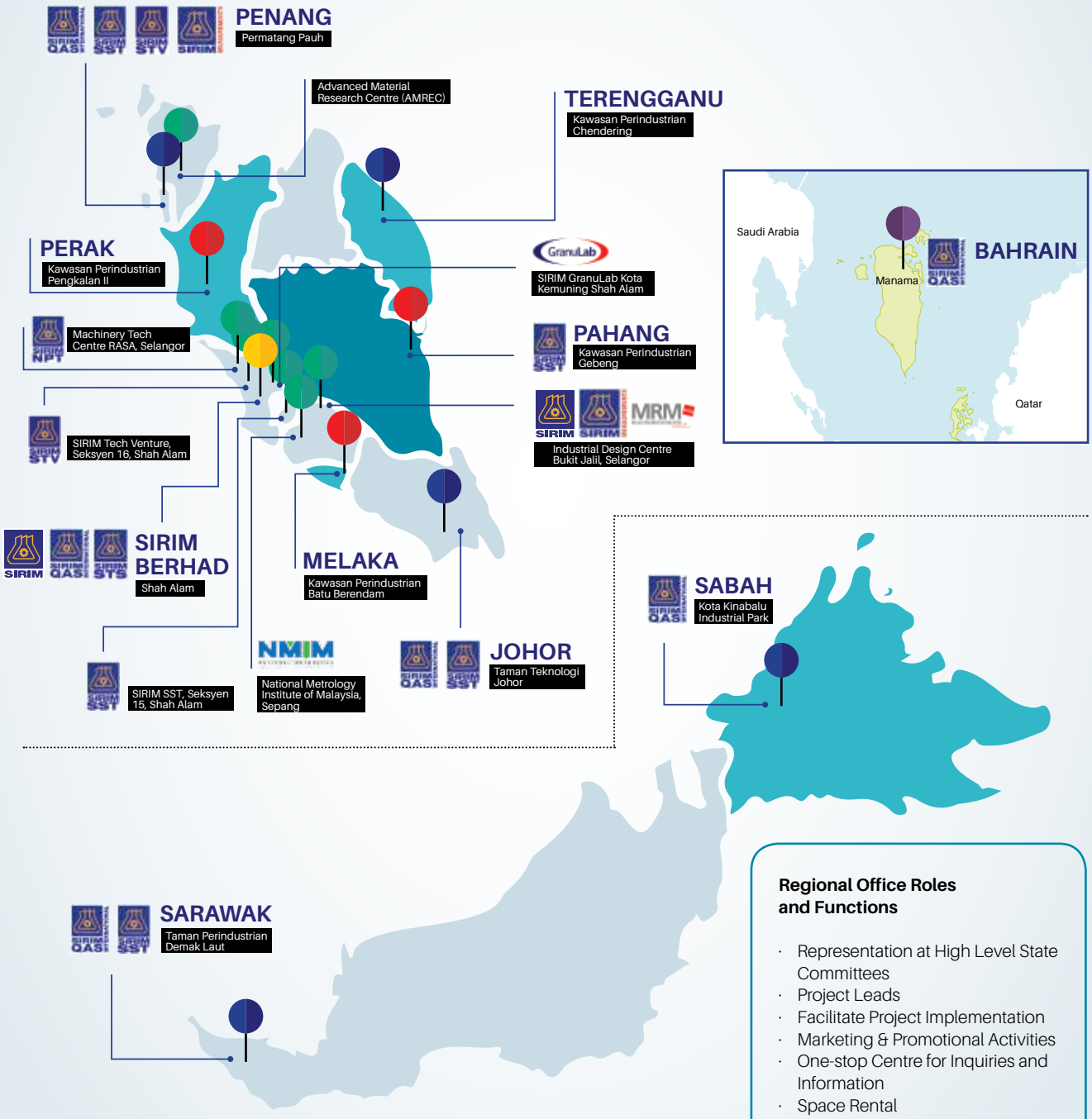
SOLIDIFYING OUR FUNDAMENTALS,
SHAPING OUR FUTURE




RECRUITMENT
SKILL
TALENT
DEVELOPMENT

REGIONAL OFFICES





Regional Office Roles and Functions

- Representation at High Level State Committees
- Project Leads
- Facilitate Project Implementation
- Marketing & Promotional Activities
- One-stop Centre for Inquiries and Information
- Space Rental

