

SIRIM 9:2017

# Refreshed, Innovative *and* Focused

ANNUAL REPORT 2017



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ANNUAL REPORT 2017

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**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



## 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 standard
  - To improve production processes and technique

## 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



**1. Academician Tan Sri Dr. Ahmad Tajuddin Ali, F.ASc, P.Eng**  
(Chairman)



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

**3. Saji M K Raghavan**

**4. Datuk Seri Dr. Mohd Azhar Hj. Yahaya**

**5. Dato' Dr. Ir. Andy Seo Kian Haw**



**6. Datuk Mohd Nasir Ahmad    7. Datuk Syed Hisham Syed Wazir**

**8. Hawariiah Wahid                    9. Datuk Dr. Hafsah Hashim**

**10. Datuk Dr. Daud Mohamad**

## MANAGEMENT COMMITTEE



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

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



**Dato' Dr. Zainal Abidin Mohd Yusof**  
(President and Chief Executive until 1 April 2017)

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

**Sabarina Harun**  
Vice President,  
Group Finance



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

**Goay Peck Sim**  
Vice President,  
Group Strategic Planning

**Nik Juliah Nik Jaafar**  
Vice President,  
Group Human Resource



# CHAIRMAN'S MESSAGE

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



## The three roles of SIRIM

"Firstly, SIRIM is the national physical standard for all measurement. This is a statutory role that we are responsible for in the implementation of the National Measurement System Act 2007. Being the custodian of this role through the National Metrology Institute of Malaysia (NMIM), SIRIM supports the industries' and nation's needs on the reliability and traceability of measurement units in the country.



Secondly, as the technological research and development (R&D) institute to develop capabilities and capacities, SIRIM supports Malaysian industries in upgrading their technology and capabilities, manpower and development. Particularly the Malaysian SMEs in upgrading their production system for improvement in product and quality, safety and environment.

Thirdly, in the area of testing and certification, and supporting the Department of Standards Malaysia (Standards Malaysia) in its national standardisation programme, SIRIM is the agent for Standards Malaysia, undertaking this role commercially until otherwise notified."



*Technology intervention by SIRIM to improve SMEs productivity*



**DELIVERY**

In order to deliver our roles effectively and efficiently, we continue to develop manpower, expertise, skills and capabilities in the specialised fields particularly in measurements technology, research and development needs, and testing and certification. This requires long term planning and focus to deliver the necessary manpower in years to come. We ensure that our service schemes and reward system are able to attract and retain good people. We want to remain competitive and offer a comprehensive package in terms of benefits and work conditions to attract and retain good talent.

As a company, we have delivered on our roles in order to survive and remain financially sustainable. This is a bit of a challenge especially in delivering on a role in support of the government. Hopefully, this will be adequately recognised by the government, and through some funding ventures of the relevant government agencies, we will be able to tap on those funds and remunerate for jobs assisting certain sectors, particularly the SMEs, in upgrading their technology, capabilities and capacities.



## CHAIRMAN'S MESSAGE



### CHALLENGES

The biggest challenge for the country was coping with change, particularly in the marketplace, domestically and internationally. The ever changing taste of consumers and demand for environmentally sustainable products is happening worldwide, and in some countries through legislation, where certain products are banned as they are deemed unsustainable. These challenges faced by industries prove that they must be equipped with capabilities and capacities to manufacture products that meet the demands of the marketplace in order to maintain competitiveness worldwide. This is where support in terms of technology to industry is important, especially where technical infrastructure is concerned. There needs to be standard and calibration facilities and so on, where manufacturers have a credible point of reference for their machines and equipment to benchmark against. SIRIM is there to support the industries in order to meet the challenges of marketplace.



### RESEARCH CAPABILITIES

As an organisation, we have limited capacity in terms of human resource and capacities. Alone, we do not have enough manpower in all the expert areas, but there are a lot of resources available from universities to work and collaborate with in order to deliver the service. The SIRIM-industry-academia collaboration should be harnessed to make a difference. In order to meet current and future challenges, there is a need for our officers to upgrade themselves in terms of knowledge particularly in the new technologies such as I4.0.

### ACKNOWLEDGEMENT

In conclusion, I would like to thank the Board Members for their support and sharing of expertise to this organisation. My sincere gratitude also goes to the President and Group Chief Executive, the management team as well as all SIRIM staff whose commitment, hard work and perseverance is crucial in ensuring that SIRIM is the Best Partner for Innovation.

**Academician Tan Sri Dr. Ir. Ahmad Tajuddin Ali, F.ASc, P.Eng**  
Chairman





# PRESIDENT & GROUP CHIEF EXECUTIVE'S REPORT

/ The year 2017 saw SIRIM growing towards a healthy and sustainable level of operations. There were significant developments and achievements by the SIRIM Group of Companies in carrying out our core commercial, developmental and statutory roles.

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



# PRESIDENT & GROUP CHIEF EXECUTIVE'S REPORT



From April 2017, I took over the mantle of leadership at the SIRIM Group of Companies. This was a huge responsibility towards steering and realising SIRIM's objectives and aspirations to move forward competitively for future sustainability. I wish to thank and congratulate my predecessor, Dato' Dr. Zainal Abidin Mohd Yusof for the years he was with SIRIM.

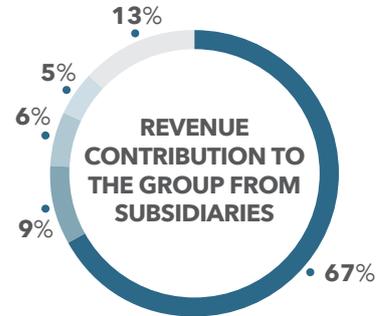
To strategically chart SIRIM's future aspirations, SIRIM's management embarked on developing the 10 Year Strategic Plan which was approved for implementation starting from 2018 to 2027 towards elevating SIRIM to a higher level.

## ELEVATE COMPETENCY, STRIVE FOR COMPETITIVENESS

The financial performance of the SIRIM Group of Companies in 2017 remarkably improved with 91% Profit Before Tax (PBT) growth from 2016's performance. The Group's Revenue grew 10% from 2016, with an improved Group's Cost of Sales & Services, contributing to 15% growth of Gross Profit margin. The strong PBT growth was also contributed by the 20% growth of Income from Investment.

Revenue contribution to the Group from **commercial** subsidiaries, SIRIM QAS International Sdn Bhd (67%) in *certification, inspection & testing services*; SIRIM Standards Training Services (SSTS) (9%) in *standards development, training & consultancy*; SIRIM Measurements Technology Sdn Bhd (SMT) (6%) and SIRIM Standards Technology Sdn Bhd (SST) (5%) in *calibration & measurement services*, respectively.

The overall performance of SIRIM QAS International resulted from the aggressive marketing activities and the strength of the SIRIM brand to retain market share domestically while penetrating the international market and business opportunities with the opening of the new branch office in Bahrain.



- SIRIM QAS International Sdn Bhd
- SIRIM Standards Training Services
- SIRIM Measurements Technology Sdn Bhd
- SIRIM Standards Technology Sdn Bhd
- Others

**91%**  
PROFIT BEFORE TAX (PBT)  
GROWTH FROM 2016  
PERFORMANCE

**10%**  
THE GROUP'S REVENUE  
GREW FROM 2016



The launching of the new ISO 37001: 2016 Anti-Bribery Management Certification Scheme and the new PV Module Testing Laboratory in 2017 are paving ways for higher growth opportunities in the future.

Standards development, training & consultancy services are another key business contributor to SIRIM. In 2017, the new industry standard developed for the Gold Hallmarking Certification is in addition to the Malaysia Standards' development project with Jabatan Standard Malaysia. For the training & consultancy services, the target market was expanded to international customers to sustain growth and secure new opportunities.

Calibration & Measurement services provided by SMT also recorded significant growth in 2017 with the new contract secured by its solutions business unit for the TMNet IP Broadcast Centre Project. The opening of SST's new branch in Kuantan was another milestone in our growth strategy towards enhancing SIRIM's business competitiveness.

Technology commercialisation activities, through the operationalisation of SIRIM Tech Venture Sdn Bhd (STV) as a full-fledged technology commercialisation arm has successfully delivered three projects from our technology & innovation centres in 2017, namely the Micro Precision Grinding machine, LPG composite tank cylinder and anti-fungal cosmetics. Future technology commercialisation opportunities are effectively managed based on technology readiness level (TRL).

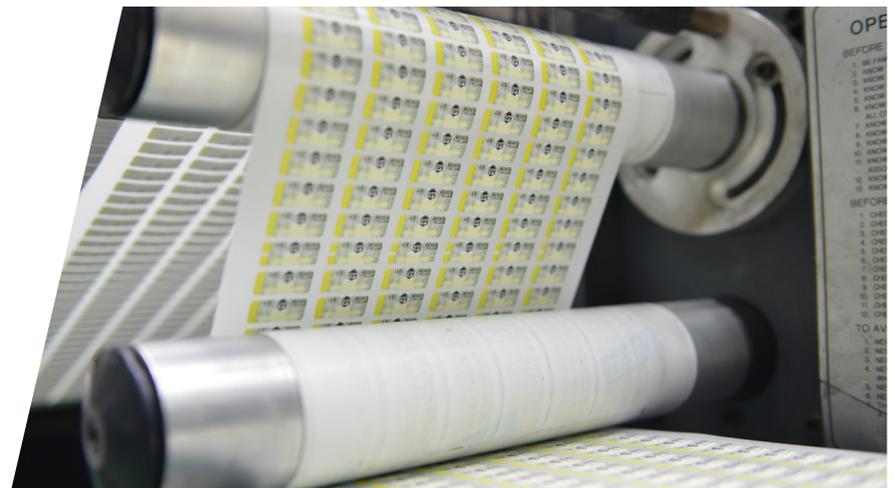
In the medical devices segment, our start-up business unit, Granulab Sdn Bhd, has been certified with the Good Manufacturing Practice (GMP) international certification. This, together with Malaysian Halal status, will enhance our synthetic bone graft products and dental implant products differentiation and competitiveness in the market. Penetration into domestic government hospitals are progressively improving while strategic partnership and licensing to legalise for sales and distribution in Indonesian public hospitals are underway.

Entrepreneurship development for the Malaysian SME industries, particularly in the food & beverages sector, is one of the key objectives of SIRIM's Packaging and Security Design Centre (PSDC). In growing our SMEs' business competitiveness, PSDC successfully trained more than 1,000 entrepreneurs in the product packaging module to meet the export standards. Another focus area to grow under PSDC is the security printing business for government authorities and agencies.

“ **IN MEDICAL DEVICES SEGMENT, OUR START-UP BUSINESS UNIT, GRANULAB SDN BHD, HAS BEEN CERTIFIED WITH GOOD MANUFACTURING PRACTICE (GMP) INTERNATIONAL CERTIFICATION** ”

**44%**

SIRIM IR HAS RECORDED  
A REMARKABLE  
REVENUE GROWTH



## PRESIDENT & GROUP CHIEF EXECUTIVE'S REPORT



Renewable energy innovation as an alternative source of electricity



Technology adoption helps accelerate growth and productivity for SMEs



SIRIM, the National Time Keeper for Malaysian Standard Time

SIRIM's developmental unit, SIRIM Industrial Research (SIRIM IR) continuously strives towards improving its' performance, recording a remarkable revenue growth of 44% as compared to a total of 6% revenue contribution to the Group in 2016. The improved top line performance by SIRIM IR is crucial in realising its' targeted financial sustainability.

The setting up of six Industrial Centres of Innovation (IC-I) in addition to the existing four Technology Centres (TC), provided a better market focus in the applied research and technology innovation activities, benefiting and fulfilling the needs of stakeholders.

Among the notable achievements of SIRIM IR were related to renewable energy innovation and breakthroughs via strategic partnership with the local authority. Four Anaerobic Digesters for food waste were commissioned at food courts in Port Dickson, Melaka, Subang Jaya and Sepang and a shopping mall to convert food waste into an alternative source of electricity at those premises.

Other new products and services launched and offered to the industries in 2017 are the Portable Procedure Station at Government Hospitals, medical devices' cytotoxicity testing services and Scheduled Waste testing for Volatile Organic Compound Analysis.

The SIRIM-Fraunhofer programme, a strategic collaboration with Germany's Fraunhofer Institute, was established since 2015, with the aim of accelerating Malaysian SME's growth and productivity through the technology adoption scheme provided by the government. To date, more than 500 SMEs had participated in the technology audit and intervention programme with more than 100 SMEs nationwide adopting the recommended technology solutions.

SIRIM IR is committed towards developing technology and innovations that contribute significant impact to the improvement of society's well-being with minimal investment cost. In 2017, SIRIM IR commissioned the "solar powered tube well systems" project to supply quality water to villagers in Sik, Kedah. In fact, there are many other SIRIM social innovation products available for potential venture by public and private entities with SIRIM.

Strategic initiatives towards driving financial sustainability, growth and competitiveness were also drawn up for implementation by SIRIM IR beginning 2018 in line with the SIRIM 10 Year Strategic Plan.

SIRIM's statutory functions are performed by the National Metrology Institute of Malaysia (NMIM) and Malaysia Design Council (MDC).

NMIM, as the custodian of the National Measurement Systems Act & Weights and Measures Act, supports the standards, accreditation & conformity assessments services for traceability to NMIM. As for MDC, the main roles are related custodianship and advisory of national design development and promotional activities.

In ensuring future sustainability and effective implementation of the national statutory roles in protecting consumers and trade risks domestically and globally, SIRIM initiated a discussion with the then Ministry of Science, Technology & Innovation (MOSTI) to consider the possibility for NMIM to be an independent entity from SIRIM and to become a direct agency under MOSTI. It is our hope that this initiative will be through under the new leadership of the Ministry of Energy, Science, Technology, Environment and Climate Change.

Moving forward and keeping pace with the latest technological evolution into Industry 4.0 environment, SIRIM is poised to support our stakeholders to enhance their business efficiencies and competitiveness via technology intervention. To realise this, SIRIM has been actively planning the establishment of the National Centre of Excellence for Smart Manufacturing towards catalysing SMEs into automation systems and cyber physical integration towards Industry 4.0.

### CONNECTION BEYOND BOUNDARIES

The management of SIRIM puts strong emphasis to initiate, develop and maintain strong connectivity with our stakeholders, which are the government authorities and agencies, industry players, partners and associations as well as consumers, suppliers and the public at large.

Managing various stakeholders with different levels of influence and interest towards meeting their expectations is highly challenging and requires strategic approaches. As a government owned company entrusted to support industrial and SME growth in Malaysia, SIRIM successfully expands its network, and enhances the brand domestically and globally.



SIRIM's facilities and state offices forming the technical infrastructure and capabilities in every state except Kelantan, Negeri Sembilan and Perlis to provide industrial support to the stakeholders. SIRIM has planned to upgrade the roles, functions, services and facilities at state offices and off-campus research facilities to serve industry players and stakeholders better as outlined in our 10 Year Strategic Plan.

Our aspiration to become the National Centre of Excellence for Smart Manufacturing in the scope of standards, technology and talent development would require a strategic and sustainable collaborative model with government authorities, agencies, industry players, partners, associations as well as academic institutions. Various stakeholders were engaged and approached this year towards realising this aspiration.

In our normal conduct of business, SIRIM has successfully carried out various stakeholder engagement programmes to seek and support business opportunities, network with stakeholders as well as enhance our branding and visibility throughout 2017.

At the Group level, the Strategic Planning Division aggressively scanned for new viable business opportunities. Two key stakeholder engagement sessions were conducted with the Ministry of Finance Incorporated, MOSTI and the Economic Planning Unit to deliberate on SIRIM's strategy, business plan & performance and business development activities. Other business networking meetings were also held with various government agencies, SMEs, Government Linked Companies and MultiNational Companies to explore potential business ventures, partnerships or extending SIRIM's services to potential clients. As a result of these initiatives, 53 Memorandums of Understanding (MoUs) and Memorandums of Agreement (MoAs) were signed during the year.

**MOVING FORWARD AND KEEPING PACE WITH THE LATEST TECHNOLOGICAL EVOLUTION INTO INDUSTRY 4.0 ENVIRONMENT**

# PRESIDENT & GROUP CHIEF EXECUTIVE'S REPORT



## EMBRACING CULTURE OF EXCELLENCE

Culture transformation is another key strategic thrust for the SIRIM Group of companies. Embracing a Culture of Excellence requires migrating the whole organisation from a *fixed mindset* as the public statutory body service provider to a *growth mindset* fitting a highly dynamic public corporate entity focused on commercially viable ventures, financial profitability, enterprise effectiveness and efficiency for future sustainability and independence.

Exploring opportunities with new industries were leveraged via four SIRIM Industry Dialogues covering the Food & Agriculture industry, Electrical & Electronic industry, Machinery & Equipment industry and the Medical Devices industry.

A series of SIRIM Industry Engagements with SMEs were held nationwide in 2017 covering Kuantan, Melaka, Johor Bahru, Sungai Petani, Miri & Tawau by the marketing team at HQ and branches. This provides an avenue for SMEs in the states to leverage on SIRIM's advisory, technologies and facilities utilisation to support their manufacturing operations.

To enhance SIRIM's marketing, branding and visibility, SIRIM participated in various major exhibitions and trade fairs such as NICE Expo 2017 organised by MOSTI and SMIDEX 2017 organised by SME Corporation Sdn Bhd.

As part of our appreciation to the industry, SIRIM also organised the annual SIRIM Quality Award Event, to reward excellent SMEs and industry players. SIRIM's Open Day was held to provide an avenue to the public, community and students to appreciate SIRIM's roles and activities towards nation building.

SIRIM's media coverage and advertisement is a key communication channel for its marketing and branding purposes. Among the highest valued media coverage about SIRIM in 2017 were related to the SIRIM-Fraunhofer programme with SMEs in Sabah and the launching of the Anaerobic Digester Green Technology for converting food waste into an alternative source of electricity in Melaka.

“ **CULTURE TRANSFORMATION IS ANOTHER KEY STRATEGIC THRUST FOR SIRIM GROUP OF COMPANIES** ”

I strongly believe that SIRIM staff will be able to align our actions in the same direction and pace towards our true north, the targeted results at the end of our journey.

To facilitate and accelerate the journey, the Human Resources Division structured a three-year roadmap focussed on three key areas - capabilities and leadership development as well as performance management, to support our people with the required framework in sustaining SIRIM's culture transformation process.

From 2017, the Competency Management Systems (COMS) was implemented to better manage staff's competency gaps with functional and personal development and upskilling programs. The structured competency development program and competencies matching provides a bigger pool of talents for mobility within the SIRIM Group of Companies.

In terms of the leadership development aspect, potential leaders will be identified from the leadership assessment centre, where appropriate leadership developmental programmes will be implemented to close the gaps in preparing for the Group's leadership succession planning programme.

Moving forward, a culture of excellence within SIRIM has to go along with the establishment of an effective Performance Management System to ensure proper aligning and cascading between enterprise objectives and individual performance objectives in order to measure and reward exceptional performance. As such, SIRIM's performance management system and remuneration reward system shall be enhanced as they become key success factors in this culture transformation journey.

Let us embark on this journey towards realising our aspirations for a "NEW SIRIM".

**President & Group Chief Executive**

Prof. Ir. Dr. Ahmad Fadzil Mohamad Hani, F.ASc, FIEM

**“ MOVING FORWARD, CULTURE OF EXCELLENCE WITHIN SIRIM HAS TO GO ALONG WITH THE ESTABLISHMENT OF AN EFFECTIVE PERFORMANCE MANAGEMENT SYSTEMS**



*Business competitiveness is enhanced via technology intervention and evolution*



**/ Report By:**  
Ir. Dr. Mohamad Jamil Sulaiman  
*Vice President, SIRIM Industrial Research*

A photograph of a person wearing a dark blue shirt with white polka dots, leaning over a table. Their hands are positioned near a white electronic device. In the foreground, another person's hand is visible, resting on the table. The background is slightly blurred, showing another person in a dark suit. The overall scene suggests a laboratory or industrial research environment.

**SIRIM**  
**INDUSTRIAL**  
**RESEARCH**

**ENVIRONMENTAL TECHNOLOGY RESEARCH CENTRE**  
 INDUSTRIAL BIOTECHNOLOGY RESEARCH CENTRE  
 SYSTEM DESIGN CENTRE  
 MACHINERY TECHNOLOGY CENTRE  
 IC INNOVATION  
 SIRIM-FRAUNHOFER SECRETARIAT



# ENVIRONMENTAL TECHNOLOGY RESEARCH CENTRE



## BIOFILTER FOR DEODORISATION OF MALODOURS

Palm Oil Mill Effluent (POME) treatment ponds and digesters are one of the most renowned sources of malodour, attributed largely to the presence of volatile organic acids (propionic, butyric and valeric acids which are particularly noxious) and hydrogen sulphide (H<sub>2</sub>S). H<sub>2</sub>S is an extremely toxic substance that will cause harm to a human's central nervous system which is also known as corrosive gas. In addition, H<sub>2</sub>S is also the main cause of global environmental problems such as air pollution and acid rain. Quantification of H<sub>2</sub>S and volatile organic acids (VOCs) have shown that the emission concentration is more than 1000 ppm.

As a project collaborator working hand in hand with the support from Ministry of Science, Technology and Innovation (MOSTI) and Sime Darby Research Sdn. Bhd., SIRIM has established a biological treatment system to remove malodour such as H<sub>2</sub>S from generated biogas. The project adopts biological processes of which indigenous microorganisms are used to convert H<sub>2</sub>S gas to elemental sulphur under partial oxidation condition. "Zero discharge" is the main theme of the process where used biomedica is readily available and microbial inoculums can be harnessed at site based on requirements. pH control is managed by taking full advantage of the buffering capacity of treated wastewater hence, negating the use of caustic chemicals. The spent biomedica and sulphur-containing wastewater can be recycled to nearby plantation as supplementary biofertiliser. As a result, the pilot-scale biological deodorisation system comprising of biofilter tower(s) and associated infrastructure which is modular and compact has been designed for removing

or abating H<sub>2</sub>S from a biogas stream. It can also be expanded to provide for a bigger H<sub>2</sub>S removal facility based on requirements.

