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# SIRIM LINK

Volume 3  
2020

BEST PARTNER FOR INNOVATION

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Industrial Research for Boosting **National Development**

IR. ANITA MARZUKI    ZURIANI USOP    SALMAH MOHD NORDIN    DR. MOHD NASIR ZAINAL ABIDIN

AZMI MUSA    RAZMAN MOHD HALIM    TS. DR. FAZRUL MOHD NOR

IR. MOHD SALLEH DRUS    RAHMAD ABD SHUKOR    MOHD AZANUDDIN SALLEH

DR. OSMAN ZAKARIA    IR. DR. MOHAMAD JAMIL SULAIMAN



# TALENTS & CAPABILITIES

Technology  
LENGTH Localisation  
MEASUREMENT  
Enquiry Point & Standards  
Plastics & Composite  
MATERIALS  
technology readiness level

E&E MEASUREMENT  
Standards  
Inspection / Testing  
FIRE PROTECTION  
TESTING  
standards



Providing Excellent Alternative to  
Bone Graft Material

**SYNTHETIC BONE GRAFT  
ORTHOPEDIC & DENTAL  
APPLICATIONS**

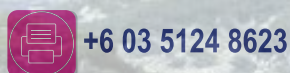
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# DECADES OF EXPERIENCE, A WEALTH OF EXPERTISE

SIRIM has been championing the growth of Malaysia's industries for over half a century. Today, we are home to an exceptional array of competencies that have been carefully curated to meet the current needs and trends of our industry players.

In this issue, we are pleased to introduce to you some of our best talents and their unique skillsets, so you can see for yourself how our people have helped and continue to help in nurturing the nation's socioeconomic development. From the initial process of getting ideas off the ground right through to getting your products and services to your intended market segments, we are well-equipped to serve your diverse needs with innovative solutions. Come get to know SIRIM and our people better, and discover how we can help your business grow.

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Salmah Mohd Nordin

Wan Mazlina Wan Hussein

Zalinda Baharum

Zanariyah Ali

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For further information on the articles featured in this magazine, please contact:  
Corporate Affairs Section  
SIRIM Berhad

Tel: 03-5544 6772  
Fax: 03-5544 6745

Email: [publications@sirim.my](mailto:publications@sirim.my)



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# ACHIEVEMENTS

SIRIM QAS International successfully launched **10** new services



### Testing

- >> Fire Test of External Cladding
- >> Insulated Glass Unit Testing
- >> Mobile Consignment Testing Services
- >> Energy Efficiency Test for Washing Machine



### Product Certification

- >> Tint Film for Automotive
- >> Registration of Used Tyres for Traders



### Management Certification

- >> ISO 18788 Management System for Private Security Operations
- >> Auto Service Certification Scheme (Based on MS 2696 & MS 2697)
- >> Industrialised Building System (IBS) Impact Certification
- >> ISO 41001 Facility Management System

technical expertise in new areas >>

**1** qualified auditor for IECEx 03-Service Facilities

**1** qualified examiner for IECEx 05-CoPC

aerospace >>

**8** qualified auditors for AS9100 Management Services Certification

## National Metrology Institute of Malaysia

SERVICES LAUNCHED

Competency Training for Measurement of Gold Purity

Calibration of Gold Bar

Validation of Belt Weigher (on-site verification)

Calibration of Dial Indicator System

Pattern Approval of Wheel Load Weigher

Pattern Approval for Electronic Balances <6000kg

Capability in Calibration of Digital Engine Tachometer

Pattern Approval for Spring Scales <200kg

Calibration of Temperature Sensor Down to 200 Celcius

awards >>



**Public Service Innovation Award**  
Gold Medal MTE 2019 (High Accuracy Approach in Tint Measurement)



**Invention and Innovation Award**  
Gold Medal MTE 2019 (Harmonisation of Measurement in Coefficient Through MyRM Transmittance)

industry attachment >>

**4**

Industry Attachments

- >> TUBITAK UME
- >> Software Testing at PTB Germany
- >> Gauge Block at Varenna Metrology School & METAS
- >> Air Speed at KRISS Korea

**4**

Approved Signatories

- ✓ Density Lab
- ✓ Dimensional Lab
- ✓ Power Energy Lab
- ✓ Radiation Thermometry Lab

## Standards Development & Training

developed **7** new Industry Standards

- >> Code of Practice for Production of Kopi-O for Federation of Sabah Association
- >> Sustainable Manufacturing – General Concept, Framework and Principle for UTM
- >> Design for Environment for UTM
- >> Herbal Extracts – Spray Dried Aqueous Extract for Mengkudu, Kacip Fatimah and Belalai Gajah for MOA
- >> Electrical Properties Testing of Products containing Nanomaterials for Nanoverify