SIRIM Berhad Headquarters | **Technology Facilities** | **State Office** | **Regional Offices** | **SIRIM QAS International Branch**

GROUP PERFORMANCE MANAGEMENT OFFICE (GROUP PMO)

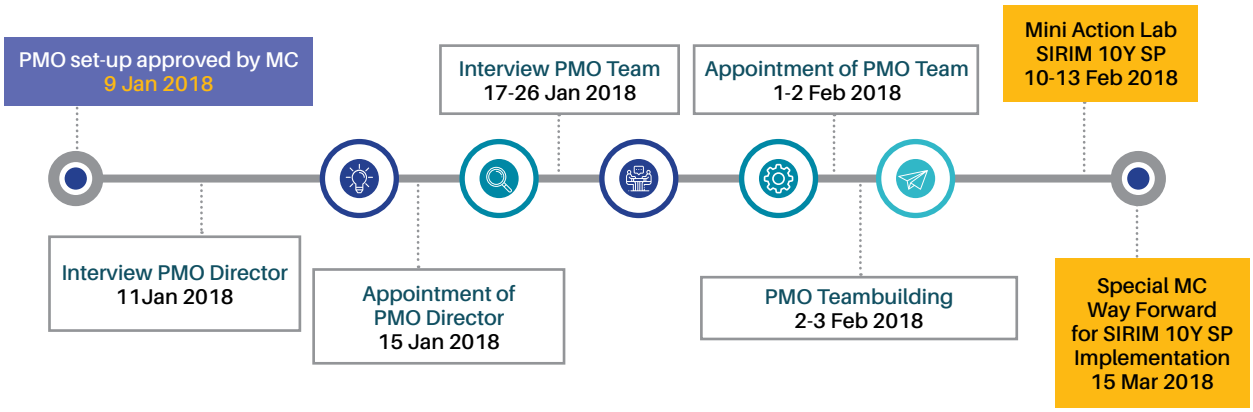
Report by:
Rafidah Mokhdar
Director, Group Performance Management Office

The setting up of the Group Performance Management Office (PMO) is a key recommendation of the SIRIM 10Y Strategic Plan.

Group PMO was established in February 2018 with 11 staff members, mobilised from across the SIRIM Group of Companies.

Our Value Proposition:

'We drive the implementation of SIRIM's Strategic Plan, and provide value-added services through Group Performance & Delivery Management and Enterprise Risk Management for the Sustainability of SIRIM Group of Companies'.



The key roles of Group PMO are:

1. Drive implementation, monitoring and reporting progress of SIRIM 10Y Strategic Plan and SIRIM IR FIRST
2. Provide in-house advisory and troubleshoot on performance delivery
3. Group Business Performance Review and Reporting
4. Enterprise Risk Management

GROUP PERFORMANCE MANAGEMENT OFFICE (GROUP PMO)

MINI ACTION LAB ON SIRIM 10Y STRATEGIC PLAN

Mini Action Lab on SIRIM 10Y Strategic Plan was successfully accomplished on 10-13 February 2018. The Mini Action Lab gathered 51 members who formed 10 groups, conducted 21 syndications and developed a total of 58 three-feet plans (3Ft Plan) for the implementation of SIRIM 10Y Strategic Plan. The way forward for the implementation mechanism was presented to the Management Committee in its Special Meeting on 15 March 2018.

ROADSHOWS ON SIRIM 10Y STRATEGIC PLAN

A series of Roadshows on the SIRIM 10Y Strategic Plan and Introduction of Group PMO were conducted throughout SIRIM Campuses with the main objective of providing awareness on the SIRIM 10Y Strategic Plan and Group PMO roles.

- SIRIM HQ (1 March 2018)
- NMIM Sepang (6 March 2018)
- SIRIM Bukit Jalil (6 March 2018)
- SIRIM Penang (7 March 2018)
- SIRIM Kulim (7 March 2018)
- SIRIM Rasa (16 March 2018)

GROUP PERFORMANCE MANAGEMENT OFFICE (GROUP PMO)

Gallery Walk for the Board of Directors, Minister of Finance (MoF) and Minister of the Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC) were also organised in 2018.