The amount of waste generated in Malaysia has been increasing due to the expansion and development of the country's population with only less than 5% of waste being recycled. Food waste contributes approximately 50% of the total solid waste and packaging waste forms the significant part of municipal solid waste. Among packaging materials, a wide range of petroleum-based polymers are currently used in packaging applications which are virtually non-biodegradable with a portion of these packaging waste being difficult to be recycled or reuse due to varying levels of contamination in these complex composites.

**ENVIRONMENTAL TECHNOLOGY RESEARCH CENTRE**  
 INDUSTRIAL BIOTECHNOLOGY RESEARCH CENTRE  
 SYSTEM DESIGN CENTRE  
 MACHINERY TECHNOLOGY CENTRE  
 IC INNOVATION  
 SIRIM-FRAUNHOFER SECRETERIAT

Through SIRIM's initiatives, the Green-Blue Packaging Industry Creation project was implemented to promote the transition to environmentally-friendly packaging in order to reduce food waste and packaging disposal to landfills through anaerobic treatment processes and sited near to the waste generation.

The utilisation of Green-Blue (GB) packaging promotes a green technology industry that is a potential contributor to the economics' growth by addressing the issues of food and food packaging waste. GB packaging reduces greenhouse gas emissions through the restoration of resources and concurrently developing an integration of Anaerobic Digester (AD) for food waste and food packaging materials. These AD systems allow diversion of organic waste fraction and reduction of greenhouse gas emissions from landfills. The organic fraction via biological treatments can also be utilised as a source of energy and biofertilizer.

**“ THE AMOUNT OF WASTE GENERATED IN MALAYSIA HAS BEEN INCREASING DUE TO THE EXPANSION AND DEVELOPMENT OF THE COUNTRY'S POPULATION WITH ONLY LESS THAN 5% OF WASTE BEING RECYCLED.**

Four units of AD systems were commissioned at:



*Kg Gelam Food Court, Port Dickson Municipal Council*



*USJ 7 Food Court, Subang Jaya Municipal Council*



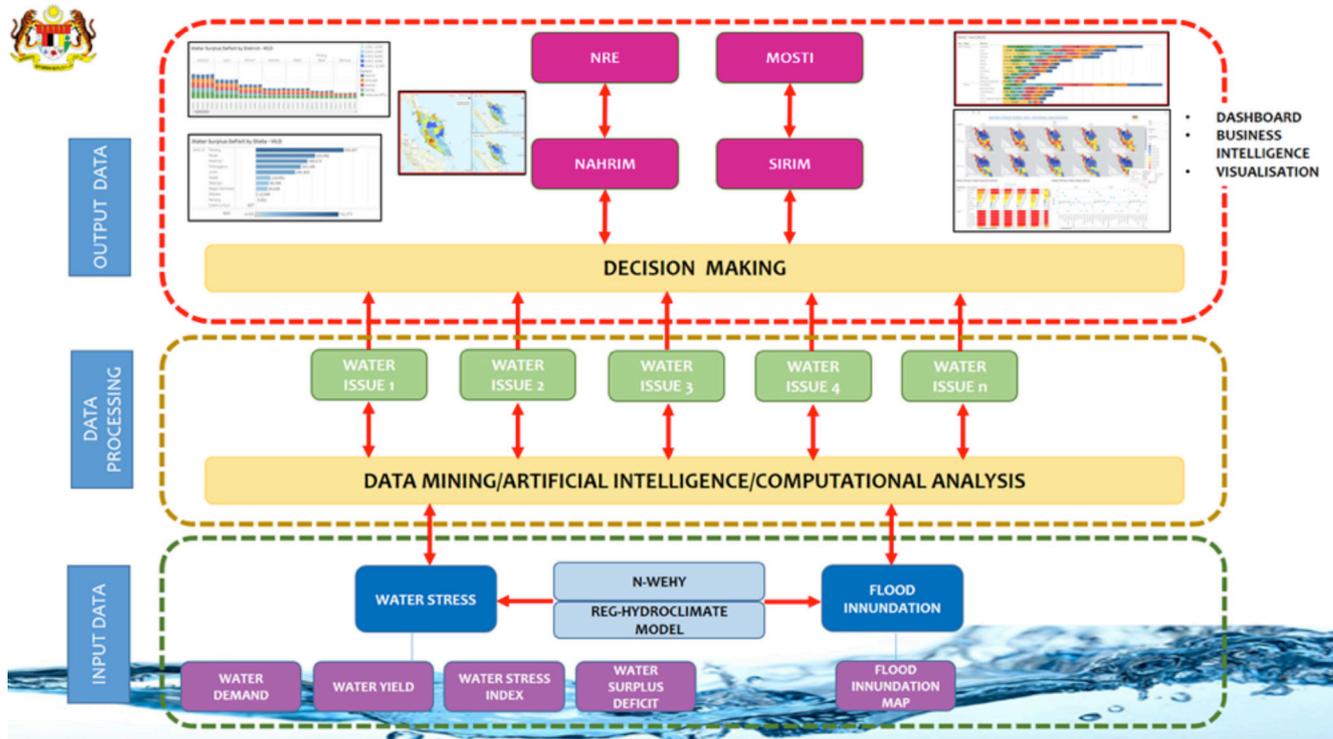
*Malacca Mall Food Court, Melaka Hang Tuah Jaya Municipal Council*



*Dengkil Food Court, Sepang Municipal Council*

**ENVIRONMENTAL TECHNOLOGY RESEARCH CENTRE**

INDUSTRIAL BIOTECHNOLOGY RESEARCH CENTRE  
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 SIRIM-FRAUNHOFER SECRETARIAT



### SUSTAINABLE WATER CONSUMPTION THROUGH WATER FOOTPRINTING (WFP) AND WATER RISK MANAGEMENT

The implementation of project to improve water management through WFP for Sustainable Water Consumption will address water security through the establishment of a water footprint assessment methodology which can be used as a starting point to navigate water risk assessment across the life cycle or supply chain of operation, products and services. It also influences water institution for strategic infrastructure planning and consumption patterns through the:

- Development of a Spatial Differentiated Water Scarcity Index (WSI) Geospatial Database
- Development of WFP Profiles of Products and Services Produced at Regions with Different WSIs
- Water Efficiency in Managing WSI and Improving WFP Profiles for Building Services

- Development of Decision Support System (DSS) for Water Risk Management
- Study on Impact of WFP and Water Scarcity Footprint on Purchasing Patterns

This project is a collaboration between SIRIM and National Hydraulic Research Institute Of Malaysia (NAHRIM), supported by the MOSTI DSTIN fund, with active participation from National Water Services Commission (SPAN) and Department of Irrigation and Drainage (JPS). Among the project outputs are:

- WSI GIS map at district level for local government to plan for mitigation actions in reducing the impact of climate change to water availability.
- Web-based WFP assessment tools for any industries to determine their product WFP for labelling & certification purposes or, for organisational

decision tools to determine hot spots within their processing facilities with more information available at <https://gisportal.sirim.my>.

- DSS for water risk management - a web-based visualisation decision tool for Flood Inundation Map for 11 watersheds embedded with climate change scenarios based on climate change realisations i.e. projected rainfall, evapotranspiration, runoff and streamflow for the duration of 2010 - 2100 with three ranges 2010-2039, 2040-2069, 2070-2100 and overlaid with infrastructure information (flood evacuation centres, hospitals, clinics and etc.).



**/ Report By:**

Isnazunita Ismail  
 General Manager,  
 Environmental Technology Research Centre

ENVIRONMENTAL TECHNOLOGY RESEARCH CENTRE  
**INDUSTRIAL BIOTECHNOLOGY RESEARCH CENTRE**  
 SYSTEM DESIGN CENTRE  
 MACHINERY TECHNOLOGY CENTRE  
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# INDUSTRIAL BIOTECHNOLOGY RESEARCH CENTRE



The Industrial Biotechnology Research Centre (IBRC) participated actively in commercial biotechnology projects with local organisations and SMEs to produce bio-based products from renewable resources with great potential value for multiple industries including chemicals, wellness and healthcare products. In 2017, there were three industrial biotechnology research projects that was funded by Ministry of Science, Technology and Innovation (MOSTI) and other ministries' grants that resulted in the publication of two technical papers and one patent filing. IBRC was also involved in research and development (R&D), and commercialisation activities of cosmeceutical products with a total of five cosmetics products under R&D which was successfully commercialised by local cosmetic entrepreneurs.

In 2017, the centre successfully maintained its ISO 9001 certification after being audited by SAI Global. To stay competitive in technical testing services, the centre increased its ISO 17025 accreditation testing from Standards Malaysia for toxicology, microbiology and material characterization testing. The IBRC Cosmetics production plant maintained its accreditation to GMP and halal manufacturing of cosmetics. IBRC also received The Excellence Award for the Provision of Safety and Biocompatibility to the medical Industry during BioMalaysia 2017.

### 3

INDUSTRIAL BIOTECHNOLOGY  
 RESEARCH PROJECTS  
 THAT WAS FUNDED BY  
 MINISTRY OF SCIENCE

### 5

COSMETICS PRODUCTS  
 UNDER R&D SUCCESSFULLY  
 COMMERCIALISED BY  
 LOCAL COSMETIC  
 ENTREPRENEURS

### ISO 9001

CERTIFICATIONS AFTER BEING  
 AUDITED BY SAI GLOBAL



**/ Report By:**

Dr Ahmad Hazri Ab Rashid  
 General Manager,  
 Industrial Biotechnology Research Centre



ENVIRONMENTAL TECHNOLOGY RESEARCH CENTRE  
 INDUSTRIAL BIOTECHNOLOGY RESEARCH CENTRE  
**SYSTEM DESIGN CENTRE**  
 MACHINERY TECHNOLOGY CENTRE  
 IC INNOVATION  
 SIRIM-FRAUNHOFER SECRETARIAT

# SYSTEM DESIGN CENTRE

The year 2017 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:

- Customising automated machines, manufacturing equipment and systems
- Designing pilot plants based on specialised processing requirements
- Retrofitting existing production machines and equipment for productivity and product quality improvement
- 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 at Ministry of Science, Technology and Innovation (MOSTI) on technology and standards. Industry 4.0 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 decentralized intelligence in manufacturing, production, logistics and the industry.

SDC has also contributed to the following:

- Lead Industry 4.0 (I4.0) Technical Working Group at SIRIM and MOSTI in the area of Autonomous Robots, System Integration and Simulation
- I4.0 Readiness Assessment and Technology audit under SIRIM Fraunhofer.

SDC contributes significantly in the planning of the National Centre of Excellence on Smart Manufacturing and Retrofitting SMEs towards 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 Audit from its Application to Closing. The Portal provides access to data repository and information related to the Technology Audit.



## FY2017

SDC has filed an IP application, PI 2017703526 for "An Integrated Vegetable and Fruit Processor"

## 820,000

SACHETS PER ANNUM BY MOZAC MEDICARE SENDIRIAN BERHAD (MMSB)'S PRODUCTION

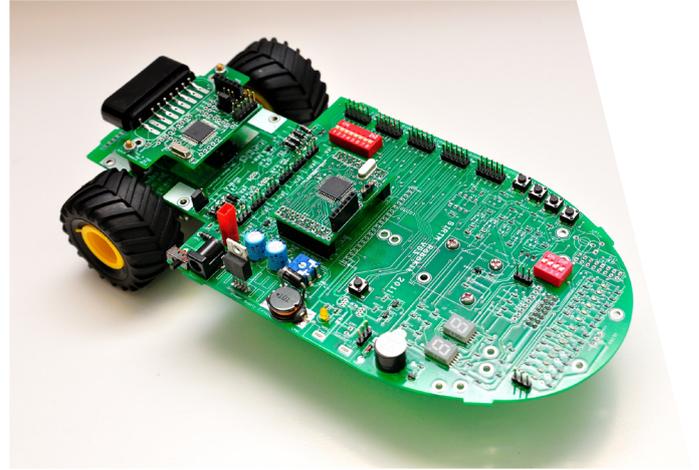
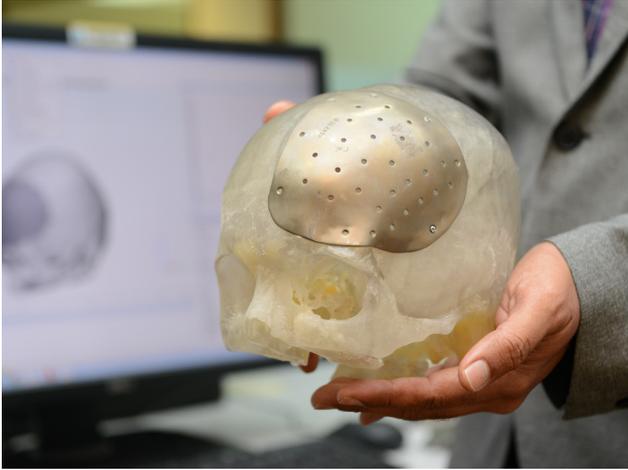


Starting from the successful re-certification of ISO9001:2008 on the Provision of Commercial Contract Development and Engineering Services in Advanced Manufacturing, SDC is now moving towards the certification of ISO9001:2015.

## COMMERCIAL PROJECTS IN 2017

The centre has successfully exceeded its commercial targets again by delivering many commercial projects in various sectors including Security, Defence and Entrepreneurship Development; as well as the Vendor Development Programme (VDP)

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and the International Research Fellowship Programme.

SDC, in collaboration with Ministry of International Trade and Industry (MITI), Malaysia Co-operative Societies Commission (SKM) and Johor Corporation (JCorp), has played an important role in the development of entrepreneurs. These programmes have enabled SMEs to increase their productivity and efficiency in business ranging from awareness programmes, marketing and sales, branding and industrial packaging, consultancy and training activities.

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

#### Entrepreneurship Development

- Integrated Coaching and Mentoring for HIPER Cooperative
- UEM Vendor Intervention Development Programme
- Vendor Development Programme for Bumiputera (Readiness programme towards ISO9001:2015 and Innovative Creative Circle)
- SME Competitiveness and Performance Programme (1 District 1 Industry) Sub Programme

- SME Competitiveness and Performance Programme (Groom Big) Sub Programme
- Product improvement and Quality Programme for Entrepreneur Development Corporation Johor

#### Contract development

- e-QMS for ANGKASA
- e-Mesyuarat for ANGKASA
- Project on Installation of Solaerator® System at Kampung Selang, Kuching, Sarawak
- 8x8 Armoured Vehicle (AV) Supply of Line Replaceable Unit (LRU) Switch Panels
- 8x8 Armoured Vehicle (AV) repair, upgrade and maintenance of Line Replaceable Unit (LRU)

#### Training and consultancy

- WAITRO-ISESCO-SIRIM Research Fellowship Programme in the area of Intelligent Systems
- Workshop on Robotic and Aerospace Engineering
- ISO9001:2008 Certification Audit

The WAITRO-ISESCO-SIRIM Research Fellowship Programme (WRFP) in Intelligent Systems was organised this year with participation from members of top research institutions, World Association of Industrial and Technological Research Organisation

(WAITRO) and the Islamic Educational, Scientific and Cultural Organisation (ISESCO). Participants from South Africa, Thailand, Trinidad and Tobago, Thailand, Iran, Botswana and Tanzania attended the 14-day programme, which became an avenue to strengthen cooperation and collaboration in research fellowship programmes, Research & Development (R&D) and commercialisation. Participants were trained in intelligent and robotic systems and applied the "Train of Trainer" knowledge in a community project to transfer their knowledge to 30 secondary students at SK Santubong Sarawak before the programme drew to a close.

“ **SDC, IN COLLABORATION WITH MINISTRY OF INTERNATIONAL TRADE AND INDUSTRY (MITI), MALAYSIA CO-OPERATIVE SOCIETIES COMMISSION (SKM) AND JOHOR CORPORATION (JCORP), HAS PLAYED AN IMPORTANT ROLE IN THE DEVELOPMENT OF ENTREPRENEURS.** ”

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The SIRIM RoboKit® Team, teachers & students and WAITRO-ISESCO members.



## RESEARCH & DEVELOPMENT PROJECTS

An R&D project entitled "Building our robotic competitiveness in Medical and Healthcare: Development of robots for Assisted Recovery and Rehabilitation" was led by SDC with the objective of helping rehabilitation with robotic arms, legs and exoskeleton. The Centre's experts continue their efforts in the DSTIN Project "Boosting Bio-Natural Gas (BioNG) Utilisation for Energy Security- Demo Plant Bio-NG Generation for Off-site Application".



## COMMERCIALISATION PRODUCTS & ACTIVITIES, PROMOTIONS AND EXHIBITIONS & AWARDS

Throughout 2017, SDC took part in exhibitions to showcase its product inventions. The SIRIM RoboKit® Team participated in the NICE exhibitions with a Robotic Competition opened to all visitors, attracting industry players and academics alike. The event is also featured in Utusan Malaysia News entitled "Kit Robotik SIRIM".

WAITRO-ISESCO Participants and school students facilitating session

A community project, Workshop on Robotic and Aerospace Engineering, was organised in Sarawak involving seven schools, namely, SMK Santubong, SMK Bandar Samariang, SMK Agama Tun Ahmad Zaidi, SMK Demak Baru, SMK Semerah Padi, SMK Tun Abg Haji Openg and SMK Bako. This training introduces participants to the product invention known as SIRIM RoboKit® and SIRIM AeroKit.

The SIRIM RoboKit® Team engaged teachers and students in secondary schools in Sarawak to develop creativity and innovation by incorporating technology and ideas, facilitated by WAITRO-ISESCO members. The success of this programme was the cover story of WAITRO News in October 2017 with full stories in the bulletin.

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In 2017, SDC has filed an integrated Vegetable and Fruit Processor for IP under the application number of PI 2017703526. Among its notable projects, the Centre has delivered one commercial project and six SIRIM Industrial Innovation Fund (SIIMF) projects namely:

1. Development of a Mineral Water Processing Facility in Kg. Ulu Cheka (commercial)
2. Capacity Increase of Sauce Production Output through System and Process Flow Management (SIIMF)
3. Facility Improvement of Production and Packaging of Goat's Milk Powder (SIIMF)
4. Pouch Packaging System of Dried Crisps at Hamie Industries Sdn Bhd (SIIMF)
5. Modification and Improvement of Two Available CNC Milling Machines to Improve Process and Reduce Production Time at Micro Precision Machining Sdn Bhd (SIIMF)
6. Healthcare Product Filling System at I-Medikel Pharmaceutical Sdn Bhd (IMPSPB) (SIIMF).
7. Product Labelling System at Syarikat Gamat Asli Enterprise (SIIMF)

**I. DEVELOPMENT OF A MINERAL WATER PROCESSING FACILITY IN KG. ULU CHEKA**



Mineral Water Processor



Bottle Capper



RO Water Processor



Filling Machine



Tunnel Shrink Oven



Bottle Rinser

**II. CAPACITY INCREASE OF SAUCE PRODUCTION OUTPUT THROUGH SYSTEM AND PROCESS FLOW MANAGEMENT**



1000L Cooking Tank



Homogenizer



Bottle Rinser



Filling Machine

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**III. FACILITY IMPROVEMENT OF PRODUCTION AND PACKAGING OF GOAT'S MILK POWDER**



Powder Ribbon Mixer



Auger Free Form Packaging Machine

**IV. POUCH PACKAGING FACILITY FOR POUCH PACKAGING SYSTEM OF DRIED CRISPS AT HAMIE INDUSTRIES SDN BHD**



Keropok Drying Ovens



Frozen Fish Filleting Machine



Hygienic Dried Keropok



Keropok Drying Ovens

**V. MODIFICATION AND IMPROVEMENT OF TWO AVAILABLE CNC MILLING MACHINES TO IMPROVE PROCESS AND REDUCE PRODUCTION TIME AT MICRO PRECISION MACHINING SDN BHD**



CNC Machine (KITAMURA)



CNC Machine (OKUMA)

## Keropok Hamie ke pasaran global

**Berkat bantuan, bimbingan agensi kerajaan**

Oleh Aslina Abu Bakar  
bhkt@bh.com.my

Marang

Berkat bantuan dan bimbingan pelbagai agensi kerajaan, seorang pengusaha keropok berjaya mengembangkan perniagaannya, malah akan menembusi pasaran antarabangsa tidak lama lagi.

Perurus Syarikat Hamie Industries Sdn Bhd, Hawa Abdul Rahman, berkata bukan mudah untuk melonjakkan perniagaan kerana memerlukan modal besar.

"Tanpa bantuan pelbagai agensi kerajaan, saya mungkin tidak dapat menyediakan modal untuk mengembangkan perniagaan keropok," katanya ketika ditemui di sini.

Hasil bantuan pelbagai agensi kerajaan, perusahaan keropok miliknya semakin berkembang dan tidak lama lagi akan dieksport ke luar negara, termasuk Singapura dan Arab Saudi.

"Saya memulakan perusahaan keropok sejak tiga tahun lalu dengan menggunakan kaedah tradisional iaitu menjemur dan membungkus keropok secara manual dan memerlukan banyak tenaga kerja.

**Peroleh sijil halal**

"Alhamdulillah, selepas tiga tahun beroperasi, kilang memproses keropok di Bukit Kor, Marang, memperoleh sijil halal daripada Bahagian Keselamatan dan Kualiti Makanan (MEST) dan kini turut mendapat permintaan dari negara," katanya.



**Hawa menunjukkan keropok keping dan sos pencicah yang telah dipasarkan di kluaz dan Pasaryaya di Malaysia.**

Hawa berkata, beliau hanya perlu mengeluarkan modal RM50,000 untuk mendapatkan mesin penjemur keropok, manakala RM200,000 lagi dibantu oleh SIRIM.

"Kaedah lama menjemur keropok di tempat terbuka sudah tidak lagi sesuai, sebaliknya perlu jemur di tempat tertutup bagi menjamin ia bersih dan selamat."

"Alhamdulillah, hasil sumbangan dua mesin berbentuk geran sebanyak RM250,000 daripada SIRIM, saya boleh menjemur keropok secara berterusan, sekali gus membantu meningkatkan produktiviti dan kecekapan kerana pada setiap dua jam, kilang mampu menghasilkan 20 kilogram keropok," katanya.