TOWNHALL & GALLERY WALK SIRIM 10Y STRATEGIC PLAN

To create awareness and communicate the implementation and progress of the SIRIM 10Y Strategic Plan, Group PMO organised a Townhall and Gallery Walk for SIRIM employees on 14 November 2018. The Townhall Address was delivered by the President & Group Chief Executive, Prof. Dr. Ahmad Fadzil Mohamad Hani. The Townhall also included Focused Storytelling session and Focused Recognitions award.

SIRIM 10Y STRATEGIC PLAN PROGRESS

SIRIM 10Y Strategic Plan has eight Strategic Thrusts (STs) which are translated into 24 Key Initiatives. Champions and Key Results Managers (KRMs) were appointed to drive the STs and lead the Key Initiatives respectively. By the end of 2018, a total of nine Champions, 24 KRMs and 186 team members were involved in the implementation of SIRIM 10Y Strategic Plan.

The monitoring and reporting of the implementation progress are conducted through two committee levels, namely the Working Committee (WC) which is chaired by a Champion at ST level and Management Steering Committee (MSC) which is chaired by the President & Group Chief Executive at Group Level.

A system to monitor and report the progress of the 3Ft Plan was developed by the end of 2018. Performance Management & Delivery System (PMDS) is a virtual workbench to effectively implement SIRIM 10Y Strategic Plan.

GROUP HUMAN RESOURCE DIVISION

Report by:
Nik Juliah Nik Jaafar
Vice President, Group Human Resource

ENHANCE EMPLOYEE CAPABILITIES

HIGHER EDUCATION (UPWARD MOBILITY)

By the end of 2018, a total of 41 staff enrolled to pursue their studies.

Qualification	Number of Employees
Diploma	3
Degree	3
Master	12
PhD	23

Functional Training 2018 (PAX)

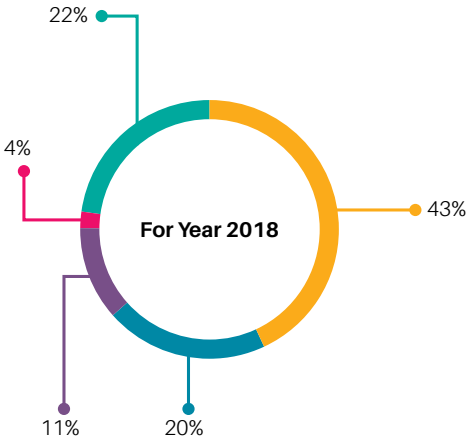
Development Training 2018 (PAX)

(PAX)	Executive	Non-executive	Total
Development	999	620	**1,619**
Functional	752	377	**1,129**

STRENGTHEN LEADERSHIP PIPELINE

LEADERSHIP ASSESSMENT

Building leadership bench strength through a robust assessment. One hundred management level staff members completed their leadership assessment at the Live Development Centre, which involved Business Care exercise, Role Play exercise and In-depth Competency and Personality-linked Interviews.



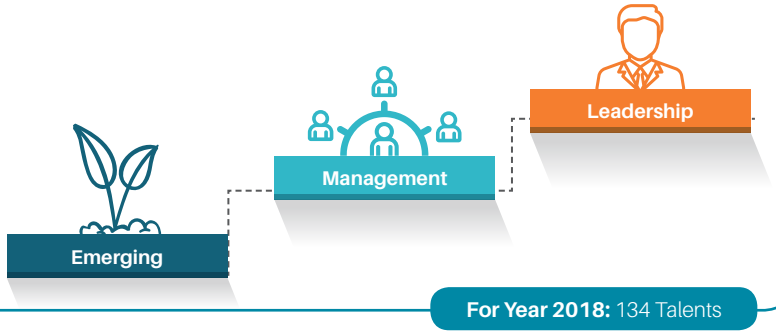
Target
100pax

Achievement
100pax

GROUP HUMAN RESOURCE DIVISION

PROGRAMME

One of the initiatives under STaMP is to manage talent and organisational capabilities to ensure availability of high quality human resource in supporting business needs. By the end of 2018, 134 staff members have been identified under this programme.



For Year 2018: 134 Talents

JOB MOBILITY

The purpose of the Job Mobility programme is to support one of the Group HR's strategic pillars: Enhance Employee Capabilities. The objectives are to enhance employee competencies, gain new skills and exposure, widen knowledge and experience, increase productivity, as well as avoiding boredom and complacency.

Target
12.5% (65)

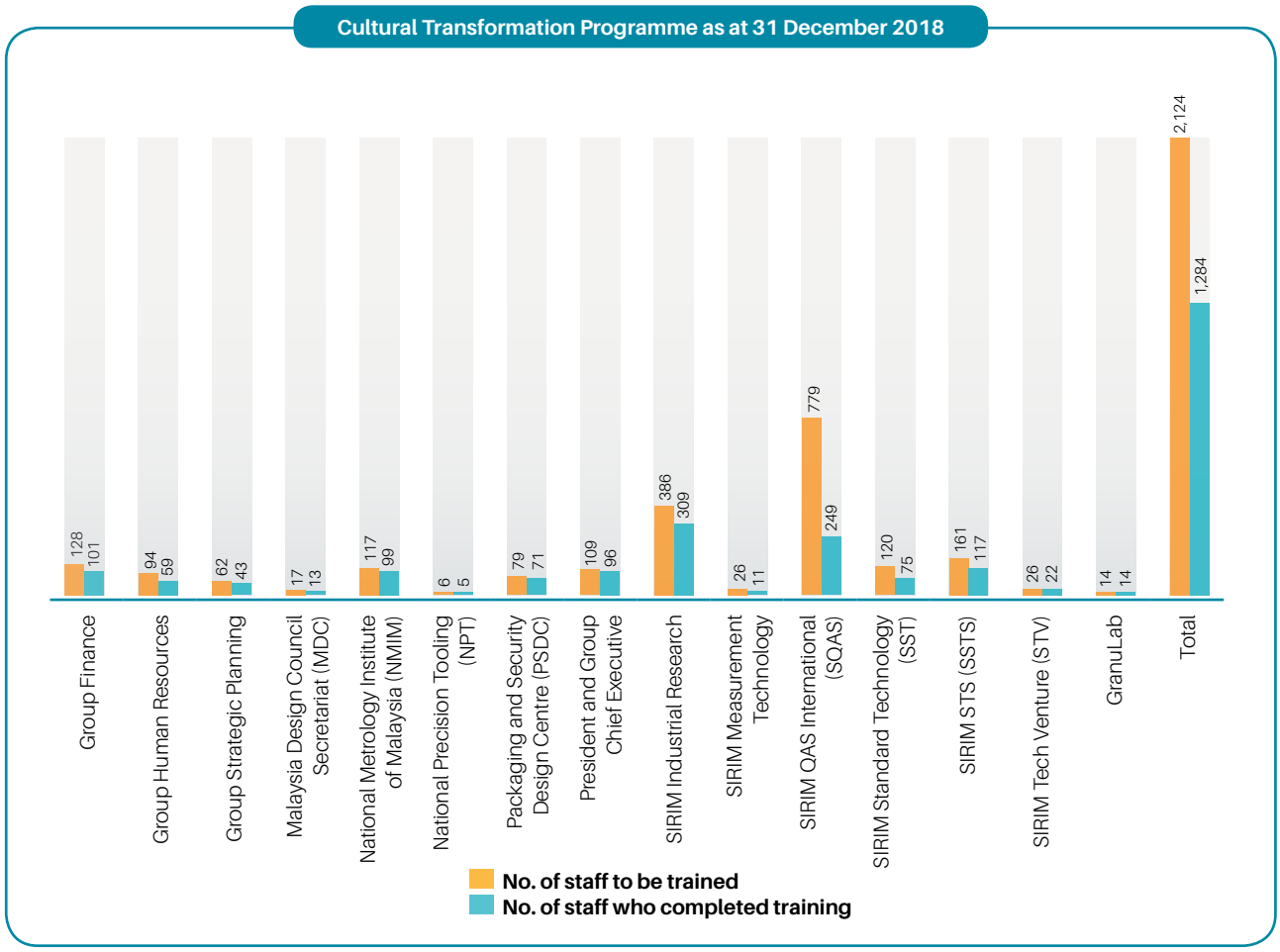
Achievement
4.3% (87)

SPORTS DAY

Employee engagement is an organisational effort to enhance productivity and retention rates. Employee engagement strategies have proven that whenever employees are engaged at work, they feel a connection with the company; they believe that the work they are doing is important and are committed to the success of the organisation. SIRIM has invested in engagement programmes such as SIRIM's Sports Day that is viewed as an opportunity to bring employees closer together based on the sporting principles of team-building, unity, participation, fitness and health. About 2,000 employees and their families attended the SIRIM Sports Day on 13 October 2018 in support of the National Sports Day programme, a government initiative to promote healthy lifestyles.