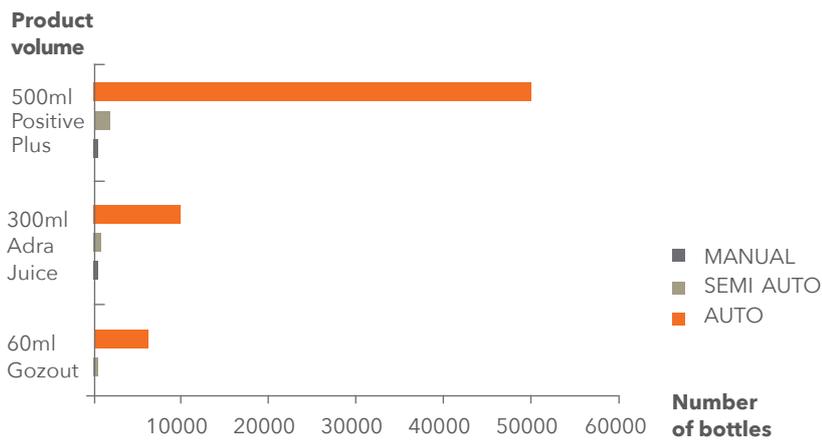
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**VI. HEALTHCARE PRODUCT FILLING SYSTEM AT I MEDIKEL PHARMACEUTICAL SDN BHD**



Auto Filling and Capping Machine

**POSITIVE RESULT AFTER THE INTERVENTION**



**VII. PRODUCT LABELLING SYSTEM AT SYARIKAT GAMAT ASLI ENTERPRISE**



Manual Labelling Process

**INITIATIVES FOR 2018**

As SDC is committed to the development of systems in a diverse range of industries, the main objectives of the Centre's activities are:

- a. To intensify technology uptake for SIIMF programme
- b. To focus on delivering more SIIMF projects in the fields of:
  - F&B
  - Pharmaceuticals
  - Retrofitting
- c. To carry out Industry 4.0 related projects, training and consultancy, technology and Industry 4.0 Audits.
- d. To expand consultancy services towards Halal, GMP and HACCP certification.



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- e. To assist SMEs in increasing their productivity and competitiveness through the SIRIM Fraunhofer project, which includes technology audits and intervention programmes.
- f. To carry out design and development in area of embedded systems, electronics and RFID
- g. To design and develop electronic prototyping
- h. Creating new services: The design and calculation analysis for factory owners of new or used pressure vessels due for registration with Department of Occupational Safety and Health (DOSH). This is in accordance with the Factories and Machinery Act 1967, where each unfired pressure vessel must have a valid certificate of fitness (CF) before it can be operated. Therefore, the approval of the design for the unfired pressure vessel has to be obtained in advance from DOSH before it is fabricated, installed or used. Application for approval of the design may be made by the manufacturing company, installer, supplier or owner of the unfired pressure vessel.

This service's key strategy relates to the SIRIM QAS International role as a certified body of API inspector. This role enable the SIRIM QAS International inspector to inspect factories and identify whether there are any pressure vessels that needs to be registered with DOSH.

The factory owner will be advised by the inspector to submit the application for registration of the pressure vessel to DOSH to be accompanied with the following documents.

- I. Design drawing shall be furnished with:
  - Main dimensions.
  - Welding details.
  - Service of nozzles & orientation of nozzles.
  - Details of material specifications.
  - Design data such as design pressure, design temperature, working pressure, working temperature, test pressure, design code, working media, volume, corrosion allowance, welding factor, flange rating and etc.

- Detail drawings of any components and welding including reference or configuration must be noted on the drawing.
- Location of main safety features such as pressure gauge and safety valve.

- II. Confirmation of design calculations must be based on current thickness in accordance with original version of the design code.

### ACHIEVEMENTS

SDC has participated in the BioEconomy Innovation Award, which displays SDC's homegrown research products, such as Green NGV Save and Smart Paddle Wheel System sweeping the Gold Medal and the Most Commercial Ready Award.



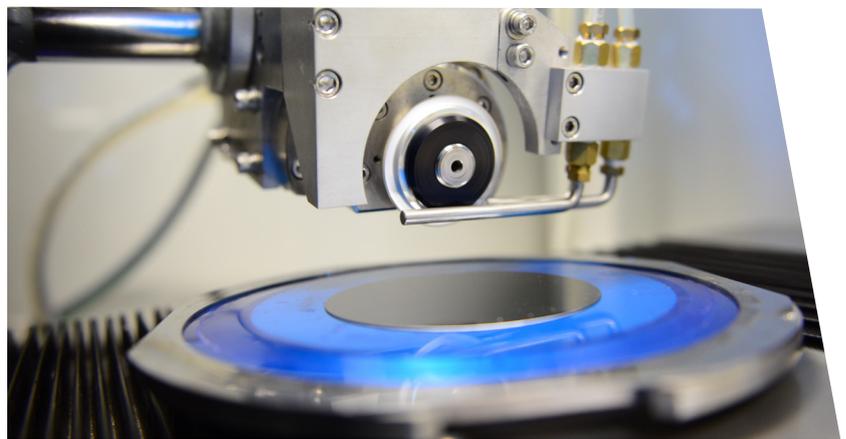
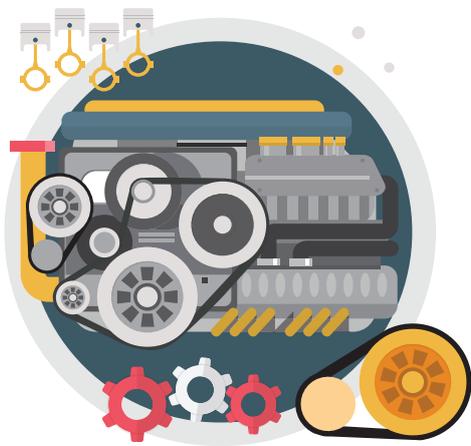
/ **Report By:**  
 Suhaimi Mahmood  
 General Manager, System Design Centre



Certificates  
 Gold & Most  
 Commercial  
 Ready Award

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# MACHINERY TECHNOLOGY CENTRE



The Machinery Technology Centre (MTC) consolidated its operations in 2017, operating within the Foundry Technology Section (FTS) and Machine Design Section (MDS). Both sections provide engineering services and advisory and consulting services in machining and fabrication as well as engineering design and analysis with specific core activities.

## **FTS' core activities include:**

### **1) Engineering Services**

- I. Casting Product Development
- II. Casting Pilot Production
- III. Testing & Evaluation of Casting Products & Materials
- IV. Equipment Rental

### **2) Advisory & Consulting**

- I. Training on Foundry & Tooling Technology
- II. Technical Consultancy

## **Meanwhile MDS' core activities include:**

### **1) Engineering Services**

- I. Design & Development of Machinery, Equipment & Components
- II. Measurements (CMM)
- III. Facilities Rental

### **2) Advisory & Consulting**

- I. Product development
- II. Training on Machine Design & CNC Measurements

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## KEY ACTIVITIES IN 2017

In line with consolidation, MTC's 45 highly experienced technical personnel and 15 support staff has provided a combination of services to more than 85 SME companies and micro-enterprises comprising:

- 1) 24 Technology Adoption and Application companies,
- 2) 32 S&T services vcompanies,
- 3) 14 Technology Audits and Technology Uptakes under the SIRIM Fraunhofer initiative and 15 companies under Ministry of International Trade and Industry's (MITI) "Program Pembangunan Kapasiti Vendor Bumiputera".

The Centre offered highly-specialised training to 16 SME personnel on Tooling Technology and Plastic Injection Mould Technology. In addition to this, MTC hosted the Malaysian Automotive Institute's (MAI) executives and policy makers in a training session to understand manufacturing processes such as foundry, machining, fabrication and mould making. This instilled better understanding of various production processes involved in the automotive industry.

In April 2017, the centre won a bronze medal for "Pembangunan Industri Pemprosesan Makanan Kuih Keras, Roti dan Pastrri" during SIRIM's Invention, Innovation & Technology Expo (SI2TE) in Kulim. MTC's commercialisation of previously completed projects with SIRIM's commercialisation arm STV Sdn Bhd throughout the year involved three machines:

- 1) Optical Dicing Machine
- 2) 2-in-1 Thermoforming Machine
- 3) VMC 800 Milling Machine

Among completed projects in 2017 include the Motorised Adjustable Vertical Platform (MAVeP) for the transportation of a Micro Satellite for ANGKASA. MTC consulted on the MAVeP structure for Finite Element Analysis (FEA), Fabrication, Assembly and Delivery to ANGKASA.

“**SIRIM WAS APPOINTED BY MITI AS THE AGENCY FOR THE DELIVERY OF “PROGRAM PEMBANGUNAN KAPASITI VENDOR BUMIPUTERA”, WHICH INVOLVED 15 SME COMPANIES.**

In addition to these, MTC assisted in setting up a Green Blue Packaging production line in a collaboration with KeTTHA. This project will assist SMEs in the packaging industry with the latest in eco-friendly packaging.

## ONGOING ENGAGEMENTS

In 2017, SIRIM was appointed by MITI as the agency for the delivery of "Program Pembangunan Kapasiti Vendor Bumiputera", which involved 15 SME companies. The program is expected to be completed by August 2018.

MTC is a Sub-implementer in the development of Local Proprietary Formulation of Polyacrylonitrile (PAN) for Lightweight Carbon Fibre tank, a fully funded initiative by MOSTI under the DSTIN Flagship fund. MTC designed and developed the Wet Spinning and Heat Treatment System producing the Carbon Fibre strand. The project is being delivered with a target completion date in the first half of 2018.

In both completed and ongoing projects, the development of production process SOPs and training modules assist companies in their production processes. The journey of commercialisation grows

in-house experience from handling and developing the range and complexity of state-of-the-art machines with high industrial value.

The Centre's activities in 2018 will continue being an implementation agent for the vendor development agenda of MITI, responsible for technical consultancy under the Vendor Development Programme (VDP), past its second approved VDP.

New VDP proposals in Automation, Mechanisation and elements of I4.0 is under way. Recent VDP projects undertaken by MTC in identified I4.0 elements are in collaboration with MITI.

Other initiatives pursued by the Centre include the TVET initiative in discussions with MOHE, MARA, Kolej Vokasional and Malaysia Automotive Institute (MAI).

Upgrading existing production capable machinery at the shop floor to support I4.0 will be undertaken via a few retrofitting projects will be proposed to suitable companies.

This pivots well with the operation of the MTC in Rasa, which will be upgraded with an extended scope of works to comply with the ISO 9001:2015 from ISO 9001:2008. A QMS Audit of the extended scope at the MDS is expected to be done by the first quarter of 2018. It is hoped that, with the anticipated compliance to this international requirement, clients of MTC will be more assured of a wholesome quality service.



/ **Report By:**  
 Md Nizam Abd Wahab  
 General Manager,  
 Machinery Technology Centre

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**IC INNOVATION**  
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# IC INNOVATION - SENSOR

Established in 2017, the Industrial Centre of Innovation (ICI) in Sensor focuses on developing product and services through sensor technology in biosensors, photonics and integrated sensing system.

## KEY ACTIVITIES IN 2017

The ICI Sensor focused on Light-Emitting Diode (LED) applications specifically on the Smart LED Street Lighting System for market expansion, design enhancement of the Underwater Fish Attracting LED (UFAL) lamp for optimal usage efficiency in the aquaculture industry and the Light Alarm Triggering System (LATTe). This was backed with networking events with LED industry players throughout the year.

Other industry-wide issues were tackled through projects such as Inspection of Kelulut Product Industry, and Improving Company Productivity and Safety at Workplace.



In the year under review, a patent was filed for a document tracking system with electronic tag and multiple access processing (PI 2017000789). Similarly, a trademark for iFiltrek TM (2017008080) was registered. The Centre's research culminated in the publication of four papers in various peer-reviewed industry journals:

- Preparation, characterisation & photostability study of biocomposites comprising quantum dots for bioimaging application Materials Science Forum Trans Tech Publications V 900 pp 3-6
- Biocompatible CdSe/ZnS quantum dot micelles for long-term cell imaging without alteration to the native structure of the blood plasma protein human serum albumin RSV. Adv., 2017,7, 2392-2402
- Effective synthesis of silicon carbide nanotubes by microwave heating of blended silicon dioxide and multi-walled carbon nanotube DOI
- Effect of heating duration on the synthesis of silicon carbide nanotubes by microwave heating of MWCNTs and silica Sains Malaysiana



## 2

AWARDS WON AT THE  
 SIRIM INVENTION,  
 INNOVATION & TECHNOLOGY  
 EXPO (S12TE) 2017

“ WE ARE LOOKING INTO NEW GROWTH AREAS TO DEVELOP INTELLIGENT SENSOR NETWORK SUPPORTING THE SMART INDUSTRY, DEVELOPMENT OF INFRASTRUCTURE AND TRACK & TRACE SOLUTIONS.

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The Centre won two awards at the SIRIM Invention, Innovation & Technology Expo (Si2te) 2017, the Silver Award for the LED Lighting System for Night Market Trader and the Bronze Award for the design enhancement of the UFAL lamp for optimal usage efficiency in the aquaculture industry.



### PUBLICATIONS

- The study of photochromic performance and photo fatigue behaviour of Spirooxazine Advance Materials for sustainability and growth AIP Conference Proc. 1901, 130014-1-130014-8

### AWARDS

- Silver Awards - LED Lighting system for Night Market Trader (Si2te - SIRIM Invention, Innovation & Technology Expo 2017)
- Bronze Awards - Design Enhancement of Underwater Fish Attracting LED Lamp (UFAL) and Develop its Optimal Usage Efficiency for Aquaculture Industry (Si2te - SIRIM Invention, Innovation & Technology Expo 2017)

### UPCOMING ENGAGEMENT

One of the hot issues arisen in 2017 is the kelulut industry which has spurred thought leadership on resolving the authenticity of the food item. ICI Sensor has arranged for networking sessions with the industry to get the ball rolling in developing biosensory technology to guide the industry. Other focus areas in the new year include:

- Integrated Smart-Manhole Management System
- Enhancing Halal Pastille Production Productivity through Automation of Process and Quality Control System Development
- Improving Capal (Thongs) Manufacturing Process to Improve Quality and High Yields
- Enhancement of Islamic Clock with Intelligent and Educative Features for Muslim Family Lifestyles Spurring SSL/LED SME Innovation through Best Lighting Project Management Practise
- A Modular Microfluidic System for Rapid Serotype-Specific Detection of Dengue Virus Infection
- Improvement of Mushroom Blocks Production Process
- Development of Automatic Production System for Rojak Sauce from Filling Process to Packaging
- Training on Internet of Things (IoT)
- Retrofit Programme for SME Preparation towards Industry 4.0 (I4.0)
- Specialised lighting system for tissue culture

### PROJECT IN 2018

- Design Enhancement of Underwater Fish Attracting LED Lamp (UFAL) and Develop its Optimal Usage Efficiency for Aquaculture Industry (Q3)
- Light Alarm Triggering System (LATTe) (Q4)

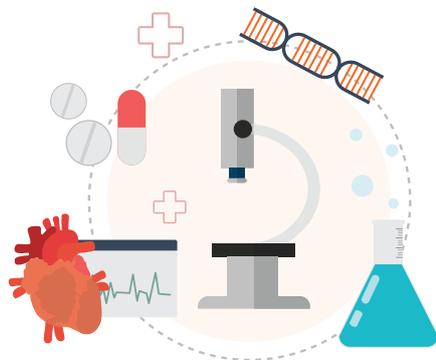
At ICI Sensor, we are looking into new growth areas to develop intelligent sensor network supporting the smart industry, development of infrastructure and track & trace solutions. We train our focus on specialised solid state lighting and precision farming, smart sensor systems based on optoelectronic sensing for healthcare applications and smart packaging and labelling for product safety and security.



/ **Report By:**  
 Hamidah Sidek  
 Director, IC Innovation in Sensor



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# IC INNOVATION - BIOMEDICAL

Industrial Centre of Innovation (ICI) in Biomedical initiates and delivers innovative solutions within the medical sector. Key research in biomedical implants comprise of dental, cranio, maxillofacial, fixture plates, total hip and total knee replacements; wound management for third degree burns, and exudative wounds and bioceramics for dentistry and orthopedic applications.

### KEY ACTIVITIES IN 2017

The focus of ICI Biomedical has always been in industry-viable areas, involving international research organisations, academia and businesses. The Centre’s main thrust is through Technical Services & Consultancy, contract research, Marketing & Business Development, technology transfer and commercialisation, and non-government industrial research.

In 2017, nine tests that were ISO/IEC17025 accredited by early 2018 under both chemical and physical testing methods. In 2018, the Centre aims to include thermal, sterility and biomechanics testing by the second quarter of the year.

In terms of technology transfer, ICI Biomedical prospected three projects, namely, portable procedure stations (PPS) in hospitals and commercialisation of tube well:

9  
 TESTS THAT WERE  
 ISO/IEC17025 ACCREDITED  
 BY EARLY 2018 UNDER BOTH  
 CHEMICAL AND PHYSICAL  
 TESTING METHODS

Project Background	Objectives	Output	Outcomes
Portable procedure stations (PPS) in hospitals	To perform on-the-spot medical procedures where healthcare professionals move to attend to as many prepped patients as possible.	<ul style="list-style-type: none"> <li>PS is less labour intensive as it involves lesser prep work and transfer of patients. This makes it more efficient for healthcare providers.</li> <li>PPS is more time efficient as healthcare providers move to patients instead of waiting for patient transfer to occur.</li> </ul>	<ul style="list-style-type: none"> <li>PPS avoids cross infection between patients</li> <li>Increases customer satisfaction levels</li> </ul>

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## PROJECT

### Portable procedure station for use in hospitals

#### Advantages of Portable Procedure Station (PPS)

- Avoiding cross infection
- Labor saving
- Time saving
- Efficiency of work
- Increasing customer satisfaction level

### Commercialisation of Tube Well

- Advantages of Solar Powered Tube Well System
- The first in the Peninsular using solar system
- No electricity and water bills
- No maintenance
- System can last up to 20 years
- Very suitable in remote areas which are without electricity or water supply or during drought

ICI Biomedical conducts non-governmental industrial research, supporting five contract research projects for MITI, DSTIN and SIRIM in 2017 alone.

Three ongoing development MITI projects from the previous year saw two reaching full valuation, namely, the RM6.1million establishment of accredited biomechanical testing for medical devices and the RM1million customisation of biomedical implants through additive manufacturing for total knee implants. The remaining project worth RM2.5million for the customisation of biomedical implants through additive manufacturing for total hip, dental, surgical guides, maxillofacial and craniofacial only realised RM850,000 with the remainder to be carried out in 2018.

Other than MITI, contract research for DSTIN to garner local proprietary formulation of polyacrylonitrile for CF lightweight formulation realised RM1million of its total RM7.5million project value in 2017 and ICI Biomedical conducted a SIRIM-wide case study project of transforming

local dental labs through innovation and digital technology adoption to enhance efficiency and productivity, in the year under review.

An active roster of events saw ICI Biomedical organising technical conferences, workshops and seminars across all biomedical fields. The calendar of events are as below:

No	Event	Date/Venue
1	Workshop on the Importance of Biosafety Assessment for Biomedical Products	13 March, SIRIM Berhad Kulim
2	SIRIM Invention, Innovation & Technology Expo (Si2TE) 2017	18-19 April 2017, SIRIM Berhad Kulim
3	Hands-on Training on Biomaterials Characterizations: Cell Culture, Cytotoxicity and Cell Morphology	22-24 May 2017, SIRIM Berhad, Kulim
4	Workshop on Coating for Optical And Biomaterial Applications by SolGel Techniques'	15-17 Ogos 2017, SIRIM Berhad, Kulim
5	2nd Advanced Powder Metallurgy Symposium 2017'	26 September 2017, Eastern & Oriental Hotel Penang
6	Workshop on Bio-Imaging: Confocal Microscopy	23 Oktober 2017, SIRIM Kulim
7	Workshop on Nano-enabled Products and Medical Devices: Testing and Regulation of Nanosafety''	13-14 November 2017, SIRIM Berhad Kulim
8	Conference on Biomedical & Advanced Materials (BIOCAM) 2017	28-29 November 2017, Bayview Hotel, Pulau Langkawi

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**OTHER ACTIVITIES IN 2017**

In summation, ICI Biomedical carried out other activities in 2017 including a technology audit, funding for innovation and Micro and Small Enterprise (MISE) projects, publications and Intellectual Property (IP) patent filings.

The technology audit is where 10 auditors from ICI Biomedical audited nearly 36 Small and Medium Enterprises (SMEs) and proposed new processes to enhance productivity and quality. Our involvement in this market sector also saw ICI Biomedical securing three SIRIM Industrial Innovation Model Fund (SIIMF) for RM270,086 and a MISE project to automate product packaging costing RM68,310 respectively. Funding for SIIMF projects had the following breakdown:

1. Improvement of product quality and productivity at Inang Suri costing RM63,886 till March 2018
2. Gelatine waste recovery for soft gel production costing RM70,000 with RM14,840 consumed by 14 February 2017
3. Automated mini Murtabak production machine costing RM136,200

Contributions to thought leadership included the publication of 10 refereed or STI publications throughout the year and three patent filings for the area of biomaterials:

No	Title	Inventor
1	Medical Procedure Station	Dr. Rosdi Ibrahim
2	Non Adhesive Hydrogel Film for Wound Management Applications	Siti Farhana Hisham; Azreena Mastor; Syazana Abu Bakar; Abdul Yazid Abdul Manaf; Siti Hajar Kassim; Norhidayah Abu; Dr. Kartini Noorsal
3	Drug Eluting Calcium Phosphate Scaffolds for Bone Tissue Engineering	Salina Sabudin; Sudirman Sahid; Shirin Ibrahim; Nor Shahida Kader Bashah; Muhamad Anas Marzuke; Zul Hazmi Hussin; Bakar Meh

**ONGOING AND PROSPECTIVE ACTIVITIES IN 2018**

Taking a product from the drawing board to the marketplace is one of ICI Biomedical’s key function. In 2018, the Centre will commercialise research products of maxillofacial implants and the chyto sponge as well as socio-economic projects which are the solar-powered tube well and portable procedure station.

Under the Centre’s initiative to solve an industry-wide problem is the transformation of dental appliances manufacturers through innovation and digital technology to adopt more efficient methods to increase productivity.

In terms of fundraising under the SMART Challenge Fund, will be Dr Jamuna Thevi’s development of an Antimicrobial Biocomposite Membrane for Dentistry and Orthopaedics for RM999,951 and the resubmission of Dr Rosdi’s titanium alloy metallic implant by metal injection molding technique for trauma cases valued for RM3million. The upcoming year will also see the CESS Fund considering proposals for palm oil and the oil and gas industries.

Among one of the key thrusts of ICI Biomedical is laboratory work and 2018 will see the preparation of proposals for OPEN LAB initiatives, big contract testing and hosting a visit from Akademi Sains Malaysia (ASM) in its effort to scout for potential labs. On 27 April 2018, the ISO/IEC 17025 laboratory accreditation (Advanced Materials Testing Laboratory) was acquired.



**/ Report By:**  
 Dr. Kartini Noorsal  
 Director, IC Innovation in Bio Medical

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# IC INNOVATION - NANOTECHNOLOGY



## 2

PROJECTS UNDER MOSTI'S  
GRANT (SCIENCE FUND  
AND TECHNOFUND)  
CARRIED OUT IN 2017

## 43

TECHNOLOGY AUDITS  
PERFORMED FOR SMES

## 110

REQUESTS FOR  
TECHNICAL SERVICES  
ALLOWED THE CENTRE  
TO PARTICIPATE IN TESTING



Debuting in 2017, the Industrial Centre of Innovation in Nanotechnology (ICI Nano)'s main focus on nanotechnology and its industrial applications embeds knowledge and value-adding enhancements to the industry.

ICI Nano's role in providing innovative nanotechnology solutions is to boost its penetration among SMEs and increase their productivity; conduct market-driven R&D in line with national nanotechnology focus areas; provide nanomaterials characterisation, testing and consultation, and to support and collaborate with National Nanotechnology Centre (NNC) and Nano Malaysia Berhad (NMB) to forge a homegrown nanotechnology industry.

### KEY ACTIVITIES IN 2017

In line with the Centre's role, there were two projects under MOSTI's grant (Science Fund and Technofund) carried out in 2017. Under the Science Fund, there was a project titled "Low Pressure Storage System Using Amine Functionalize Multiwall Carbon Nanotube As Absorbent Materials For Natural Gas Storage" approved in 2017 and is undergoing in 2018. For Technofund project, it was completed in October 2017 titled "Pilot manufacturing process of titania-silver composite coatings on 316l stainless steel orthopedic fixation plate". The objective of this project is to complete GLP compliant preclinical assessment (in-vitro and in-vivo) according to ISO 10993 series. This project will be further tested for clinical study with Islamic International University of Malaysia (IIUM) as a collaborator.

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Under the SIRIM Fraunhofer programme, there were 14 technology uptake projects approved and 43 technology audits performed for SMEs. The technology audits performed by 15 auditors from ICI Nano resulted in innovative processes and technologies adopted by the audited SMEs, improving productivity in the process.

In terms of research, ICI Nano carried out market-driven R&D in advanced materials and nanotechnology to deliver outputs and products for future commercialisation. Receiving more than 110 requests for technical services allowed the Centre to participate in testing contracts, testing services for ceramic, metal, composite and polymers utilising high-end equipment such as the XPS, XRD, FESEM, TEM, VPSEM and materials processing facilities.

ICI Nano fosters increased awareness of its technological capabilities and facilities to the industry, institutions of higher learning, research institutions and Government agencies through participation in exhibitions and organisation of seminars, workshops and training programmes. Through these ventures contract R&D, consultancy, training and technical service projects may be affected by ICI Nano in the near future.



**/ Report By:**

Dr. Mohd Radzi Mohd Toff  
 Director, IC Innovation in Nanotechnology

The long-term visibility of ICI Nano is also enhanced by the contribution of its highly-trained personnel in expert panels that evaluate projects under the Science Fund, Techno Fund and other nanotechnology-related projects under NNC.

A vital marker of ICI Nano's contribution in the nanotechnology sector is found in its' active calendar of events both as an Organiser and a Participant. Among the industrial engagement, workshops and seminars involving ICI Nano are:

No	Event	Date/Venue
1	SIRIM Fraunhofer Program Bersama Vendor	20 February 2017, Universiti Malaysia Kelantan (UMK), UMK, Kelantan
2	Industrial Engagement on Nanotechnology	29 March 2017, Bluewave Hotel, Shah Alam
3	Business Networking Session with Boustead Naval Shipyard Sdn. Bhd	2-3 May 2017, Boustead Naval Shipyard Sdn. Bhd., Lumut, Perak
4	Industrial Engagement Programme - SIRIM Industrial Research with Boustead Naval Shipyard Sdn. Bhd.	11 July 2017, SIRIM Kulim
5	Industrial Engagement Day with Southern district companies for ICI Programme	15 August 2017, Bayu Marina Resort, Johor Bahru
6	Industrial Engagement Day at Northern area for SME	22 August 2017, Hotel Park Avenue, Sungai Petani, Kedah
7	National Electrospinning Workshop 2017 (NEW2017)	11 October 2017, Auditorium Research Centre, Bukit Jalil, Kuala Lumpur
8	Symposium on Manufacturing with Nanotechnology - Towards Industry 4.0	6-7 November 2017, SIRIM Kulim
9	Business Networking Session with LGM on Kedah Rubber City	14 November 2017, Palm Garden Hotel, Putrajaya
10	Business Networking Session with KKTM, Kuantan, Pahang	21 November 2017, Pahang
11	Business Networking Session with PETRONAS	22 November 2017, Kerteh, Terengganu



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# IC INNOVATION - BioNG



The main project for ICI BioNG is Dasar Sains Teknologi Inovasi Negara (DSTIN)'s Boosting Bio-Natural Gas (BioNG) Utilisation for Energy Security. By addressing weak links in the value or supply chain of renewable gaseous fuel from solid and liquid biomass, this project converts waste into energy resources.

Biomass feedstock or BioNG originates from waste readily found in palm oil mills and municipal landfills and has the potential to power grid lines upon successful conversion as a fuel option. This power generation option is viable for sites closely located to grid lines, however as most palm oil mills are remotely located and main consumers of energy, the main gap would be to connect the generation site to the usage site.

Current modes of transportation of BioNG from palm oil mills either through tankers and gas tanks or gas pipelines are both inefficient and expensive. The most energetic transportation method seems to be by reducing transport vehicle mass via lightweight carbon fibre cylinders for storage and mobility.

The project outcome of developing a demo plant to demonstrate the viability of BioNG took place in eastern Sabah on a semi-commercial scale in 2017. The success of the project will determine the commercialisation route of BioNG as a sustainable alternative to diesel-powered plants and other industrial consumers. By improving the mobility of gaseous fuel via the application of lightweight modular storage tanks (virtual pipeline), BioNG utilisation is expected to gain traction.

## KEY ACTIVITIES IN 2017

The project's two main components, which are the design and construction of a 5,000L diesel-equivalent or 170MMBtu per day - capacity compressed BioNG demonstration plant in Tawau, Sabah and the development an energetic gas transportation (virtual pipeline) system for distribution of BioNG were undertaken in 2017.

By December 2017, the testing and commissioning of the BioNG processing plant and Mother Refuelling Station comprising a high pressure compressor of up to 200 bar and a filling station were completed. The resultant BioNG has been used in fuelling the on-site genset and vehicles and off-site applications are pending the development of the gas transportation system.

TWO MAIN COMPONENTS WHICH ARE THE DESIGN AND CONSTRUCTION OF A

5,000L

DIESEL-EQUIVALENT OR 170MMBTU PER DAY

200

BAR AND A FILLING STATION WERE COMPLETED DRIVING CAMPAIGN

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### ONGOING ACTIVITIES IN 2018

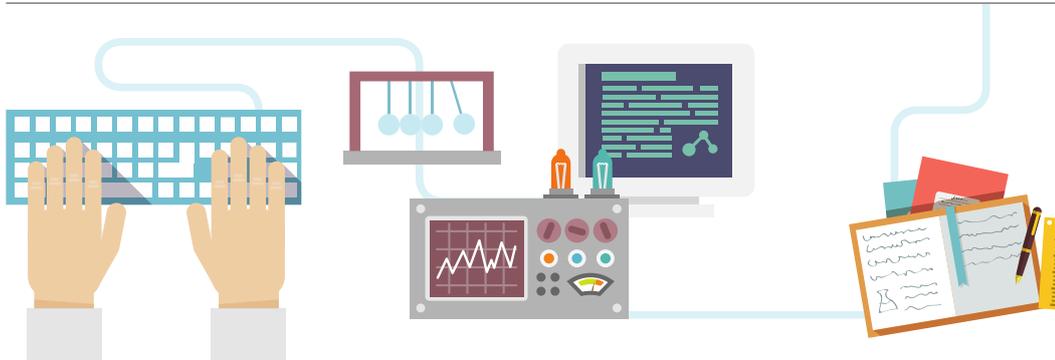
Meanwhile, the construction of the lightweight virtual pipeline has met some challenges as the composite cylinders produced in Permatang Pauh have yet to comply with one of the ISO 11439 standard tests, which is exposure to extreme temperature pressure cycle. This results in ongoing design improvements on liner and cylinder materials to be undertaken in 2018.

The targeted certification by SIRIM QAS International is slotted for July 2018 and the virtual pipeline is expected to be delivered to Tawau by August 2018 with end-users benefitting from BioNG by September 2018.



**Report By:**  
 Azhar Abdul Raof  
 Director, IC Innovation in BioNG

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# IC INNOVATION - ENERGY MANAGEMENT

Under the SIRIM-Fraunhofer Programme, the Industrial Centre of Innovation (ICI) in Energy Management (EM) (ICI-EM) has successfully implemented Technology Uptake programmes for Small and Medium Enterprises (SMEs), Energy Consultancy and Government-funded programmes under the auspices of the Ministry of Science, Technology and Innovation (MOSTI). Transfer of knowledge and experience from the SMEs Technology and Innovation Development programme, Commercial Consultancy services and applied research activities has catalysed growth in this area and positioned ICI-EM as an end-to-end Energy Management solutions provider.

## SIRIM-FRAUHOFFER TECHNOLOGY UPTAKES

As the sustainability agenda gains ground, focus on the impact of green house gas (GHG) emissions originating from combustion of fossil fuels has turned to renewable energy sources with low impact on the environment, including solar, biomass and wind. The other approach to GHG reduction is in Energy Audit implementations.

In the past year, ICI-EM has seen three SIRIM Industrial Innovation Model (SIIM) Fund projects implemented with consideration of the utmost criteria of crafting viable renewable energy resources while ensuring productivity improvement is achieved.

The three projects are the optimisation of Industrial Rotating Air Drum Dryer for Drying of Empty Fruit Bunches (EFB) in the Palm Oil Industry; Supply, Installation, Commissioning and Training on Electropolishing Process and Energy Management; and Packaging System for Spices and Improvement on the Drying System.

### 3

SIRIM INDUSTRIAL  
 INNOVATION MODEL (SIIM)  
 FUND PROJECTS  
 IMPLEMENTED WITH  
 CONSIDERATION OF THE  
 UTMOST CRITERIA OF  
 CRAFTING VIABLE  
 RENEWABLE ENERGY  
 RESOURCES WHILE  
 ENSURING PRODUCTIVITY  
 IMPROVEMENT IS ACHIEVED.

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Project Background	Problem Statement	Objectives	Output/Outcomes
<p><b>OPTIMISATION OF INDUSTRIAL ROTATING AIR DRUM DRYER FOR DRYING OF EMPTY FRUIT BUNCHES (EFB)</b></p> <p>Hosted by Detik Aluran Sdn Bhd, the project repurposes solid biomass waste derived from Empty Fruit Bunches (EFB) and Palm Kernel Shell (PKS). Both EFB and PKS have high energy content with calorific values of 20MJ/kg and 18MJ/kg respectively.</p> <p>Detik Aturan utilises PKS as fuel source to power the biomass furnace that generates hot combustion gas for EFB drying. EFB's moisture content (MC) drops from 80% to 15-20% prior to pelletising.</p> <p>As Malaysia's leading EFB pellet producer, monthly capacity of approximately 1,000 tonnes is supplied to Japan, Korea and China in Asia Pacific.</p>	<p>Production has dropped and yield inconsistent in the oldest plant in Kuala Selangor due the drying system's biomass furnace and rotating drum dryer.</p> <p>Biomass furnace's inconsistent heating is due to surface heat loss of the aged unit and direct transfer of hot combustion gas to the rotating drum dryer via uninsulated perforated vertical steel plates.</p> <p>The rotating drum dryer is inefficient with longer drying time required to reach MC of 15=20%, which tallies with the higher humidity levels recorded. Process-wise, the operations are halted due to entanglement of EFB fibres and lumping.</p>	<p>Optimisation of the biomass furnace involves incorporation of suction blower, a shell and tube type heat exchanger and several blowers. The rotating drum dryer was retrofitted with the replacement of the lifting flight with a spiral type. Refer to Figure 1.0 for process improvement</p>	<p>Targetted productivity improvement was by 50%.</p>
<p><b>SUPPLY, INSTALLATION, COMMISSIONING AND TRAINING ON ELECTROPOLISHING PROCESS AND ENERGY MANAGEMENT</b></p> <p>Hosted by OSA Technology Sdn Bhd, the project involves electroplating and electropolishing, which is a process using electrolysis to refine metals to the desired concentration or purity.</p> <p>The host is a medical device and implant manufacturer and provides products in the orthopaedic industry.</p>	<p>Electropolishing is the subsequent process of pretreatment of metals, which includes degreasing, cleaning and polishing, that has caused a bottleneck in production.</p> <p>The new electroplating process will improve production capacity and an Energy Audit was done to assess the high utility bills of the plant.</p>	<p>The twin objectives of increasing productivity of bone plate and screw plating as well as to provide an energy-efficient solution</p> <p>Figure 2.0 shows the overall process improvement.</p>	<p>To increase productivity from 10 pieces per batch hour to 20 pieces per batch hour, which is 100% increase for the electropolishing process.</p> <p>Energy Audit reported energy savings of approximately 15% (low cost measure).</p>

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Project Background	Problem Statement	Objectives	Output/Outcomes
<p><b>PACKAGING SYSTEM FOR SPICES AND IMPROVEMENT ON THE DRYING SYSTEM</b></p> <p>Kuala Terengganu-based Syarikat Hassan Majid Sdn Bhd a family-run spice production and distribution company has been in operations for half a century now. The annual average income of RM2million in the local market supports a semi-manual production that relies heavily on labour.</p> <p>Production capacity is 550kg/day from grinding but drying is dependent on weather with the conventional dryer churning out 1.5 to 3 days/batch.</p> <p>Spice packaging is limited to one machine that produces seven products at one go. Packaging is done manually and relies on operator skills.</p>	<p>To overcome production bottlenecks, a solar dryer to replace the conventional dryer will remove the uncertainty of drying time and improve drying to 1 day /batch.</p> <p>Meanwhile and automated packaging machine will eliminate time consuming manual packaging and increase productivity by 68% for spice packs.</p>	<p>The objectives of reducing production time for drying and packing will see automation and innovation in processes.</p> <p>Figure 3.0 shows the production floor after technology uptake.</p>	<p>Installed new solar drying system reduces entire drying time to 1 day/batch.</p> <p>Automated packaging process improved productivity by 62%.</p>



Fig 1. Enhanced drying system by SIRIM.

#### KEY ACTIVITIES IN 2017

There were two main programmes and collaboration organised under the SIRIM-Fraunhofer programme participated by ICI-EM. They were the Food 4 Future Innovation Network and the ISE Collaboration with Fraunhofer.

**The Food 4 Future Network** pilot programme is an interconnected and integrated functions and operations by SMEs in the food processing sector mediated by scientific partners. SIRIM-Fraunhofer's development or diffusion of innovation actualised the SME's growth and competitive edge. Launched and officiated by the Deputy Minister, MOSTI in mid-December 2016, there were 10 food & beverage manufacturing companies who joined as founding members.

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Activities carried out by the programme:

1. Periodic workshops to discuss and updates from the industries on relevant topics such as the development of technology trends, market radar and online surveys of SME's business and strategy.
2. Best practice site visits to Multi-National Companies (MNCs) for exposure and management perspectives of operations from their point of view.
3. Malaysia International Food & Beverage (MIFB) trade fair participation in August 2017 at Putra World Trade Centre (PWTC) to showcase and promote innovation network programme.
4. National Seminar on Food Innovation and Global Trends, a one-day plenary session during MIFB with more than 250 local and international participants.

The ISE Collaboration with Fraunhofer was a collaborative effort by ICI-EM with Fraunhofer ISE, Germany to conduct in-depth Energy Audit on two sites - NB Poultry Processing, Johor and KPJ Ampang Puteri, Kuala Lumpur. The audit for energy management detailed the hot water supply system in both premises, where based on actual demand of hot water and energy, ICI-EM proposed a Solar Thermal system to meet industry and hospital needs.



Fig 2. New electro polishing process improves production time and overall productivity

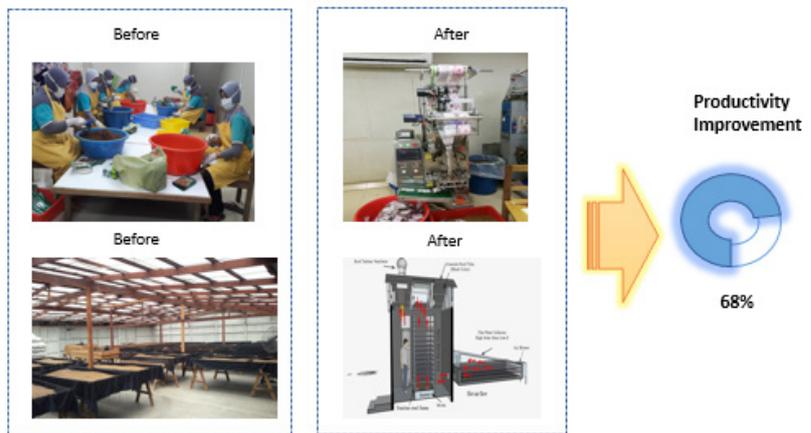


Fig 3: Automated packaging and Drying system.



Fig 4: Workshops and Best Practice Industry Learning by the Innovation Network Members

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Fig 5: National Seminar on Food Innovation and Global Trends during MIFB 2018

### ENERGY CONSULTANCY SERVICES

ICI-EM's Energy Audits, whether independent preliminary, detailed or investment-grade allow companies to understand energy management by identifying opportunities for energy saving in reducing total energy consumption. The Energy Management System standard EnMS ISO 50001:2001 provides systematic technical and management approach for those committed to energy efficiency.

A number of Energy Audit Grants from both SEDA and MGTC were obtained to perform Energy Audits on industrial and commercial premises. Beginning with understanding consumption breakdown by fuel type/electricity it progresses to close measurement and monitoring of Significant Energy Users (chillers, pumping system, energy supply system, major process equipment and lighting).

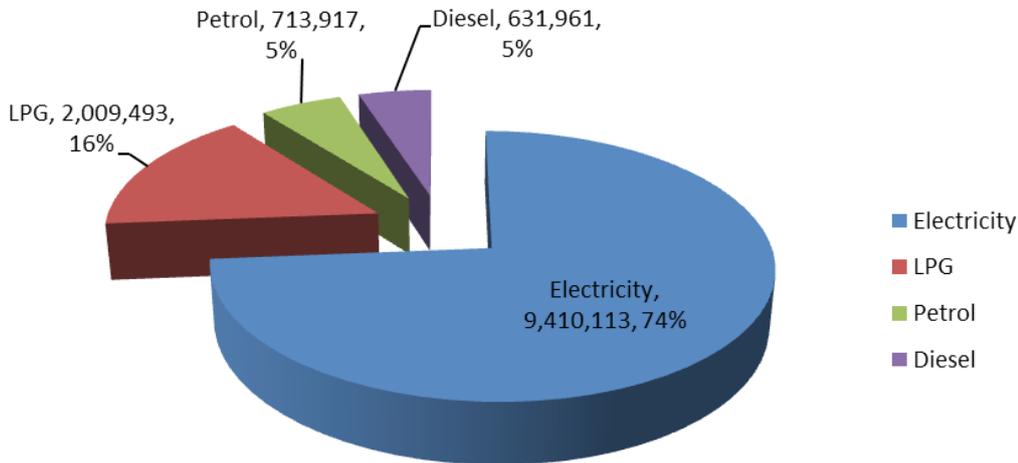
### RESEARCH AND DEVELOPMENT (R&D)

Two of the most exciting R&D projects undertaken by ICI-EM in the year under review was MyLIPOS for Stationary High-Power Energy Storage Applications and High-Performance White Quantum Dot Light Emitting Diode (QDLED) based on InP/ZnSe/ZnS colloidal nanocrystal.

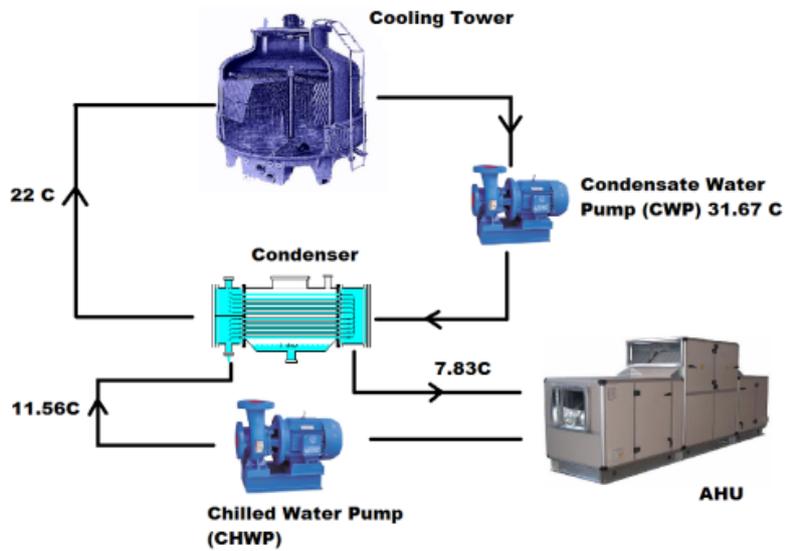
In the first project, MyLIPOS is a lithium-ion battery utilising lithium iron phosphate (LiFePO<sub>4</sub>) as a cathode. The electrochemistry allows high-power density, longer lifetime and safer for end users. Fabricated at a pilot plant in SIRIM Pulau Pinang, MyLIPOS battery module is customizable in large or small formats powering a diversity of energy storage systems and performs well and safely in Malaysian climate.