GROUP HUMAN RESOURCE DIVISION

CULTURAL TRANSFORMATION WORKSHOP



25 YEARS OF SERVICE AWARD AND COMPULSORY RETIREMENT CEREMONY

Employee tenure recognition is an excellent way for SIRIM to show that they value the ongoing dedication and contributions of individuals. The Group's Human Resource division organised the ceremony for two occasions - 25 years' service and compulsory retirement - on 2 November 2018. For the year 2018, 42 staff received the Sijil Simpanan Premium BSN for 25 years' service and 21 staff received either the Sijil Simpanan Premium BSN or gold coins for their compulsory retirement at age 60.

IFTAR AND DATES DISTRIBUTION

In honouring Islamic responsibilities, SIRIM has continuously contributed business zakat to the Lembaga Zakat Selangor (LZS) to assist the needy and underpriviledged citizens. On 31 May 2018, 51 children from an orphanage were treated to a buka puasa feast in SIRIM's multi-purpose hall. The children from Pertubuhan Kebajikan Pendidikan Nur Kasih Selangor were aged between 5 and 16 years old.

SIRIM handed RM30,000 in cash aid to the organisation and distributed RM150 in duit raya, baju raya (new clothes for Hari Raya Aidilfitri) and stationeries to each child before the breaking of fast.

GROUP HUMAN RESOURCE DIVISION

ZAKAT DISTRIBUTION

SIRIM also supported various programmes such as Kasihku with LZS and Back to School programmes for needy and underpriviledged children.

Acknowledging how well-rounded students can make a positive impact on the future, on 29 June 2018, SIRIM awarded 48 of its employees' children with RM10,027 in cash rewards for their excellent results in Ujian Pencapaian Sekolah Rendah (UPSR), Pentaksiran Tingkatan 3 (PT3) and Sijil Pelajaran Malaysia (SPM).

EMPLOYEE ENGAGEMENT ACTIVITIES/ROADSHOW

The Employee Engagement Survey (EES) is conducted annually in SIRIM with the main objective of measuring our employees' motivation and satisfaction. The measurement is important to assist management in making more informed decisions in improving the quality of work, communication and infrastructure, and thus creating a more conducive, harmonious and productive work environment.

The three lowest EES results were identified for each Strategic Business Unit (SBU)/Subsidiary (SUB), allowing them to build an action plan to resolve the issues. The Group Human Resource Department has organised 19 roadshows, inclusive of branches.

Focus groups were formed to understand each issue and develop an effective action plan. Employees were also informed on the initiatives taken.

TASKA

In order to keep up with the daily demands of work and home life, employees need help balancing work with their family responsibilities. SIRIM, which is under the Ministry of International Trade and Industry (MITI), is the agency responsible for employee welfare. One of its endeavours is the provision of childcare. These facilities aim to support employee retention, reduce absenteeism and increase productivity. A total of 147 children (ages 2 months to 6 years old) come under this childcare programme afforded by SIRIM. The childcare programme covers all aspects of child development and school readiness by providing valuable educational and social experiences.

CALENDAR OF EVENTS

ENHANCING COMMUNITIES,
TOUCHING LIVES

CALENDAR OF EVENTS

AN EVENTFUL YEAR

22 JAN

SIRIM-Demi Idaman Partnership witnessed by HRH Sultan of Selangor

SIRIM signed a Memorandum of Understanding (MoU) with Demi Idaman Sdn Bhd to collaborate on the development of organisational standards on gold refining. The MoU was signed by the President and Group Chief Executive of SIRIM, Prof. Ir. Dr. Ahmad Fadzil Mohamad Hani, and Managing Director of Demi Idaman Sdn Bhd, Zakaria Saad, at Concorde Hotel, Kuala Lumpur. The Sultan of Selangor, HRH Sultan Sharafuddin Idris Shah, witnessed the MoU.

The areas of cooperation include consultation, expertise, information, drafting of standards, standards development, research & development, knowledge-based activities and other collaborative programmes in Gold Standards.