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## Energy Consumption (kWh) breakdown



Example Energy Utilization Breakdown/Apportionment



Central air conditioning system e.g. Chiller



Heating ventilation air conditioning (HVAC)  
 e.g. Chiller



Fig 8: Energy Audit

ICI-EM applied for this project to be placed under DSTIN funded by MOSTI to advance its technology for three stationary high-power stationary applications:

- a. Solar-powered lighting –  
 Comprising custom made composite poles to house battery and mount fixtures for the LED lights and solar panel, MyLIPOS battery module (60 Ah) was integrated with controllers and wired to the LED light and solar panel and then housed in the hollow compartment at the bottom of the pole. Forty units of these lights will be installed in Pantai Murni Waterfront, Yan, Kedah by August 2018. (See Figure 9.0 for installed street lights)
- b. Marine vessel tracking system –  
 The Anti-Piracy Automatic Identification System (APAIS) designed with a collaborator utilised MyLIPOS battery to power the transponder and receiver systems. Ten APAIS transponders powered by MyLIPOS (10Ah) will be installed in 10 ships in Langkawi while three receiver systems powered by MyLIPOS (40Ah) will be installed at Langkawi's coast line to monitor vessel tracks by 2018.



Fig 9. MyLIPOS (60Ah) for Solar Powered Street Light

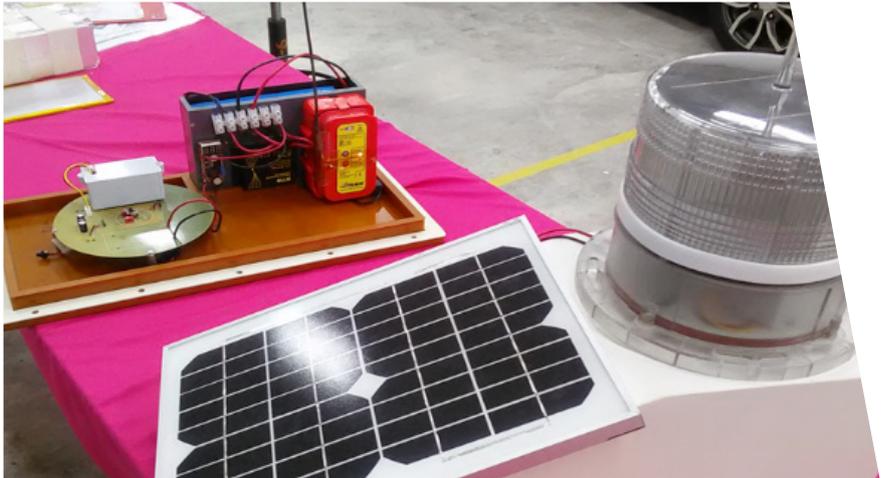


Fig 10. APAIS powered by MyLIPOS (10Ah)

“ **TEN APAIS  
 TRANSPONDERS  
 POWERED BY  
 MYLIPOS (10AH) WILL  
 BE INSTALLED IN 10  
 SHIPS IN LANGKAWI**

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Fig 11. MyLIPOS (100Ah) for telecommunication tower

- c. Power backup for telecommunication towers - MyLIPOS battery module (100Ah) will replace the current bulky lead acid batteries on standby for power backup at telecommunication towers. With the lightweight MyLIPOS battery modules, backup times for a minimum of four hours is possible and two identified telecommunication towers in Karangan, Kulim, Kedah and Lestari Puteri, Seri Kembangan, Selangor will be up by August 2018.

## “ THE SECOND R&D PROJECT, INVOLVING WHITE QDLEDs POSIT THE NEXT GENERATION IN SOLID STATE LIGHTING TECHNOLOGY (SSL).

Meanwhile, the second R&D project, involving white QDLEDs posit the next generation in solid state lighting technology (SSL). In contrast with OLED for wide area-lighting, QDLED offer high colour purity, flexibility and cost-efficient processing methods. The QDs convenient band gap tunability, narrow emission bandwidth and high photoluminescence quantum yield is enhanced further with the use of the less toxic Indium Phosphide (InP) from the hazardous Cadmium Selenide (CdSe) a generation ago.

Enter the colloidal core/shell InP/ZnS/ZnSe QD to be synthesised with yellow emitter and a new blue emitter with ZnO/TiO<sub>2</sub> spun-coated as an electron transport layer. With a display size of 20mm x 15mm and luminosity at 250cd/m<sup>2</sup>, the photostability of QD will overcome the degradation of OLED structure and prolong lifetime of lighting.



/ **Report By:**  
 Mohd Fauzi Ismail  
 Director, IC Innovation in Energy Management

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 SYSTEM DESIGN CENTRE  
 MACHINERY TECHNOLOGY CENTRE  
 IC INNOVATION  
**SIRIM-FRAUNHOFER SECRETARIAT**

# SIRIM-FRAUNHOFER PROGRAMME

## 170

SMEs AUDITED  
IN THE PAST YEAR

## 28

NEW AUDITORS WERE  
TRAINED

## 560

TECHNOLOGY INTERVENTION  
PROJECTS APPROVED  
FOR SMEs

## 12

STANDARDS WERE  
DEVELOPED IN VARIOUS AREAS

The SIRIM-Fraunhofer programme has been recognised as one of the key Government initiatives to embrace technology in catalysing the growth of Small and Medium Enterprises (SMEs) since its inception in 2015. Driving its objectives through technology penetration and upgrading, SIRIM Industrial Research is at the forefront of spearheading and delivering projects of calibre to fulfil its aim. The SIRIM-Fraunhofer Secretariat was set up to oversee the implementation and introduction of new technology programmes to maximise efficiency and delivery of SMEs.

Malaysian SMEs have shown keen interest in 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 of the Model's significant features - enhancement of innovation services and strengthening networks with strategic partners.

The Programme comprises four main activities: Implementation of Innovation Management/Technology Audit, Technology Uptake, Nurture Growth of Small and Micro Enterprises and Cross-cutting Programmes.

The Technology Audit remains the key component of the Programme with a total of 170 SMEs audited in 2017 with most from Food & Beverage, Industrial, Machinery and Equipment, Automotive and Medical Devices sectors. There were 28 new auditors trained to expand the current pool of qualified technology auditors so that implementation of Audits are seamlessly carried out. A total of 24 briefing and engagement sessions were carried out with SMEs across various industries, Government agencies and industrial associations to increase participation across the board.

The second key feature of the programme is technology intervention activities which comprises of technology adoption, application and facilitation. In 2017, there were 560 technology intervention projects approved for SMEs 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 production yield, innovation of new products and processes, reduced rejection rates and market expansion.



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Another key activities under the SIRIM-Fraunhofer Programmes are projects on solving industry-wide problems, whereby common issues faced in the industry is identified and resolved through solutions from various strategic partners both local and abroad. SIRIM and partners have undertaken technology and innovation projects to solve common problems faced by selected industries. Demo sites are set up to demonstrate identified technology solutions, while consultancy services are provided for their implementation. Some of the projects undertaken in the past year are:

- Retrofitting towards Industry 4.0 (I4.0)
- Nano-filtration for improved water quality
- Application of IoT development of Kelulut-based industries
- Digital technologies for manufacturing of dental appliances
- Solid state lighting for poultry industries

To nurture the growth of SMEs, it is important to equip them with greater understanding of technology and market competitiveness in order for them to make sound technical and business decisions. In this spirit, the

Technology Market Radar (TMR) was developed in collaboration with Fraunhofer Institute to help SMEs leverage on technology and market trends, specifically for three identified areas, the Industry 4.0, renewable energy and food processing.

Across board, industry standards serve as benchmarking tool to raise productivity levels of business enterprises by promoting production efficiency, product quality and consistency which leads to consumer confidence. Throughout the year, 12 standards were developed in areas covering lean management, design, remanufacturing, sustainable manufacturing and total productive maintenance. The standards provide guidance for continual improvement and describe innovative techniques in its implementation.

The SIRIM-Fraunhofer programme will continue playing a vital role in the enhancement of SME productivity. In fact, the establishment of Industrial Centre of Innovations (ICI) has strengthened SIRIM's market readiness towards fulfilling the objectives of the Programme. Since the Programme's inception, there has been six ICIs formed in the areas of natural gas, biomedical, industrial design, sensor, nanotechnology and

energy management. Collaboration with strategic partners has yielded impressive research and development (R&D) outcomes and improved market penetration through ICIs innovation services to SMEs.

**“ THROUGHOUT THE YEAR, 12 STANDARDS WERE DEVELOPED IN AREAS COVERING LEAN MANAGEMENT, DESIGN, REMANUFACTURING, SUSTAINABLE MANUFACTURING AND TOTAL PRODUCTIVE MAINTENANCE.**



**Report By:**  
 Rosmina Mustafa  
 General Manager,  
 SIRIM-Fraunhofer Secretariat





# SUBSIDIARIES

**SIRIM QAS INTERNATIONAL SDN BHD**

SIRIM STS SDN BHD  
 SIRIM SST SDN BHD  
 SIRIM MEASUREMENTS TECHNOLOGY SDN BHD  
 NATIONAL PRECISION TOOLING SDN BHD  
 SIRIM TECH VENTURE SDN BHD  
 GRANULAB (M) SDN BHD

# SIRIM QAS INTERNATIONAL SDN BHD



SIRIM QAS International Sdn Bhd role's in certifying, inspecting and testing for conformity to national and international standards, as well as SIRIM Industry Standards, builds confidence in their customers' product and service offerings. In 2017, SIRIM QAS delivered a solid performance with higher revenues and profit before tax despite the challenging economic outlook and stiff competition. The year was also peppered with significant events, new services and recognitions that SIRIM QAS International can leverage on.

## INTERNATIONAL EXPANSION

A significant milestone for SIRIM QAS International was its maiden foray into the Middle East in Manama, Kingdom of Bahrain in March 2017 by SIRIM Chairman, Tan Sri Dr. Ir. Ahmad Tajuddin Ali. SIRIM QAS International's Bahrain branch is a launchpad to the rest of the Middle East, beginning with the signing of a Memorandum of Understanding (MoU) with the Ministry of Industry, Commerce and Tourism (MOICT), Kingdom of Bahrain for cooperation in conformity assessment. The establishment of a branch office in a Gulf Cooperation Council (GCC) member country is a pre-requisite for SIRIM QAS International's application as a Gulf Cooperation Council (GCC) Notified Body.

SIRIM QAS International further cemented its commitment in the Middle East with the appointment of Saudi Arabian Sensing Solutions Co to market its services in the Kingdom of Saudi Arabia and the signing of a Memorandum of Understanding (MoU) with Ministry of Industry, Commerce and Tourism (MOICT), Kingdom of Bahrain to cooperate in the areas of conformity assessment.

“

**SIRIM QAS INTERNATIONAL BEGAN OFFERING ANTI-BRIBERY MANAGEMENT SYSTEM CERTIFICATION BASED ON ISO 37001:2016 STANDARD FOR ORGANISATIONS WISHING TO DEMONSTRATE COMMITMENT IN HANDLING BRIBERY AND CORRUPTION RISKS.**

## KEY ACTIVITIES IN 2017

Back on the home front, SIRIM QAS began offering Anti-Bribery Management System certification based on ISO 37001:2016 standard for organisations wishing to demonstrate commitment in handling bribery and corruption risks. The standard defines requirements and provides guidance on prevention, detection and response to bribery, complying with anti-bribery laws such as the Malaysian Anti-Corruption Commission (MACC) Act 2009. This instills trust and confidence in an organisation's ability to implement a risk-based anti-bribery management system. In 2017, the pilot programme in collaboration with MACC and Association of Malaysian Certified Integrity Officer (ACEiO) saw 11 organisations attaining the certification.

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As part of SIRIM QAS International's certification and testing legacy spanning more than four decades, consumer confidence in the SIRIM mark for product safety and quality has culminated in the introduction of the SIRIM Gold Hallmarking Certification Scheme. This certification ensures that gold bars and jewellery's fineness and purity, the assaying and hallmarking processes are compliant to MS 1247:2005 code of practice on the description and marking of articles of, or containing precious metal.

SIRIM QAS International's expansion of testing capabilities included fire resistance tests on ventilation ducts to the following standards:

- MS 1600-12:2012 Fire resistance tests - Part 12: Service installations - Ducts
- EN 1366-1:2014 Fire resistance tests for service installations - Part 1: Ventilation ducts
- BS 476-24:1987 Fire tests on building materials and structures. Method for determination of the fire resistance of ventilation ducts

As sustainability becomes more than just a buzzword, with the support of the Malaysian High Technology (MIGHT) under the Regional Hub for Solar Testing, Certification and Training programme, SIRIM QAS International set up a photovoltaic (PV) module testing facility to develop, support and boost Malaysia's PV industry. The facility provides independent assurance of compliance of both crystalline silicon and thin-film terrestrial PV modules for safety, quality and performance according to these standards:

- Malaysian Standards, MS IEC 61215:2005 (Crystalline Silicon Terrestrial PV Modules - Design Qualification and Type Approval) and MS 61646:2010 (Thin-film Terrestrial PV Modules - Design Qualification and Type Approval)

- The latest International Electrotechnical Commission (IEC) standards, IEC 61215-1:2016, IEC 61215-2: 2016, IEC 61730-1:2016 and IEC 61730-2: 2016 covering both crystalline silicon and thin-film terrestrial PV module types.

SIRIM QAS International added another accreditation under its belt with the Malaysian Sustainable Palm Oil Certification Scheme (MSPO) accredited by the Department of Standards Malaysia.

SIRIM QAS International gained the following recognitions in 2017:

- Appointed the Designated Testing Laboratory for EMC testing of telecommunication equipment for the Asian Pacific Economic Cooperation (APEC) Mutual Recognition Agreement (MRA) for Conformity Assessment of Telecommunications Equipment (APEC-TEL MRA/US FCC) by the Malaysian Communications and Multimedia Commission (MCMC).
- Designated by Road Transport Department as Technical Service provider for all categories of the following:
  - i. Category A, B, C and D for the UN ECE R 22.05 - Protective Helmets and Their Visors for Drivers and Passengers of Motor Cycles and Mopeds
  - ii. Category A, B, C and D for UN ECE R10 - Electromagnetic Compatibility (EMC)

SIRIM Eco Labelling Scheme's credibility and recognition was elevated with the signing of a Memorandum of Understanding (MoU) between SIRIM QAS International and the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), The German Federal Environment Agency (UBA) and the RAL GmbH to cooperate on certification of the Blue Angel Eco Labelling Programme in Germany and the SIRIM Eco Labelling Scheme in Malaysia.

### ONGOING & PROSPECTIVE ACTIVITIES IN 2018

Moving forward, SIRIM QAS International's new services will include brake testing for vehicles of less than five tonnes, pre-mix bitumen testing and the issuance of Gulf Marking once SIRIM QAS International is appointed as GCC Notified Body, facilitating Malaysian exported products in the GCC market.

SIRIM QAS International's focus on initiatives to improve service delivery and customer experience include digitalisation of business processes and a dedicated customer service team to handle customer enquiries.



#### / Report By:

Mohd Azanuddin Salleh  
 Managing Director, SIRIM QAS International  
 Sdn Bhd



SIRIM QAS INTERNATIONAL SDN BHD

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# SIRIM STS SDN BHD

63

NEW MALAYSIAN  
STANDARDS

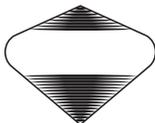
4,057

MALAYSIAN STANDARDS  
PUBLISHED YEAR-TO-DATE  
UNDER THE PURVIEW  
OF DEPARTMENT  
STANDARDS MALAYSIA

2,332

VOTES IN INTERNATIONAL  
STANDARDISATION  
ACTIVITIES

SIRIM 9:2017



SIRIM 10:2017



SIRIM 11:2017



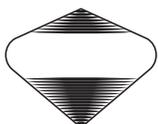
SIRIM 12:2017



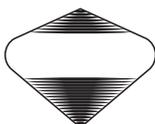
SIRIM 13:2017



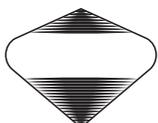
SIRIM 14:2017



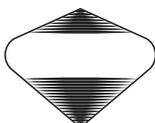
SIRIM 15:2017



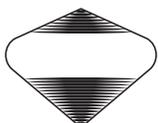
SIRIM 18:2017



SIRIM 19:2017



SIRIM 20:2017



SIRIM 21:2017

## MALAYSIAN STANDARDS DEVELOPMENT ACTIVITIES

The Standards Department of SSTS is 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 as well as promoting implementation of Malaysian Standards via events such as seminars and workshops, and sales of standards.

In 2017, there were 63 new MS developed and 107 revised, making a total of 170 MS submitted to the Department of Standards Malaysia. As for publications, a total of 452 published MS were confirmed in 2017 with another 921 withdrawn for various reasons. As of year-to-date, there are 4,057 MS published on behalf of the Department of Standards Malaysia.

Standards Department managed 313 Technical Committees (TCs) and Working Groups (WGs) which reported to 18 Industry Standards Committees (ISC) across industry sectors. One hundred eighty eight 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 2017, Standards Department has conducted almost 600 meetings to deliberate inputs for MS, as well as responses on international documents.

## SIRIM INDUSTRY STANDARDS DEVELOPMENT ACTIVITIES

Consultancy services on the development of industry and organisation standards, a service which was undertaken by the department in 2017, saw collaborative efforts in industry standards development for organisations such as Public Works Department, Nano Verify Sdn Bhd and Houz of Hijama. One such effort was for Demi Idaman Sdn Bhd, whereby the department successfully developed SIRIM 21:2018, Specification for fineness and marking of gold bullion. This standard defines the requirements for fineness, marking and testing for fineness of gold and will be the reference for SIRIM QAS International hallmarking certification for gold bullion of 917 to 999.9 fineness.



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#### 11 SIRIM Industry Standards (SIS) developed in 2017:

No.	Standard No.	Title
1	SIRIM 9:2017	Thermoplastic stop valves for potable water supply in buildings
2	SIRIM 10:2017	Green logistics - Road freight transport - Recommended best practices
3	SIRIM 11:2017	Specification for mechanical fitting for plastics pressure for piping systems
4	SIRIM 12:2017	Lean Management - Part 1: Requirements for key activities
5	SIRIM 13:2017	Lean Management - Part 2: Requirements for competent persons
6	SIRIM 14:2017	Lean Management - Part 2: Requirements for competent persons
7	SIRIM 15:2017	Specification for motor vehicle aftermarket air conditioning service (service and replacement parts) for workshop
8	SIRIM 18:2017	Specification for corrugated steel panel tanks with liner for water storage
9	SIRIM 19:2017	Total Productive Maintenance (TPM)
10	SIRIM 20:2017	Good practice in green supply chain management
11	SIRIM 21:2018	Specification for fineness and marking of gold bullion

#### INTERNATIONAL STANDARDISATION ACTIVITIES

Standards Department managed Malaysia's participation in international standardisation activities at ISO and IEC via various TCs as a participating member (P-member) or an observer member (O-member). The result of active participation culminated in 2,332 votes on documents issued by those committees, as reflected in the table below:

Membership Type	ISO	IEC	Total
P-member	135	37	172
O-member	97	73	170
Total	232	110	342

Committee	No. of documents voted
ISO	1,739
IEC	593
Total	2,332

Besides this, Standards Department managed the International Plenary Meeting of ISO/TC 157 on Non-systemic contraceptives and STI barrier prophylactics in Penang in September. There were 160 participants from 25 member countries of ISO/TC 157.

#### PROMOTIONAL ACTIVITIES ON AWARENESS AND IMPLEMENTATION OF STANDARDS

There were 18 seminars and workshops related to MS organised on behalf of Standards Malaysia and four seminars on SIRIM Industry Standards. These seminars were attended by 2,000 participants across the board including government agencies and industries.

#### SALES OF STANDARDS

Standards Department is an appointed sales agent for MS and other standards including International Standards, Foreign Standards (e.g. British Standards, Australian Standards) and SIRIM Industry Standards (SIS).

A total of 15,362 copies of Malaysian Standards were sold including 7,802 copies sold online. Meanwhile the number of international and foreign standards sold was 905.

To facilitate purchase of standards via online, the SIRIM Standards Store was launched in November 2017 as a sales platform of standards, in particular to promote and increase sales of SIS.

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

The national WTO/TBT enquiry and notification point has circulated more than 2,415 notifications throughout the year from other WTO member economies through the SIRIM Export Alert System, presenting more than 700 subscribers with timely notifications on proposed changes to regulations and standards of foreign countries.

On the home front, six notifications on new and revised Malaysian technical regulations have been forwarded to WTO, involving telecommunication equipment and network (Malaysian Communications and Multimedia Commission), household electrical equipment (Energy Commission) and safety glass for motor vehicles (Ministry of Trade, Co-operatives and Consumerism). Meanwhile 24 local and foreign inquiries were received and answered accordingly.

The SIRIM Library Membership Scheme sees a membership of 302 companies, organisations and Government agencies reaping the benefits of access to the most comprehensive collection of International, Foreign, Association and Malaysian Standards.

### MARKET ACCESS CONSULTANCY

Engaging companies with knowledge and support to reduce barriers to market access is Standards Department new initiative on market access consultancy. This new service guides companies on product compliance to standards requirements, ensuring product acceptance by regulators and consumers. There were 11 companies that applied for Market Access Consultancy programme and 20 companies assisted under the Product Compliance Consultancy.



**/ Report By:**  
 Dr. Norlinda Mohd Zawawi  
 Managing Director, SIRIM STS Sdn Bhd



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# SIRIM STANDARDS TECHNOLOGY SDN BHD

SIRIM Standards Technology Sdn. Bhd. (SST) provides a wide range of services related to calibration and measurement across five fields; electrical, force and pressure, temperature, dimensional and mass and volumetric. With branches in Shah Alam, Penang, Johor Bahru, Kuching and Kuantan, SIRIM SST supports local industry players' calibration needs, serving more than 3,000 companies on average per annum.

In 2017, SIRIM SST successfully launched its new calibration laboratory in Kuantan, Pahang, serving the entire East Coast of Pahang, Terengganu and Kelantan. Initially designated as a marketing and delivery point, it is capable of performing electrical, pressure and temperature calibration. This new launch is in line with the Group's commitment to improve service delivery and customer relations in the East Coast.

CAPEX expansion on new standard equipment in Kuching, Sarawak, has expanded its electrical calibration capability, achieving new scopes in the ISO/IEC 17025 Laboratory Accreditation by the Department of Standards Malaysia ("Standards Malaysia"). Under the National Laboratory Accreditation Scheme (SAMM) on Electrical Calibration, the Kuching lab is now capable of the full scope from low to medium-end and on-site calibration.

Other calibration laboratories benefitted from the successful extension of accreditation, with the Johor branch achieving electrical site calibration, power meter/indicating instruments DC Power Energy (0.1W to 1kW and 1kW to 20kW) and AC Power Energy, and the Penang branch for Torque Wrench, Force Universal Tensile Machine (UTM) and Temperature and Enclosure (of down to -60°C) calibration.

A Memorandum of Understanding (MoU) was signed with Vas Aero (Malaysia) Sdn. Bhd. to provide calibration and measurement support for repairs and preventive maintenance services.

Moving forward, SIRIM SST is optimistic for another successful year with the aspirations of playing more active roles in supporting local and international industries' players, in relation to calibration and measurement activities. With its customised services targeted to niche markets, such as defence, aviation, electronics and oil & gas.

**3,000+**  
 COMPANIES ON AVERAGE  
 PER ANNUM.

“ **MOVING FORWARD, SST IS OPTIMISTIC FOR ANOTHER SUCCESSFUL YEAR WITH THE ASPIRATIONS OF PLAYING MORE ACTIVE ROLES IN SUPPORTING LOCAL AND INTERNATIONAL INDUSTRIES' PLAYERS, IN RELATION TO CALIBRATION AND MEASUREMENT ACTIVITIES.**

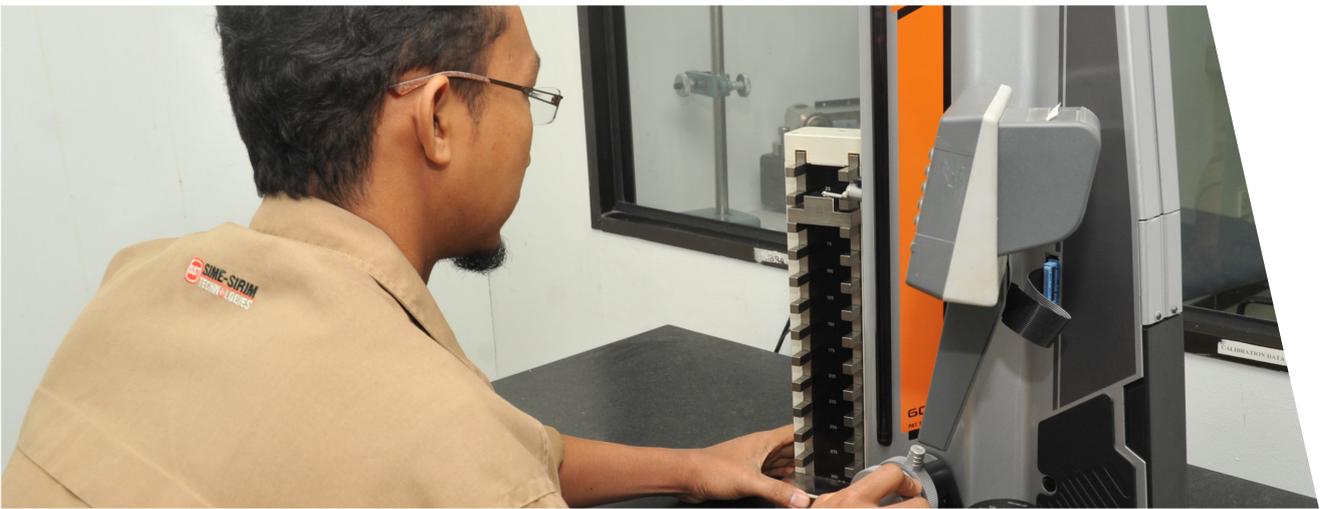


/ **Report By:**  
 Abdul Ghani Abdul Rahman  
 Chief Executive Officer, SIRIM Standards  
 Technology Sdn Bhd



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# SIRIM MEASUREMENTS TECHNOLOGY SDN BHD



SIRIM Measurements Technology Sdn Bhd. (SMT) focuses in providing a wide spectrum of measurements, information and communication solutions and services to scientists, engineers, researchers and academicians to enable discoveries and push the frontier of science.

The ongoing total solutions in support services, inked in 2016, with Motorola Solutions Penang entered its second year out of a three year deal.

Two new contracts were inked in 2017 with Flextronic for contractual calibration services across the region and TMNet IP services for comprehensive services and support for its IP Broadcast Centre. The Flextronic deal serves eight sites in Malaysia and a site each in Singapore and Batam, Indonesia, while the TMNet IP contract covers a three-year period commencing from October 2017.



/ **Report By:**  
Chew Teck Ming  
Chief Executive Officer,  
SIRIM Measurements Technology Sdn Bhd

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# NATIONAL PRECISION TOOLING SDN BHD

National Precision Tooling Sdn. Bhd. (NPT) is a special purpose vehicle mandated by the Government as the lead collaborator in the implementation of the development of the Bumiputera Automotive Tool, Dies and Moulds (TDM) Industry project. The main objectives of the TDM Project are to increase the capability and capacity development as well as to enhance the Bumiputera automotive TDM industry clusters. The aim to increase their participation in the TDM business, specifically within the manufacturing sector is achieved through the following development programs:

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

In mandating the TDM Project to NPT through SIRIM Berhad, the Government, through the Economic Planning Unit (EPU) in the Prime Minister's Department had initially provided an allocation of RM50million in 2009 and 2010 for the first phase and an additional RM30million in late 2012 as part of the second phase of implementation.

## KEY ACTIVITIES IN 2017

Due to a slow 2017 for the Malaysian automotive industry, the Bumiputera automotive TDM industry was impacted. According to the Malaysian Automotive Association (MAA), the Total Industry Volume (TIV) for the year was 576,635 with a marginal decline of 0.6% or 3,450 units compared to 2016. For two years in a row, the TIV dipped below 600,000 units. This resulted in no new applications for all programmes in 2017.

As part of the mandate, NPT continues monitoring the performance of 16 beneficiary companies under the TDM programme. The average utilisation rate remain at 50% on for all machines including CAD/CAM applications and no increase compared to the previous year. NPT's overall performance since inception in 2009 has seen the first and second phases of the TDM Project's implementation of 36 EAPs worth RM48,765,063 for 16 beneficiary companies. Ten HCD programmes costing RM3,464,729 were implemented, comprising five overseas training programs with 19 trainees from five beneficiary companies, and five local training programs with 77 trainees from eight beneficiary companies. Additionally, four TA-EP programmes costing RM4,052,866 were implemented with eight experts attached to nine beneficiary companies and 114 technical staff of these companies participating in various technology transfer activities.



## 74.1

of its total allocation, with RM50,091,662 disbursed to equipment suppliers of the Training and Technology Providers.

## 576,635

WITH A MARGINAL DECLINE  
OF 0.6% OR 3,450 UNITS  
COMPARED TO 2016

## 36

EAPS WORTH RM48,765,063  
FOR 16 BENEFICIARY  
COMPANIES

At year-end, the TDM Project had consumed RM56,282,658 or 74.1% of its total allocation, with RM50,091,662 disbursed to equipment suppliers of the Training and Technology Providers. The balance of the TDM Project's allocation of RM19,717,342 or 25.9% of the fund's total allocation is to be used for development programmes in 2018 which include an impact and way forward study of the TDM programme.



/ **Report By:**  
Ahmad Nizrasham Abdullah Jumain  
Chief Operating Officer,  
National Precision Tooling Sdn Bhd

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 GRANU LAB

# SIRIM TECH VENTURE SDN BHD

8

CONFIGURABLE ORIENTATIONS THAT ALLOW PRECISION GRINDING PROCESSES UP TO 2 MICRON (0.002MM) AND SURFACE ROUGHNESS OF UP TO 0.02 MICRON FOR TUNGSTEN CARBIDE METAL WITH HARDNESS VALUE OF 2,600 VH.

SIRIM Tech Venture Sdn Bhd (STV)'s main mandate of 'Accelerating Business Commercialisation' offers a range of services including technology commercialisation services, skills development in micro-precision grinding technology, fabrication and testing of composite cylinders, as well as business commercialisation.

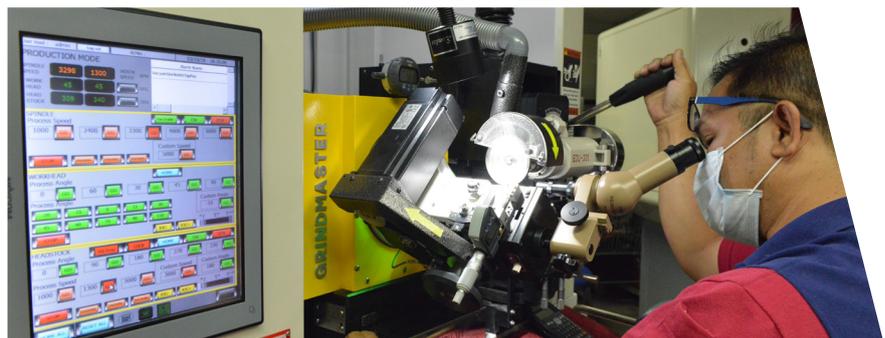
The main focus of commercialisation services include development of business plans covering all aspects of business, financial and resources management, market and technology intelligence as well as the full suite of technology consultancy:

- a. Techno-economy analysis
- b. Technology transfer for commercialised technologies
- c. Technology Market Radar (TMR)
- d. Technology scouting
- e. Technology upscaling

STV's achievements in the year saw three successful commercialisation projects through the Technology Docket, namely, micro precision grinding technology, composite low pressure liquefied petroleum gas (LPG) cylinder and dermatocide botanical antifungal cream.

## MICRO PRECISION GRINDING TECHNOLOGY:

This multi-orientation micro precision grinding machine uses the dry grinding technique with 8-configurable orientations that allow precision grinding processes up to 2 micron (0.002mm) and surface roughness of up to 0.02 micron for tungsten carbide metal with hardness value of 2,600 VH. STV's strategic alliance with LD Micro Sdn Bhd to produce this machine was later rebranded GrindMaster and targeted for the educational market segment in producing highly-skilled workers for the industry. The alliance also targets sectors such as semiconductors, medical devices and aerospace parts requiring precision parts and components. STV will continue to facilitate the technology transfer of the precision grinding technology and producing more Industry 4.0-enabled machines for the future use by industry standards.



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 SIRIM STS SDN BHD  
 SIRIM SST SDN BHD  
 SIRIM MEASUREMENTS TECHNOLOGY SDN BHD  
 NATIONAL PRECISION TOOLING SDN BHD  
**SIRIM TECH VENTURE SDN BHD**  
 GRANULAB (M) SDN BHD

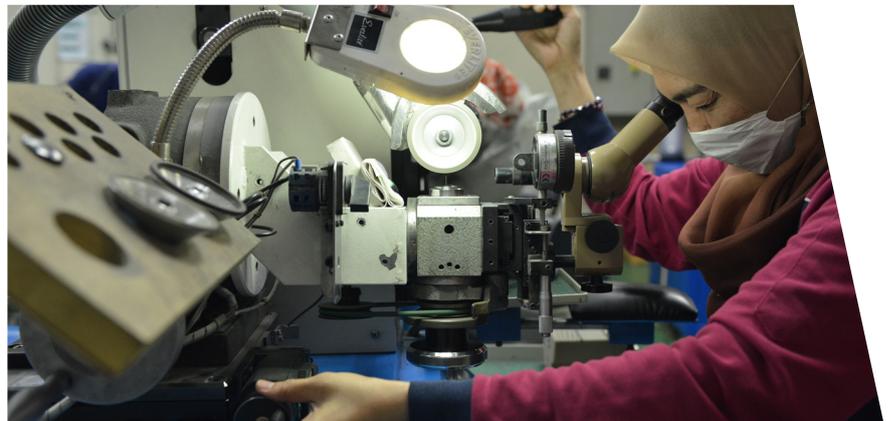
“ **STV WILL CONTINUE TO FACILITATE THE TECHNOLOGY TRANSFER OF THE PRECISION GRINDING TECHNOLOGY AND INDUSTRY 4.0-ENABLED EMBEDDING FEATURES FOR THE FUTURE USE.** ”

#### **COMPOSITE LOW PRESSURE LIQUEFIED PETROLEUM GAS (LPG) CYLINDER:**

The LPG tank type 4 (12kg), is manufactured using SIRIM's filament winding process; where the inner layer is wrapped by medium density polyethylene (MDPE) fibreglass. The performance is tested according to the BS EN 14427 standard and are lightweight (50% lighter than current steel LPG cylinders), ergonomic and non-corrosive. The first of its kind in this region, they are undergoing market validation and production upscaling by Safari PLT under the MTDC Symbiosis Programme.

#### **DERMATOCIDE BOTANICAL ANTIFUNGAL CREAM:**

Using state-of-the-art extraction and fractionation of natural plant extracts its bioactives are an antifungal agent, that is then formulated as a topical antifungal cream. The botanical cream is an alternative to the chemical-based antifungal cream widely available and is effective in inhibiting broad spectrum fungus growth such as Athlete's foot, ringworm, and other fungus infections such as Microsporum Canis, Mentagrophytes Trichophyton and Candida Albicans. The patented product is undergoing market validation and production upscaling by Procell PLT under the MTDC Symbiosis Programme.



**/ Report By:**  
 Ajmain Kasim  
 Chief Operating Officer,  
 SIRIM Tech Venture Sdn Bhd

SIRIM QAS INTERNATIONAL SDN BHD  
 SIRIM STS SDN BHD  
 SIRIM SST SDN BHD  
 SIRIM MEASUREMENTS TECHNOLOGY SDN BHD  
 NATIONAL PRECISION TOOLING SDN BHD  
 SIRIM TECH VENTURE SDN BHD  
**GRANULAB (M) SDN BHD**

# GRANULAB (M) SDN BHD



A wholly-owned subsidiary of SIRIM Tech Venture Sdn Bhd (STV), Granulab (M) Sdn Bhd (Granulab) was established in 2006 and is the sole bone graft manufacturer in Southeast Asia. The BioNexus Status Company (BNX 100217) has a manufacturing facility in Shah Alam, Selangor that is ISO 13485:2016 certified by British Standard Institution (BSI) and operates under the manufacturing license A017866, producing high-quality bone substitute materials for Orthopaedic and Oral Maxillofacial surgery through bone grafting procedures. In a year, the facility is capable of producing up to 350kg of synthetic bone grafts across types such as Hydroxyapatite (HA), Tricalcium Phosphate (TCP) and Biphasic types in various forms, shapes and sizes for clients, hospitals and patients.

The main product, GranuMaS® is the first of its kind bone graft material certified CE Mark by BSI and Halal certified by JAKIM. To meet surgeons' needs, the Synthetic Bone Construct (SBC) is a custom-made patient-specific product, providing traction even within six months after it is released.

## ABOUT GRANUMAS®

GranuMaS® is a Hydroxyapatite (HA) bone graft made of calcium phosphate, similar in nature to human bone and is a Class D medical device according to the Medical Device Act 2012. It is used for non-load bearing applications in Orthopaedics, ENT, Dental and Maxillofacial surgeries and is the brainchild of R&D effort by SIRIM Berhad with various institutions of higher learning, namely International Islamic University Malaysia (IIUM), Universiti Sains Malaysia (USM), Universiti Kebangsaan Malaysia (UKM) and Agency Nuklear Malaysia (ANM).

The production of GranuMaS® conforms to ASTM F1185-88 Standard for composition of ceramic hydroxyapatite for surgical implants and ISO 13779 Standard for surgical implants from hydroxyapatite. It has also proven its safety and efficacy in pre-clinical and clinical trials.

SIRIM QAS INTERNATIONAL SDN BHD  
 SIRIM STS SDN BHD  
 SIRIM SST SDN BHD  
 SIRIM MEASUREMENTS TECHNOLOGY SDN BHD  
 NATIONAL PRECISION TOOLING SDN BHD  
 SIRIM TECH VENTURE SDN BHD  
**GRANULAB (M) SDN BHD**

## ABOUT SBC

SBC was created to cater to surgeons' needs for advanced trauma cases where major bone loss or defects occur. The custom-made bone construct treats segmental



bone defects or injuries due to trauma, non-union cases or even diseased bones. As such, SBC is an osteoconductive and biodegradable comprising more than 50% calcium phosphate materials, with the main compound a combination of tri-calcium phosphate and tetra-calcium phosphate which are highly resorbable in a human body.

The original powdered state of SBC allows it to be formed into solids of various shapes and sizes through moulds, including discs as fillers of segmental bone loss or pellets, blocks and other bespoke shapes of various sizes and thickness. SBC's porous structure allows bone ingrowth to take place in situ.

## PROMOTIONAL ACTIVITIES & ACCREDITATIONS

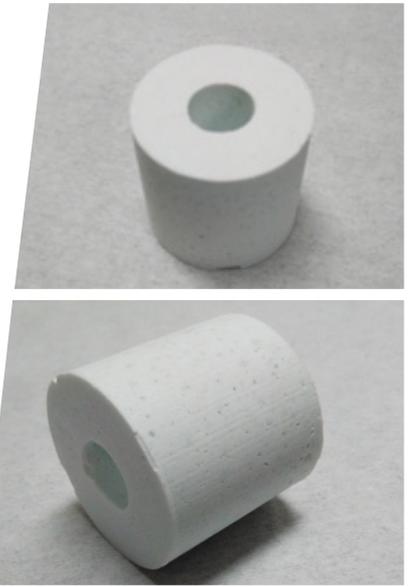
While Orthopaedic applications were widespread, Granulab widened the scope of both GranuMaS® and SBC to the dental and oral maxillofacial sectors. Both public and private healthcare clinics have been approached, preferring GranuMaS® as their choice of bone grafts. Among public hospitals currently using GranuMaS® are Hospital Kajang, Selangor, Hospital Batu Pahat, Johor and Hospital Sultanah Nur Zahirah, Terengganu while the private sector is represented in KPJ Kajang Specialist Hospital.

SBC's maiden operation was in June 2017 and within six months, it had been used in four major advanced trauma cases. Penetration rate of SBC in hospital operating theatres have included Hospital Shah Alam, Selangor and IIUM Medical Centre, Kuantan. This new product is expected to be championed in other hospitals within the coming year with increased awareness on the product.

In addition to participation in medical exhibitions in Malaysia and Indonesia, Granulab plans to join one of the biggest medical exhibitions in Dubai, known as Arab Health, in January 2018.

With Granulab's position as a manufacturer of cutting edge medical devices comes the need to be accredited and certified by international bodies. In 2017, GranuLab underwent an annual audit for Good Manufacturing Practice (GMP) ISO 13485:2016 and product audit for CE Mark certification by BSI and successfully retained both certifications.

The registration of GranuMaS with the Medical Device Authority (MDA) was also successful in order to obtain its license to sell the medical device in Malaysia. GranuLab has successfully

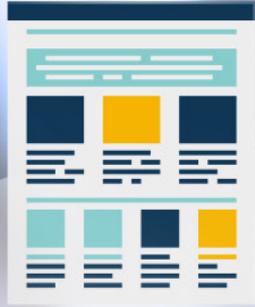


secured product licenses via registration with the Ministry of Health Indonesia in November 2017. Subsequently, GranuMaS will also be marketed overseas such as Brunei and Indonesia in 2018. This allows GranuMaS® to be traded in three different forms: cubes, chips and granules.

In Malaysia, GranuMaS® has also obtained Halal certification from JAKIM as a consumer good. This promotes the bone grafts by Granulab as Halal and fully synthetic with GranuMaS® obtaining Halal certification in January 2018. The certification, valid till January 2020, is for all forms of GranuMaS® in granules, cubes, chips and pins.



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



# CONTRACT

network and understand how all the members of the network interact and influence each other. This is a key to understanding the dynamics of business processes and the flow of information.

The market is not efficient in any kind of business. Further studies of capital markets have shown that the market is not efficient. The market's ability to price assets is not efficient. The market's ability to price assets is not efficient. The market's ability to price assets is not efficient.

Another observed discrepancy between the theory and real markets is the late stages of a bull market, the market is driven by buyers who take little value. This is indicated by the large differences in the valuation of companies. Towards the end of a crash, markets go into free fall as prices are not supported by fundamentals. A theorist might say that rational (and hence efficient) participants should always immediately take advantage of the market's irrationality. It may be inferred that many rational participants are not rational. It may be inferred that many rational participants are not rational. It may be inferred that many rational participants are not rational.

Measuring market penetration and understanding the dynamics of business processes and the flow of information. This is a key to understanding the dynamics of business processes and the flow of information.

A person in a dark suit and white shirt is shown from the chest down, holding a silver pen over a document. The document features a bar chart with blue, red, and green bars. The background is a blurred office setting. A large green diagonal shape is on the right side of the image.