26 JAN

The Launch of Secondary Battery Safety Standards Compliance Guideline Advocacy

The launching ceremony was officiated by the Domestic Trade, Cooperatives and Consumerism Minister, Dato' Seri Hamzah Zainudin. The event was attended by 400 participants comprising manufacturers, importers and secondary battery suppliers as well as representatives of relevant government agencies. The event was held to assist the relevant parties to understand three key areas: safety standards guidelines, testing requirements and secondary battery certification. Secondary batteries are recharged batteries that generate electricity continuously in the long run. The batteries are widely used in mobile phones, power banks, electronic cigarettes, electronic game gadgets and drones, to name a few.

The Secondary Battery Safety Standards Compliance Guidelines provide industry guidance on voluntary compliance for secondary battery safety standards while recommending for industry to conduct testing and obtain certification before marketing.

CALENDAR OF EVENTS

^ 26-28 FEB

Karnival Negaraku Berinovasi

SIRIM participated in the Karnival Negaraku Berinovasi, which was organised by the Ministry of Science, Technology and Innovation (MOSTI) in Tuaran, Sabah. Exhibitions, talks, hands-on activities and a lucky draw were held as part of the event. SIRIM featured technologies such as GreenBlue Packaging and Wound Management, along with an exciting Perubahan Iklim – Pelepasan Karbon (PIPKAR) board game to educate visitors on carbon emissions and ways to reduce them, and Robokit, which allowed students to play with robots in the form of 'BattleBots'. The three-day programme received overwhelming response from various agencies under MOSTI, non-governmental organisations (NGOs) and the private sector.

v 1-2 APR

The Sabah State Level Science Week

The Sabah State Level Science Week, organised by the Ministry of Science, Technology and Innovation (MOSTI), took place at the IMAGO Mall in Kota Kinabalu. Various interactive activities were held, including 'Colors of TN50' colouring for kids, Battlebots, science and technology quizzes, car model installations and Science Cinema. Other hands-on activities included ice cream making. The event was aimed at increasing public awareness on the importance of science and bridging the gap between science and society by presenting a variety of interesting and interactive programmes.

CALENDAR OF EVENTS

^ 27 MAR

Smart Farming: Kelulut (Stingless Bee) Product Industry Programme

This product-oriented programme was aimed at introducing the use of Internet of Things (IoT) and Wireless Sensor Networks in kelulut farming and entrepreneurship. It is one of the projects under the SIRIM-Fraunhofer programmes, which enables SIRIM to help kelulut farmers enhance the production capacity of honey, thus generating more lucrative incomes.

The programme, developed by SIRIM in collaboration with the Malaysian Genome Institute (MGI) and Universiti Malaysia Terengganu (UMT), encompasses the development of the Kelulut Integrated Information System (KIIS), a portable and lightweight honey harvesting tool, awareness training and exposure to breeders about the potential of propolis as a cosmetic agent, and a labelling and packaging programme.

v 20 APR

Signing of MoU Between SIRIM and MARA

SIRIM and Majlis Amanah Rakyat (MARA) signed a Memorandum of Understanding (MoU) to enhance graduates' marketability, improve industry-led research & development, and enhance the quality and delivery of TVET programmes. The event took place during the launching of MyApprenticeship which was held to create millions of opportunities for apprentices in the public and private sectors, especially for youths and women.

CALENDAR OF EVENTS

6 MAY

SIRIM-KEJORA MoU on the Study of Screw-Pine Planting

SIRIM signed a Memorandum of Understanding (MoU) with Lembaga Kemajuan Johor Tenggara (KEJORA) in Sedili, Kota Tinggi. The cooperation involved entrepreneurship development in food and non-food categories, as well as enhancing KEJORA's Small and Medium Enterprises' (SMEs) capabilities in technology management to improve their productivity and competitiveness while facilitating their manufacturing and processing activities. SIRIM was represented by Zulkifli Abdullah, Senior General Manager, Group Marketing and State Office Department, while KEJORA was represented by its General Manager, Norazman Othman.

29 JUN

SIRIM Group's Hari Raya Celebration

More than 1,100 clients, business partners and stakeholders joined in the Hari Raya celebration, which was held at the Shah Alam Convention Centre (SACC). The event was also attended by heads of government agencies, leading corporations, entrepreneurs and industry associations from various sectors, higher education institutions and the media. Also present was the newly appointed Selangor Menteri Besar, Amirudin Shari.