# DEVELOPMENTAL AND BUSINESS UNITS & NATIONAL PROJECTS

**ACT**

*Company provides success  
people is the powerful*

*to this evidence that the  
markets have pointed  
and that the share prices  
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*is that at  
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**PACKAGING & SECURITY DESIGN CENTRE**  
 NATIONAL METROLOGY INSTITUTE OF MALAYSIA  
 MALAYSIA DESIGN COUNCIL  
 WAITRO  
 UNIDO PROJECT

# PACKAGING AND SECURITY DESIGN CENTRE

SIRIM Berhad's Packaging and Security Design Centre (PSDC) partners funding agencies to assist and develop SME entrepreneurs. In 2017, PSDC introduced the Biz Transformation Programme to increase Micro, Small and Medium-scale entrepreneurs' understanding in packaging, branding and product quality improvement.

Within the year, PSDC came up with a marketing strategy that provides quality assurance of products and services, particularly for repeat customers. The largest programmes in collaboration with the East Coast Economic Region (ECER) programme was held in Nanning, China in September and the ANGKASA programme, MACCOPS 2017 held at Sunway Pyramid Convention Centre in November.

As part of PSDC's ongoing Green Blue Packaging (GB) programme, awareness programmes on environmental conservation packaging has been carried out at Port Dickson Municipal Council, Negeri Sembilan, Hang Tuah Jaya Municipal Council, Melaka and the Sepang and USJ Municipal Councils, Selangor. Meanwhile for security design services, penetration at the local authority level has increased with the municipalities of Sepang, city halls of Kuala Lumpur and Petaling Jaya among early movers. This service has also received support from Government agencies and various institutes of higher learning.

Among the Government agencies that have cooperated with PSDC through INNOPACK and the Biz Transformation Programme this year are:

- |  |   |
|--|---|
| 1. ANGKASA   | 10. RISDA Headquarters Kuala Lumpur, (Johor, Melaka, Perak, Negeri Sembilan, Pahang, Sabah) |
| 2. Kelantan State EXCO (Kelantan Women Development Unit) | 11. SUK Selangor  |
| 3. IRDA  | 12. UiTM, Terengganu  |
| 4. MDTCC   | 13. Ko Nelayan  |
| 5. MARA (Perak, Melaka, Terengganu, Kelantan)            | 14. MDEC  |
| 6. KeTTHa  | 15. MID Sabah   |
| 7. ECER  | 16. Kejora  |
| 8. Perak Youth & Sports Center                           |   |
| 9. State Economic Development Unit (UPEN) Selangor       |   |



**/ Report By:**  
 Sulaiman Arshad  
 Chief Executive Officer,  
 Packaging and Security Design Centre



PACKAGING & SECURITY DESIGN CENTRE  
**NATIONAL METROLOGY INSTITUTE OF MALAYSIA**  
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# NATIONAL METROLOGY INSTITUTE OF MALAYSIA

## 109

ROWS OF CMCS  
 PUBLISHED ON THE  
 BIPM WEBSITE

## 2

GOLD AND SILVER MEDALS  
 SECURED FOR ITS  
 INNOVATION PROJECTS.

The National Metrology Institute of Malaysia (NMIM) enhances the nation's competitiveness in cross discipline trade by providing vital strategic infrastructure and high-level technical skills in measurement capabilities. NMIM is a public funded institution entrusted with the maintenance and administration of national standards including performing calibration and related services since its inception in 1977.

### KEY ACTIVITIES IN 2017

NMIM's role impacts both Government and Industry through the National Quality Infrastructure, which is seen in NMIM's active presence in various measurement activities including scientific, legal and industrial metrology. The main task of the institute in establishing and maintaining the National Measurement Standards based on the International System of Units (SI units) provides a traceable link to international standards, anchoring the national calibration or traceability hierarchy for all.

Technological advancement and demand for new areas of calibration services and provision of traceability has led NMIM to develop measurement standards and calibration and measurement capabilities across five key areas:

#### Name of New Development/Services

- Weighbridge system with capacity of 50 tonnes for training and awareness purposes
- Endurance testing facility for water meter to make an accurate and reliable flow measurement for water supply in Malaysia.
- Water content using volumetric Karl Fischer apparatus.
- Chemical surface analysis using Energy Dispersive X-Ray (EDXRF)
- Measurement of gold density and purity.

### CIPM MUTUAL RECOGNITION ARRANGEMENT (CIPM MRA)-RELATED ACTIVITIES

The CIPM MRA is the framework in which NMIM benchmarks and conforms to the international standards of ISO/IEC 17025 - General Requirements for the Competence of Testing and Calibration Laboratories. It demonstrates the international equivalence of measurement standards derived with NMIM accredited by the Department of Standards of Malaysia (DSM) since 2003. In October 2017 a reassessment and surveillance audit conducted saw NMIM successfully retaining it's accreditation.

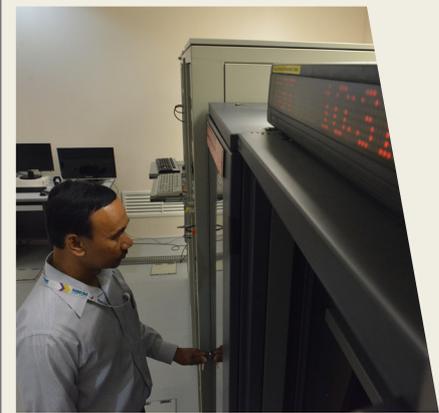
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In compliance with CIPM MRA requirements, two peer reviews were conducted since the last APMP meeting on Time & Frequency by National Time and Frequency Standard Laboratory, Taiwan in March 2017 and Mass Related Quantities (Mass, Pressure & Density) by KRISS, Korea in December 2017, respectively.

As part of the international benchmarking activities, NMIM boasts a total of 109 rows of CMCs published on the BIPM website, <http://kcdb.bipm.fr/appendixC/>, covering eight different measurement fields:

Name of New Development/Services	No
• Acoustics, Ultrasonic and Vibration	21
• Mass & Related Quantities	15
• Length	7
• Photometry and Radiometry	8
• Thermometry	6
• Time and Frequency	4
• Electricity and Magnetism	79
	(with Matrices)
• Chemistry (QM)	0
<b>Total</b>	<b>140</b>

In enhancing the national measurement capability and ensuring the traceability to the international standards, NMIM participated in interlaboratory comparison programmes for the fields of radiation in radiation thermometry, time and frequency and length.



Name of Standards	Field	Remarks
• APMP T-S11 Regional Comparison of Temperature Standard Radiation Thermometry (156 oC - 2,000 oC)	Radiation Thermometry	Data analysis
• APMP T-S12 Regional Comparison of Temperature Standard Radiation Thermometry (960 oC - 2,800 oC)	Radiation Thermometry	Data analysis
• APMP Supplementary Comparison of Blackbody for Clinical Infrared Ear Thermometer (35.5 oC - 41.5 oC)	Radiation Thermometry	Measurement
• APMP-PTB GPS Time Transfer	Time and Frequency	Complete with Satisfactory Results
• Calibration of Gauge Blocks by Mechanical Comparison Method	Length	Data analysis



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## AWARDS & RECOGNITION

At the International Innovation ITEX 2017 held at KLCC Convention Centre on 11-13 May 2017, NNIM secured two gold medals and one silver medal for its innovation projects. For the 'Harmonisation of Opacity Measurements in Malaysia (MYRM Opacity)', the project not only bagged the gold medal but also the Special Award - Best Invention for the Research Institute category.

The other project winning gold was the 'High Accuracy Measurement Approach in Tint (Tint MYRM)' while the silver medal was for the 'Malaysia Reference Material Gold (Gold MYRM)'. Both opacity and tint projects were won by the Electrical Group comprising Dr. Mohd Nizam Abdullah, Mr. Muhammad Zawawi Samsudin and Mr. Mohd Khairi Khalid. Meanwhile the silver for Gold MYRM was represented by Mr. Adlan Akram and Ms. Norliza Baharom (Chemistry Group), Mr. Fazrulhisyam Mohd Nor and Mrs. Razinah Noor Rahmat (Thermophysical Group).

During SIRIM's Open Day on 19 December 2017, NMIM launched the Malaysian Standard Gold Reference Material (MyRM Gold) Standard in

conjunction with the launch of the SIRIM Gold Hallmarking Certification Scheme. The MyRM Gold standard was developed to ensure that all gold measuring equipment are based on the International System of Unit (SI Unit) to promote fair trading of gold in Malaysia. With a single reference of gold purity, the MyRM Gold ensures the measuring equipment is internationally recognised and gold purity is the same regardless of type.

## SIGNING OF MoUs & COCS

A Memorandum of Understanding (MoU) exchange between SIRIM Berhad and Keysight Technologies Malaysia Sdn Bhd on 7 August 2017 in underlining the importance and mutual benefit by both parties in technical cooperation.

Meanwhile the Politeknik Sultan Azlan Shah (PSAS) awarded NMIM with a Certificate of Collaboration (CoC) in a ceremony officiated by Dato' Seri Idris Jusoh, the Minister of Higher Education. The key objectives of the CoC is for collaborative effort in conducting interviews for graduates of PSAS, securing work offers, providing PSAS students with Industrial Training for six months

continually for every semester and conducting courses and short courses in developing existing curriculum and engaging with existing expertise to produce quality employable graduates.

The key objectives of the CoC is for collaborative effort in conducting interviews for graduates of PSAS, securing work offers, providing PSAS students with Industrial Training for six months continually for every semester and conducting courses and short courses in developing existing curriculum and engaging with existing expertise to produce quality employable graduates.



**/ Report By:**  
 Dr. Osman Zakaria  
 Senior Director,  
 National Metrology Institute of Malaysia

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 NATIONAL METROLOGY INSTITUTE OF MALAYSIA  
**MALAYSIA DESIGN COUNCIL**  
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# MALAYSIA DESIGN COUNCIL

## 412,900

DISABLED PERSONS  
 REGISTERED TO DATE.

## 2

SESSION PROGRAMME  
 SAW 14 REPRESENTATIVES  
 FROM EACH COUNTRY  
 DISCUSS AND PRESENT ISSUES  
 ON SOCIAL INNOVATION  
 IN THEIR GEOGRAPHIES,  
 EXPOUNDING ON THE  
 BEST IMPROVEMENT  
 METHODS AND RESOLUTIONS  
 IN THE FIRST SESSION.

Malaysia Design Council (MDC)'s role in enhancing the national economy through innovation and design sees it continue with the landmark Malaysia Good Design Mark (MGDM) 2016, a collaborative effort with South Korea's Gwangju Design Centre (GDC). Adoption of design through various segments of society also saw MDC collaborating with various Government ministries and agencies, namely the Ministry of Women, Family and Community and Ministry of Science, Technology and Innovation (MOSTI), holding industry-wide design talks, sharing sessions and symposiums with industry peers, institutes of higher learning and the private sector both locally and abroad.

### MALAYSIA GOOD DESIGN MARK 2016 AWARDS CEREMONY

MDC's collaboration with GDC to create the MGDM hosted an awards ceremony in April 2017 at the Shah Alam Convention Centre. The prestigious award is in recognition for groundbreaking products and high-quality designs by the Malaysian Government. Growth was noted in terms of quality and product designs that showed an overall improvement from the year that was.

MGDM continues to engage local design consultants, industry players and the business entrepreneurs in the SME and local companies. The ultimate aim ties back to MDC's ethos to improve product competitiveness on the international stage; enhancing reputation and increasing consumer confidence and recognising creativity and homegrown talents in product design and development.

### TRAIN THE TRAINER (TOT) PROGRAMME TO EMPOWER THE DISABLED'S SOCIOECONOMIC DEVELOPMENT

In collaboration with the Department of Social Welfare, Ministry of Women, Family and Community, Pusat Latihan Perindustrian dan Pemulihan Bangi (PLPP) and MIMOS Berhad, MDC's ToT programme was an ongoing commitment since August 2016. Held at PLPP Bangi till February 2017, the ToT programme had 412,990 disabled persons registered to date. Less than 20% of these had received formal training with only 15% entrepreneurs.



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To ensure this group is fully integrated into society, with equal rights and opportunities, this workshop on product design and development is fully funded by MOSTI's Social Innovation (MSI) grant and developed by PLPP's instructors. The key objectives of the programme are:

1. Improve understanding of instructors to instruct the disabled at PLPP on design in product manufacturing,
2. Catalyse independence of the disabled from reliance on Government assistance,
3. Encourage programme participants in their journey as design entrepreneurs of high-quality designed products that meet market requirements.

The comprehensive programme in product quality improvement covers skills training, design quality improvement and technology transfer. Meanwhile, MDC's commitment in supplying machinery and equipment involves the supply of two CAD software units and equipment used from design development to prototype manufacturing.

### NATIONAL TRANSFORMATION 2050 DIALOGUE SESSION (TN50)

With the theme "Govern by Design", MDC hosted the dialogue session with Datuk Seri Panglima Madius Tangau, Minister of MOSTI, in November 2017. The principal objective of national transformation to shape Malaysia's future over the period of 2020 to 2050 involved the participation of design industry practitioners, students and companies.

The dialogue session gathered the aspirations of the participants, churned out fresh ideas to strengthen the design industry and the creation of job opportunities along the way. Government endorsement paved the way to understand the perspectives of design industry practitioners and enabled the concept of "Govern by Design" to be understood and applied by both private and public sector. As a result, the Design



Roadmap & Policy to be developed will facilitate the design system in Malaysia and inculcate funding for design industry players in line with the goal of becoming a developed nation.

Other notable design events held by MDC was the Kuala Lumpur Design Month 2017 Design Talk, ASIA Design Sharing Council Meeting 2017 and the Design and Social Innovation Symposium (DESIAP) 2017. The Kuala Lumpur Design Month 2017 in October was jointly organised with Rekanegara and hosted by MDC with the theme "Design Futures Today". The discussion on designs in general cuts across education, industry and Government sectors, with the primary objective of sharing ideas on design. The four speakers spoke on design related issues with interactive sessions within the programme. On the sidelines was an exhibition for MGDM-accredited products where participants could engage with the designers on the developed products.

The following month saw the ASIA Design Sharing Council Meeting 2017 take place at the Korea Institute of Design Promotion (KIDP). The synergistic collaborative of design agencies comprise of KIDP, MDC, Center for International Trade Exposition and Missions, Philippines (CITEM), Design Center of Philippines (DCP), Indonesia Design Development Center (IDCC), Thailand Creative and Design Center (TCDC) and Vietnam Trade Promotion Agency (VIETRADE). Member countries establish mutual understanding, focus on developing regional design industries and provide strategies and activities that enhance competitiveness and socio-economic progress through design.

Towards December 2017, MDC and Rekanegara engaged with two international institutions of higher learning, namely, RMIT University and Northumbria University to host DESIAP 2017, a networking programme headed by Dr Yoko Akama from RMIT and Dr Joyce Yee from Northumbria, respectively. Discussing social innovation issues at the Asia Pacific level, Malaysia has been hosting DESIAP for the third time in a row.

The two-session programme saw 14 representatives from each country discuss and present issues on social innovation in their geographies, expounding on the best improvement methods and resolutions in the first session. The second session raised comprehensive outcomes from the discussions and issues raised. There were a total of 120 delegates from various design backgrounds present. As the host country's representative, MDC proposed solutions on social innovation by the Government of Malaysia in its endeavour to become a fully developed nation by adopting design as a new source of wealth by 2050.



**/ Report By:**  
Associate Prof. Dr. Mohamad Hariri Abdullah  
General Manager, Malaysia Design Council  
Secretariat

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 MALAYSIA DESIGN COUNCIL  
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# WORLD ASSOCIATION OF INDUSTRIAL & TECHNOLOGICAL RESEARCH ORGANISATIONS (WAITRO)

## 180

INDUSTRIAL RESEARCH  
 ORGANISATIONS FROM  
 80 COUNTRIES UNDER THE  
 AUSPICES OF THE  
 UNITED NATIONS

## 2

DAYS OFFICIAL VISIT TO THE  
 MOSTI OF MALAYSIA LED  
 BY MR DAVID O.O. OBONG

## Food Industry 4.0

ORGANISED BY  
 THAILAND INSTITUTE  
 OF SCIENTIFIC AND  
 TECHNOLOGICAL RESEARCH  
 (TISTR) ON 12-13 JUNE 2017,  
 BANGKOK

The World Association of Industrial and Technological Research Organisations (WAITRO), an independent association of about 170 industrial research organisations from 70 countries under the auspices of the United Nations, carries out action-oriented partnerships for sustainable development.

Throughout 2017, WAITRO organised various programmes among which are an exchange programme for international attachments, training and development opportunities and working visits for international delegations to SIRIM.

### ATTACHMENT ON MICROBIAL TESTING FOR CARIRI, TRINIDAD AND TOBAGO PERSONNEL IN SIRIM



The Caribbean Industrial Research Institute (CARIRI) requested for assistance from the WAITRO Secretariat in a placement of their staff from the Food and General Microbiology Laboratory for training in SIRIM Berhad. The focus of the placement is to support the industrial and economic development of the Latin American and Caribbean region.

Ms. Andrea Mulraine-Ash underwent microbial testing training from 13-17 February 2017 at the SIRIM Industrial Biotechnology Research Centre (IBRC) covering areas on cosmetics bioburden, quantitative evaluation of bactericidal activity of chemical disinfectants, bacterial endotoxin testing and microbial molecular identification methods. The only outsourced component was endotoxin training by a Technical Sales Executive from FC-BIOS that included usage of equipment, reagents and training in endotoxin analysis.

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**WORKING VISIT TO SIRIM BERHAD BY A DELEGATION FROM THE MINISTRY OF SCIENCE, TECHNOLOGY AND INNOVATION, UGANDA**

The Ministry of Science, Technology and Innovation (MOSTI) of Uganda paid SIRIM Shah Alam a working visit after their two-day official visit to the MOSTI of Malaysia from 6-7 June 2017. Led by Mr David O.O. Obong, the Permanent Secretary of MOSTI, Uganda and accompanied by Ms. Jennifer Muwuliza of MOSTI, Malaysia, the delegation comprised of officials from the Uganda Industrial Research Institute (UIRI), the Ministry of Public Service, Uganda and MOSTI, Uganda. The delegates were Prof. Charles Kwesiga, Mr. Richard Tushemeireirwe and Ms Julian Kajuma from UIRI; Mr. Emmanuel Turyatunga and Mr. Steven Bukulu from the Ministry of Public Service and Ms Stella Kesemiire from MOSTI, Uganda.



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During the working visit, a presentation was given by SIRIM Group Strategic Planning, SIRIM QAS International Sdn Bhd and SIRIM STS Sdn Bhd. The delegation then visited the SIRIM Gallery and paid courtesy call on SIRIM's President and Group Chief Executive, Prof Ir. Dr Ahmad Fadzil Mohamad Hani.

**INTERNATIONAL CONFERENCE:  
 FROM LOCAL TO GLOBAL  
 INTERNATIONAL FORUM: FOOD  
 INDUSTRY 4.0**

Mr. Mohd Mahayuddin Hussin, an IBRC researcher specialising in microbiological analysis participated in the forum 'From Local to Global International Forum: Food Industry 4.0' organised by Thailand Institute of Scientific and Technological Research (TISTR) on 12-13 June 2017, Bangkok. This platform to share strategies, opportunities and vision on the direction of the Thai food industry is in line with the

Government's initiatives for Thailand 4.0. TISTR Governor, Dr Luxsamee Plangsangmas, outlined the objective of the forum to forge ahead for the 'Food Innopolis' project. An exhibition of scientific and technological achievements from local and international networks were also displayed on the side lines of the forum.

In his keynote address H.E. Dr Atchaka Sibunruang, Thailand's Minister of Science and Technology outlined the national strategy of Thailand 4.0 which was to allow Thailand to transit into a new era through value-added goods and services, capitalising on its enhanced and sustainable competitive advantages.

The first day's highlight was on the 'Sharing Opportunity and Vision: Driving Thai Food Industry towards Industry 4.0' and continued with the themes 'Food for the Future: Trends in Functional Food and Dietary Supplement'; 'SMEs and Start-ups of Thai Food Industry in the Digital Age'; and 'Food for Health and Safety: Trends in Food Safety Standards'.

“ **GOVERNMENT'S  
 INITIATIVES FOR  
 THAILAND 4.0. TISTR  
 GOVERNOR, DR  
 LUXSAMEE  
 PLANGSANGMAS,  
 OUTLINED THE  
 OBJECTIVE OF THE  
 FORUM TO FORGE  
 AHEAD FOR THE  
 'FOOD INNOPOLIS'  
 PROJECT.**



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## WAITRO MANAGEMENT PROGRAMME 2017

The WAITRO Management Programme (WMP) 2017, was conducted in Shah Alam from 17-22 July 2017 with the aim of providing understanding for participants who facilitate the WAITRO Board and Regional Focal Points. The WMP comprised nine participants from Turkey, South Africa, Colombia, Germany, Thailand, Nigeria, Trinidad and Tobago, and China.

Participants were taken on a site visit to the Industrial Biotechnology Research Centre to view the processes in-situ from ideation to commercialisation of products were done.

Participants then paid a courtesy call to the SIRIM President and Group Chief Executive, Prof. Ir. Dr. Ahmad Fadzil Mohamad. Hani, who provided an in-depth review of why Industry 4.0 (I4.0) is the economic thrust currently and how the SIRIM-Fraunhofer programme allows businesses to thrive through industrial development. Through this engagement WAITRO facilitated the global participation of RTOs in I4.0.

## WAITRO-ISESCO-SIRIM RESEARCH FELLOWSHIP PROGRAMME (WFRP) IN THE AREA OF INTELLIGENT SYSTEM

Organised by the System Design Centre from 23 October to 2 November 2017, the WFRP in the Area of Intelligent System was held in Putrajaya and Kuching. Participation is from WAITRO member organisations and ISESCO member countries, namely Botswana, Iran, South Africa, Sri Lanka, Tanzania, Trinidad and Tobago, and Thailand.

Participants familiarised themselves with IS technology applications such as robotics and embedded system and remote control (RC) airplanes; and experienced hands-on modules, controlling and sensing physical input and output devices using a microcontroller.

Using SIRIM's indigenous products, the SIRIM RoboKit® and the SIRIM AeroKit, participants designed a prototype of the RC plane and underwent a piloting simulation. The second week had the approach of 'Train the Trainer' elements involving seven secondary students in Kuching. The RC flight testing competition was the main highlight as students designed and built an RC aeroplane prototype.

“ THE RC FLIGHT TESTING COMPETITION WAS THE MAIN HIGHLIGHT AS STUDENTS DESIGN AND BUILT AN RC AEROPLANE PROTOTYPE. MR CHEN FEI MING, KUCHING DISTRICT EDUCATION DEPUTY DIRECTOR GAVE A CLOSING CEREMONY SPEECH.



/ **Report By:**  
Dr. Rohani Hashim  
Secretary General, WAITRO



PACKAGING & SECURITY DESIGN CENTRE  
NATIONAL METROLOGY INSTITUTE OF MALAYSIA  
MALAYSIA DESIGN COUNCIL  
WAITRO  
**UNIDO PROJECT**

# UNITED NATION INDUSTRIAL DEVELOPMENT ORGANISATION (UNIDO) PROJECT

40%

REDUCE GREENHOUSE  
GAS (GHG) EMISSIONS  
BY THE YEAR 2020

40,963,583 GJ

TOTAL ENERGY SAVING

2,757 ktCO<sub>2</sub>

LIFETIME GHG  
EMISSION REDUCTION

United Nation Industrial Development Organisation (UNIDO) is a specialised agency of the United Nations that promotes industrial development for poverty reduction, inclusive globalisation and environmental sustainability. The climate change effecting the country and the world are of great concerns by Malaysia and would like to contribute in addressing the issue and pledged to reduce greenhouse gas (GHG) emissions by 40 per cent by the year 2020. In July 2014, a national initiative project on GHG Emissions Reductions in Targeted Industrial Sub-sectors through Energy Efficiency (EE) and Application of Solar Thermal Systems in Malaysia started its implementation. The project is termed as Malaysia Energy Efficiency and Solar Thermal Application (MAEESTA). The project is expected to contribute to total direct energy saving of 40,963,583 GJ and lifetime GHG emission reduction of 2,757 ktCO<sub>2</sub> by implementation of thermal energy efficiency improvement and application of solar thermal system. MAEESTA project is funded by the Global Environment Facility (GEF), implemented by the United Nations Industrial Development Organization (UNIDO) and SIRIM as the lead executing agency.

Global Environment Facility (GEF) is an organisation established on the eve of the 1992 Rio Earth Summit to tackle environmental problems that go beyond country boundaries.

Throughout year 2017, MAEESTA has organised and implemented substantial amount of activities based on three core components stipulated under the MAEESTA project, namely;

- 1) Development of regulatory framework, support programme and financial incentive mechanism to facilitate solar thermal energy utilisation
- 2) Awareness raising and capacity building program relating to process heating and cooling optimisation, and solar thermal energy utilisation, and
- 3) Demonstration and scaling up of sector-specific EE and solar thermal energy utilisation in targeted industrial subsectors.

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## REGULATORY FRAMEWORK, SUPPORT PROGRAMME AND FINANCIAL INCENTIVE



*Stakeholder Engagement Workshop*

PricewaterhouseCoopers (PwC), the appointed consultant to develop the National Solar Thermal Roadmap for Malaysian Industries organised two stakeholder workshops, each in July and December and conduct interviews with stakeholders to get inputs from the industries, government agencies, research institutions, institute of higher learning and consultants. Prior to the stakeholder workshop in December, a Task Force workshop with PwC was held at IBIS Hotel Sri Damansara to address issues related to the roadmap preparation. A visit to Sungai Buloh Hospital was made after the workshop to expose the Task Force members on the solar thermal system installed.

PwC drafted the roadmap which highlighted priority areas which require special attention for developing an implementable ecosystem such as technology and R&D; testing, standardisation and quality assurance; awareness and capacity building; and project financing and tax incentives and regulatory landscape. The Roadmap document will be used as a reference to move forward in enhancing the implementation of the solar thermal technology in the country.

## AWARENESS RAISING AND CAPACITY BUILDING

Throughout 2017, MAEESTA has been actively promoting the project to the Malaysian industries and to create local expertise in thermal energy efficiency optimisation and application of solar thermal technology. A total of eight awareness seminars, and one 2-Days User, one Expert Course 1 (Batch 2) and two Expert Course 2 (Batch 1 & 2), one Vendor and one financial training programmes were organised. Most of the training programmes were conducted by International trainers from AEE Intec, Austria assisted by local expert trainees from the Batch 1 Expert Training Programmes.

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## AWARENESS PROGRAMME

The awareness seminars were organised at various locations within Malaysia including Sabah and Sarawak. Total number of participants attended the seminars was 264. Seven seminars were jointly organised with Federation of Malaysian Manufacturers (FMM) and one seminar with Malaysia Association of Energy Service Company (MAESCO).



## USER TRAINING PROGRAMME

The 2-Days User training programme was held at Malacca on 27 to 28 November. Total number of participants was 71, comprised of 34 consultants, 22 from industries, 11 from institutes of higher learning and research institutes and 2 from a government agency. The User Training covers both topics on EE and solar thermal technology. The training was conducted both by international and local trainers. Three solar thermal equipment suppliers also participated in the training programme namely, Alpha Entity (M) Sdn Bhd, Solar District Cooling Sdn Bhd and Aqua Solar Technology Sdn Bhd to exhibit their solar collectors.



## EXPERT TRAINING PROGRAMME

Throughout 2017, one Expert Course 1 (Batch 2) and two Expert Course 2 (Batch 1 & 2) training programmes were organised. The Expert course 1 training programme focuses on thermal energy efficiency and Expert Course 2 training programme focuses on solar thermal technology. Total number of participants attended the Expert Course 1 and Expert Course 2 was 42 and 65 respectively. In between the Course 1 and Course 2 training, the participants were required to implement energy audit at the host companies within a duration of six months. During the Batch 2 Expert Course 2 training that was held in November 2017, a visit to PUTRA Hospital Malacca was organised in order to enable the participants to understand more on the application of solar thermal technology.

Under the Expert Training programme (Batch 1 and 2), 18 companies participated in the energy audit assessment. The participating companies are from various subsectors including food, automotive, steel, textile, rubber glove, pewter, pharmaceutical, oleo-chemical, petrochemical and tiles.



Expert Course 2 (Batch 2) Training



Visit to PUTRA Hospital Malacca

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**VENDOR TRAINING**

A total of 15 participants from 11 solar thermal suppliers attended the Vendor training programme held at SIRIM Shah Alam on 19 May 2017. The training was delivered by International Trainer from AEE Intec, Austria.



**FINANCIAL TRAINING**

The Financial Training on Aspects of Financial and Engineering Economics was held at Shah Alam Convention Centre SACC on 18 December 2017. The objective of the training was to assist the participants to develop the financial component in their project proposal to the top management of the company that are interested to invest in the solar thermal system. The training was attended by 33 participants from energy consulting company, manufacturing industry, institute of higher learning, research institutes and government agencies who had participated in the earlier capacity building programmes under the MAEESTA project. The training was delivered by Dr. Ir. Philip Tan, a member of the Federation of Malaysian Manufacturers (FMM) Energy Management Committee.

**TRAIN THE TRAINER PROGRAMME**

Train the Trainer programme basically started on 19 May 2017 when the International trainers held a special session with all the potential local trainers at SIRIM as preparation for Batch 2 Expert Course 1 training held on 22 to 25 May 2017 at HATTEN Hotel, Malacca. Four potential local trainers from Batch 1 Expert Training Course were identified.



**DEMONSTRATION PLANT**

Three companies were approved for the 20% fund under the MAEESTA project in year 2017. Out of three, two companies are a \*co-funded projects with SIRIM SME Development Programme.

Companies approved for solar thermal integration are:



**\*MIWA Manufacturing Sdn Bhd**  
 - solar hot water for making jelly drink.



**Perusahaan Perkayuan Wan Feng Sdn Bhd**  
 - solar hot air for timber drying



**\*Advanced Chicken Processing Sdn Bhd**  
 - solar hot water for scalding tank (poultry).



**/ Report By:**  
 Dr. Azmi Idris  
 National Project Manager





**CALENDAR  
OF EVENTS**



# CALENDAR OF EVENTS

LAUNCHING OF GREEN-BLUE PACKAGING INDUSTRY CREATION PROJECT - **Putrajaya**

10  
JAN



Deputy Minister of Energy, Green Technology and Water, Senator Dato' Seri S.K. Devamany launched a new initiative, the Green-Blue Packaging Industry Creation Project (GB) as a step towards empowering the industry through the creation of GB packaging industry value chain. Green-Blue packaging is an innovative packaging technology that combines the concept of biodegradation and resource restoration to support environmental and business sustainability and SIRIM was appointed as the implementing agency for the pilot project.

SIRIM-INDUSTRY ENGAGEMENT PROGRAMME - **Kuantan**

28  
FEB



SIRIM-Industry Engagement Programme, a joint venture by SIRIM with related agencies offers a wide range of technology applications and services in an effort to increase industrial productivity and entrepreneurship in Pahang. The Programme emphasizes on Small and Medium Enterprise Productivity Improvement, Quality Management System, Innovative Packaging and Design, Measurement and Calibration Services. More than 100 representatives from industry associations and local entrepreneurs from various sectors in Pahang were present.

SIRIM QAS INTERNATIONAL OPENS BRANCH OFFICE IN BAHRAIN - **Manama**

31  
MAR



SIRIM QAS International opened its maiden branch office in the Middle East region in Manama, Bahrain. For a start, SIRIM QAS International offered the IECEx certification of personnel competence for explosive atmospheres, IECEx certified service facilities certification, product certification and management system certification services in Bahrain. The launch of the branch office was graced by SIRIM Chairman, Tan Sri Dr. Ir. Ahmad Tajuddin Ali, in Manama, Bahrain. Bahrain was chosen due to the country's strategic location, attractive investment incentive and its reputation as a modern industrial, business and service centre in the region. With this opening, SIRIM QAS International will leverage on Bahrain's strong growth prospects as a gateway to expand its presence in the fast growing Middle East region.

SIRIM ENGAGEMENT SESSION WITH STAKEHOLDERS

21 APR



SIRIM Engagement Session with Stakeholders was held with the Ministry of Finance, the Economic Planning Unit and the Ministry of Science, Technology and Innovation. The Engagement Session was chaired by President and Group Chief Executive of SIRIM Berhad, Prof Ir. Dr. Ahmad Fadzil Mohamad Hani. The main objectives of the engagement session were to provide updates on SIRIM's Role and Activities especially SIRIM Fraunhofer Program, obtain feedback from Stakeholders on SIRIM's Role and Activities and strengthen the existing bilateral relationship between SIRIM and Stakeholders.

GLOBAL RESEARCH ALLIANCE MEETING - Shah Alam

03 MAY



Seven world renowned research institutions who are members of the Global Research Alliance (GRA) shared their knowledge with Malaysian entrepreneurs and industry players on how to leverage on technology and innovation for the betterment of their businesses. Some 200 participants of the "Exploring Technology & Innovation with Global Research Alliance" programme were also exposed to opportunities in the GRA member countries as well as technology and innovative models to increase the effectiveness of future approaches to SME development in Malaysia, the topic of Industry 4.0 and its implications on the global business environment. The half-day session in conjunction with GRA 16th Annual General Meeting, was officiated by Deputy Science, Technology and Innovation Minister, Datuk Wira Dr Abu Bakar Mohamad Diah.

ITEX 2017 - Kuala Lumpur

13 MAY



SIRIM won three gold medals and one silver medal at the International Invention, Innovation & Technology Exhibition (ITEX 2017) at the Kuala Lumpur Convention Centre. The projects that won the gold medal were, MyLIPOS Composite Solar Streetlighting System, Harmonisation of Opacity Measurement in Malaysia (MyRM Opacity) and High Accuracy Approach in Tint Measurement (MyRM Tint). The MyRM Opacity project also won the Special Award - Best Invention (Research Institute Category), while the Malaysia Reference Material Gold (MyRM Gold) won the silver medal at the event.

# CALENDAR OF EVENTS

## TECHNOLOGY AND MARKET RADAR - Shah Alam

18  
MAY



SIRIM launched the Technology and Market Radar (TMR), a business tool to assist local SMEs to identify relevant technology and market trends for making strategic decisions on technology investment. TMR is designed to be accessed by SMEs, Ministries and Government Agencies to retrieve relevant and strategic information on technology and business trends complemented with an analysis of opportunities and challenges. The TMR was launched by President and Group Chief Executive of SIRIM, Prof Ir. Dr. Ahmad Fadzil Mohamad Hani and attended by more than 100 participants which consists of local SMEs, industries and government officials related to the Malaysian SME activities.

## SIRIM TECH VENTURE SIGNS STRATEGIC ALLIANCE AGREEMENT WITH LD MICRO PRECISION - Shah Alam

04  
JUL



SIRIM Tech Venture Sdn Bhd (STV) formed a strategic alliance with LD Micro Precision Sdn Bhd (LDM) in its continuous effort in commercialising micro precision grinding machine into the educational program market segment. Through the strategic alliance agreement, STV will be the marketing and sales window for the micro precision grinding machine manufactured by LDM. The agreement was signed by President and Group Chief Executive of SIRIM, Prof Ir. Dr. Ahmad Fadzil Mohamad Hani and Director of LDM, Lai Siaw Ling. The synergistic partnership will bring outputs of research and development and innovation into the market and augurs well with the Malaysia Commercialisation Year initiatives.

## GREEN FOOD PREMISE AND ANAEROBIC DIGESTIVE SYSTEM PILOT SITE - Port Dickson

20  
JUL



The Green Food Premise and Anaerobic Digestive System Pilot Site was launched in Port Dickson as part of the Green-Blue Packaging project. Under this initiative, the anaerobic digestive system was introduced to treat GB packaging with food waste to produce biogas and biofertiliser to reduce the release of green gas. The launching ceremony was officiated by Linggi District Assemblyman, Dato' Abd Rahman Mohd Redza.

## FOOD INNOVATION AND GLOBAL TRENDS SEMINAR - Kuala Lumpur

10  
AUG



A seminar on Food Innovation and Global Trends was organised to support and assist local food industry to better understand the future of the food industry. More than 200 participants from the food and beverage industry, research institutions, higher education institutions, government and private sector agencies were exposed to various topics on food innovation, halal, food processing technology, innovation networks and global trends of the future of food. The one-day seminar held in conjunction with the 18th Malaysian International Food and Beverage Trade Fair (MIFB) 2017, was officiated by the Minister of Science, Technology and Innovation, Datuk Seri Panglima Wilfred Madius Tangau.

## DELEGATES FROM NAM S&T INDUSTRY NETWORKS VISIT SIRIM

07  
SEP



20 delegates from the 14th Governing Council Meeting of the Science and Technology of the Non-Aligned Movement and Other Developing Countries Industry Networks (NAM S&T Industry Networks) visited SIRIM in Shah Alam. The visit was organised by MOSTI to enlighten the delegates from various countries namely India, Indonesia, Iran, Kenya, Palestine, South Africa, Sri Lanka, Zimbabwe and Democratic Republic of Korea, on SIRIM's research activities and innovation they ventured in. Delegates were briefed on SIRIM Group's activities especially on research and technology, and also visited three laboratories at its Industrial Biotechnology Research Centre.

## SIRIM STANDARDS TECHNOLOGY SEALED MOU WITH VAS AERO MALAYSIA

15  
AUG



SIRIM Standards Technology Sdn Bhd sealed a Memorandum of Understanding (MoU) with VAS Aero Malaysia Sdn Bhd to form strategic partnerships in calibration and measurement services. Through the collaboration, both parties will form a joint venture involving projects or tenders on calibration and measurement services as well as related support services, including repair and maintenance services. The MoU was signed by SIRIM Group President and Chief Executive, Prof Ir. Dr. Ahmad Fadzil Mohamad Hani and Managing Director of VAS Aero Malaysia Sdn Bhd, Datuk Nordin Ahmad.

# CALENDAR OF EVENTS

SIRIM WON A GOLD MEDAL AT BIOMALAYSIA 2017 KUALA LUMPUR

13  
SEP



SIRIM won a gold medal at BioMalaysia 2017 at the Kuala Lumpur Convention Centre with the Smart Paddle Wheels System project for the category of Agriculture/ Agro-Based Industry (Most Commercial Ready Product). The Bioeconomy Innovation Awards 2017 was aimed at awarding universities or research institutes that have developed outstanding innovative solutions to technical, social and environmental challenges.

SIRIM INKED SEVEN MOUS FOR COLLABORATIONS IN TECHNOLOGY AND COMMERCIALISATION - Kuala Lumpur

13  
OCT



SIRIM signed seven Memorandums of Understanding (MoU) with various parties including institutions of higher education and private companies to enable collaborations in technology and commercialisation, in conjunction with the National Innovation and Creative Economy Expo (NICE) 2017 organised by MOSTI. During the event, 12 Small and Medium Enterprise entrepreneurs were also recognised for their involvement in the SIRIM-Fraunhofer Programme. They were from various industries such as electrical and electronics; packaging materials; machinery and engineering; biotechnology; food and beverages; as well as labelling and packaging.

SIRIM CHAIRMAN CONFERRED THE SENIOR FELLOWSHIP BY THE ACADEMY OF SCIENCES MALAYSIA

02  
NOV



Chairman of SIRIM, Tan Sri Dr Ahmad Tajuddin Ali received the Conferment of Senior Fellowship by the Academy of Sciences Malaysia. The Senior Fellow was awarded in recognition of Tan Sri Dr Ahmad Tajuddin's leadership and perseverance in strengthening the field of science, engineering and technology. Academy of Sciences Malaysia is a body established by the government with the main function to be the nation's "Thought Leader" for matters related to science, engineering, technology and innovation.

ANNUAL QUALITY, STANDARDS AND BEST PRACTICES (QBEST 2017) SEMINAR

09  
NOV



The QBest Seminar with the theme, Integrity, Competency and Leadership, was held in conjunction with World Quality Day. A total of 79 participants attended this seminar comprising of government agencies, corporate bodies, multinational companies, industries, associations and individuals. The objective of the seminar is to provide exposure on the latest developments in management standard systems, the introduction of new standards and best practices to support the development of an organization to remain competitive and relevant.

## MAJLIS SIRIM INDUSTRI - Subang Jaya

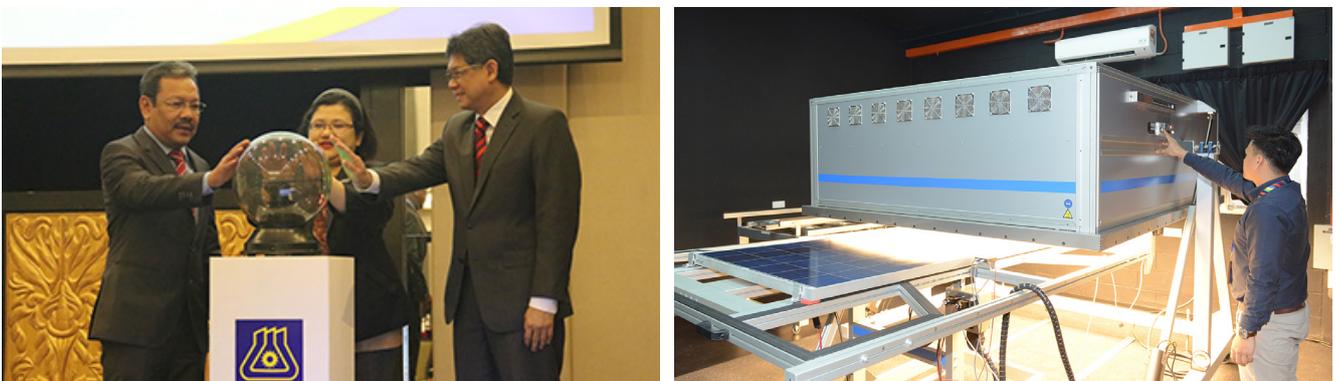
10  
NOV



The Majlis SIRIM Industri 2017 honoured seven outstanding organisations with the prestigious SIRIM Quality Award 2017, which is a recognition to organisations that achieve quality management in various sectors that meet national and international standards. The awards were presented by Deputy Minister of Science, Technology and Innovation, Datuk Wira Dr. Abu Bakar Mohamad Diah. The Anti-Bribery Management System Certification Scheme was also launched at the event, in which, the scheme is based on ISO 37001:2016 that outlines the need and provides guidance to organisations in detecting, preventing and responding to corrupt practices in line with the requirements of the Malaysian Anti-Corruption Commission Act 2009, and other anti-bribery prevention and law. SIRIM QAS International in collaboration with the Malaysian Anti-Corruption Commission and the Association of Malaysian Certified Integrity Office has implemented a pilot certification program involving 11 organisations from various sectors such as government departments, local authorities, government-linked companies (GLCs) and private companies.

## SIRIM QAS INTERNATIONAL LAUNCHED THE FIRST PHOTOVOLTAIC MODULE TESTING FACILITY IN MALAYSIA

23  
NOV



SIRIM QAS International launched the first Photovoltaic Module Testing Facility in the country, in which, the facility can provide certainty to the compliance of the Photovoltaic Module in terms of safety, quality and performance in accordance with national and international standards. The lab is capable of conducting tests based on the standard requirements to support the growth of the photovoltaic industry in Malaysia and helping the government in curbing the pile of non-standard Photovoltaic Modules in the Malaysian market.

## CALENDAR OF EVENTS

SIRIM FAMILY DAY  
- Perak

16  
DEC



SIRIM organized SIRIM Family Day to foster closer relationships among the staffs and their families. The 2017 Family Day was held at Lost World of Tambun in Ipoh, Perak with a total of 2,439 people. Various telematch events were conducted for the adults and children with free activity in the evening for the staffs to enjoy their time at the Theme Park with their family members.

SIRIM OPEN DAY

19  
DEC



SIRIM Open Day themed "Merakyatkan Kualiti" was held to showcase technology, products and services provided by SIRIM. Various interactive activities were held during SIRIM Open Day, which include visits to SIRIM's research and testing laboratories, 'Q-talk' on topics of interest such as beauty and safe cosmetics, managing stress and ideal weight; to technology-related topics such as 3D printing technology, Industry 4.0 and green technology, make-up demonstrations, colouring and drawing contests for kids, food truck park, buskers corner and special product sales for visitors.

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