CALENDAR OF EVENTS

12 JUL

Courtesy Call to Deputy Chief Minister of Sabah and Minister of Trade and Industry Sabah, Datuk Seri Panglima Wilfred Madius Tangau

SIRIM'S President and Group Chief Executive, Prof. Ir. Dr. Ahmad Fadzil Mohamad Hani, together with our top management, made a courtesy call to Datuk Seri Panglima Wilfred Madius Tangau, Deputy Chief Minister of Sabah and Minister of Trade and Industry Sabah. He was briefed on the services offered by SIRIM as well as SIRIM's activities that will be carried out in Sabah. The Deputy Chief Minister has agreed to work closely with SIRIM to develop the industry in Sabah, especially through the implementation of SIRIM-Fraunhofer programmes.

6 AUG

Collaboration Meeting with the Kuala Lumpur and Selangor Chinese Chamber of Commerce & Industry (KLSCCCI)

SIRIM received a visit from the Kuala Lumpur & Selangor Chinese Chamber of Commerce & Industry (KLSCCCI) and the Federation of Malaysian Manufacturers (FMM). The KLSCCCI and FMM delegation was led by Dato' Dr. Ir. Andy Seo, who is also the KLSCCCI's Chairman of Industry Committee and FMM's Council Vice President.

Both parties agreed to establish a mechanism for SIRIM-Fraunhofer Secretariat and KLSCCCI/FMM to cooperate. This will allow KLSCCCI and FMM members to participate in the SIRIM-Fraunhofer programme. There are also plans for the members to visit SIRIM's facilities and facilitate the development of their businesses.

CALENDAR OF EVENTS

29 AUG

SIRIM-Industry Engagement Programme

Manufacturers, entrepreneurs, Small and Medium Enterprises (SMEs) as well as members of related industry associations in Sandakan and nearby areas attended the SIRIM-Industry Engagement Programme, a platform for SIRIM's experts and the industry to meet and share experiences to cope with current challenges. The half-day programme allowed experts from SIRIM to share information on current solutions to provide added value for increasing productivity and economic growth in Sandakan, Sabah.

24 SEP

Handover of Solar Thermal Demonstration Plant in Johor

The Solar Thermal Demonstration Plant, developed by SIRIM in collaboration with the United Nations Industrial Development Organisation (UNIDO), is the first demonstration plant utilising solar thermal technology on an industrial scale in the country. The demonstration plant is capable of providing sustainable solar heating power for the poultry factory and can replace 80% of the heating energy of the electric boiler currently being used.

This project reduces carbon emissions by up to 69 tonnes per year, and conserves up to RM50,000 of electricity consumption per year. The system consists of solar heating tube collectors, thermal storage tanks and auto-regulated heat exchangers.

The project was handed over to PPNJ Poultry & Meat Sdn Bhd at the handover ceremony by the Secretary General of the Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC), Datuk Seri Dr. Mohd Azhar Hj Yahaya.

CALENDAR OF EVENTS

9-12 OCT

SIRIM Won OIML Award - Excellent Achievements in Legal Metrology in Developing Countries

Malaysia was awarded the Countries and Economies with Emerging Metrology Systems (CEEMS) Award for Excellent Achievements in Legal Metrology in Developing Countries by the International Committee of Legal Metrology (OIML) in Hamburg, Germany.

26 OCT

Visit by Delegates of Regional Conference on Fourth Industrial Revolution – New and Emerging Technologies in Achieving Sustainable Development Goals

SIRIM Bukit Jalil was visited by the delegation of the Regional Conference on the Fourth Industrial Revolution – New and Emerging Technologies in Achieving Sustainable Development Goals. Twelve delegates, including ACPTT representatives from India and Japan, and representatives from various agencies and ministries, were shown demonstrations on 3D Scanning, Finite Element, Computational Fluid Dynamic Analysis & CAD, Intelligence System and Additive Manufacturing.

CALENDAR OF EVENTS

31 OCT

The National Policy on Industry 4.0 - Industry4WRD: Shaping The Future of Industry

SIRIM was invited by the Ministry of International Trade and Industry (MITI) to participate in the National Industry 4.0 Policy that was launched on 31 October 2018 at MITI. Themed 'Industry4WRD: Shaping the Future of Industry', the launching ceremony was graced by Tun Dr. Mahathir Mohamad, Prime Minister of Malaysia.

Among the invited exhibiting companies were ABB, Celcom, GMI, KISMEC, MIMOS, Petronas, SAP and Vitrox. SIRIM showcased the Centre of Excellence (CoE) on Smart Manufacturing and SIRIM IR (IC-I Sensor & IC-C ID) as well as a report on SME Readiness Assessments under MITI's Policy Pavilion by the SIRIM-Fraunhofer Secretariat.

14 NOV

Visit by the National Science & Technology Council Delegation, Cambodia

The Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC) arranged for a delegation of eight people from Cambodia's National Science & Technology Council (GS-NTSC) to visit SIRIM. The delegation was headed by the Secretary General of GS-NTSC, who is equivalent to Deputy Minister in the Malaysian government structure. The purpose of the visit was to learn more about SIRIM's activities and commercialisation-related activities.

CALENDAR OF EVENTS

23 NOV

Courtesy Visit to Penang Chief Minister

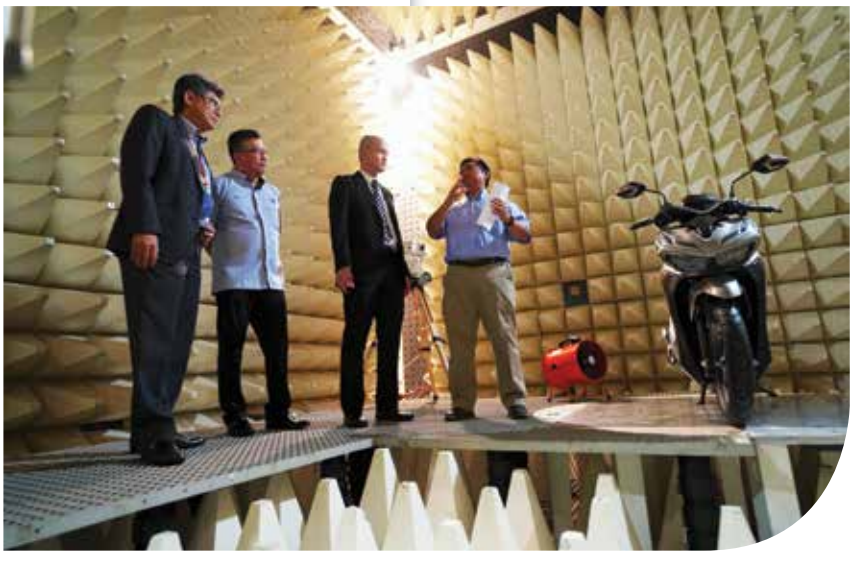
SIRIM Management Group paid a courtesy visit to Penang Chief Minister Chow Kon Yeow at his office in KOMTAR. The meeting was also attended by Dato' Abdul Halim Hussain, EXCO for Domestic & International Trade Development, Consumer Affairs and State Entrepreneurship Development. The objective of this meeting was for SIRIM to share details on various activities and services with the state government.

18 DEC

Working Visit by the Deputy Minister of International Trade and Industry (MITI)

SIRIM welcomed Dr. Ong Kian Ming, Deputy Minister of International Trade and Industry (MITI), who was on a working visit along with his special officers. They were hosted by the SIRIM Management, led by Prof. Ir. Dr. Ahmad Fadzil Mohamad Hani, SIRIM's President and Group Chief Executive. Also present was SIRIM Board Director, Dato' Dr. Ir. Andy Seo.

Dr. Ong and his special officers were briefed on SIRIM's main roles and activities which were closely related to the international industrial and trade sectors. They also visited the SIRIM Gallery, Radio Frequency and Electromagnetic Compatibility Laboratory (EMC), Civil and Construction Testing Laboratory and Kelulut Farm.



spinning towards
SUSTAINABLE PROGRESS

SIRIM

The gasing (spinning top) is the quintessence of Malaysian tradition and a perennial favourite among the young and old; with a level foundation and the right skill, it can attain the perfect balance to spin fluidly. On this cover, it pays tribute to SIRIM's legacy as a trusted name in Malaysia as well as its famous certification mark. Just like the spinning gasing, SIRIM has a stable foundation and the right expertise to help the country's industries to progress sustainably and fluidly.

SIRIM BERHAD
No.1, Persiaran Dato' Menteri, Seksyen 2, Peti Surat 7035
40700 Shah Alam, Selangor Darul Ehsan
Tel: 603 5544 6000 I Toll-Free: 1300 88 7035 I Fax: 603 5510 8095