## Standards Implementation

MS 2696 and MS 2697 (Auto Service Standards – 4R2S) in collaboration with MARii

## Launched **9** New Training Programmes

ISO 28001 (Security Management System)

ISO 21001 (Management System for Educational Organisation)

Certified AS 9100 Professional Programme

MSPO Supply Chain Certification Standard (SCCS) Auditor Training

Certified Halal Executive Programme

Certified Halal Auditor Programme

Soft and Management Skills

Certified Food Safety Management System (FSMS) Programme

Certified Internal Auditor Programme



Offered E-Learning Training

- >> Digital Marketing
- >> Green 5S
- >> MS 1500:2019
- >> ISO 14001:2015
- >> Training Programme

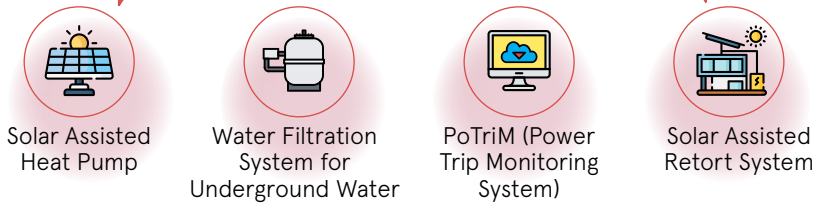
Training and Consultancy

- >> 10 qualified consultants in Aerospace, Educational Organisations Management
- >> System (EOMS), Rail, ISO/IEC 17025, Halal Executive and Certified Halal Auditors



**SIRIM Industrial Research**

**4** new products offered



**9** new services offered

| Biomedical Technology  | Nano Technology  | Chemical Technology   |
|--|--|---|
| <ul style="list-style-type: none"> <li>• Confocal Microscope</li> <li>• Tensile Deflection, Compression, Preparation</li> <li>• Viscosity Measurement</li> </ul> | <ul style="list-style-type: none"> <li>• Zeta Potential Test (Nanosafety Testing and Consultation)</li> <li>• Particle Size Analyser (Particle Distribution)</li> <li>• Particle Size Analyser (Auto Tritrator)</li> <li>• Water Filtration System for F&amp;B Industry</li> </ul> | <ul style="list-style-type: none"> <li>• Density in Paint</li> <li>• Formaldehyde in Paint</li> </ul> |



- >> Industry4WRD Readiness Assessment – 31 Qualified Assessors
- >> MasterClass SIRIM-KISMECC-BOSCH – 24 SIRIM engineers trained in MSS Didactics 4.0
- >> Winner of ASEAN Energy Award 2019 for Bio Natural Gas from Palm Oil Affluent
- >> Winner of Six Innovation Awards at The Selangor Research Development and Innovation Expo 2019
- >> Best Invention Award at the International Invention, Innovation and Technology Exhibition 2019 – ITEX 2019

**4 Gold Medals**

- Natural Bioactive Dermacide Anti-Fungal Cream Using Natural Substance
- Eco Substrate for Coral Restoration and Rehabilitation for Marine Eco System
- Water Scarcity Footprint Apps (WaSFA)
- Quantum Dot Light Emitting Diode (QLED) Device for General Lighting Applications

**3 Silver Medals**

- Underwater Fish Attraction LED lamps (UFAL)
- Lab on Chip for Molecular Diagnostic
- Low Pressure Storage System

**SIRIM Standard Technology**

New Services offered



Acquisition of SMT Shares

>> Full operation of RF Lab in Penang

**Secured Long-term Contract with MNC/GLC**

- >> Accredited (non-RF) calibration contract with Proton and TNBR
- >> Calibration, repairs in-house calibration lab and support team contract with Motorola
- >> 5-year contract with EXXON Mobil

GranuLab

- >> Obtained LKPP e-Catalog Registration for Indonesia government central purchase system in March 2019
- >> Completed registration for Medical Device Authority (MDA) change notification (category box design and amendment of box description)

Malaysia Design Council Secretariat

- >> Stance Wheel for OKU (Social Innovation Project) Furniture Design Conference MTIB
- >> Hosted Asia Design Sharing Seminar
- >> Hosted the Asia Students Package Design Competition (ASPaC)
- >> 326 product entries for Malaysia Good Design Award 2019. Highest number of entries achieved

**SIRIM Tech Venture**

**TOP 5**

Innovation in Oil and Gas Asia (OGA) Innovation Award 2019 for Filament Winding Technology (CNG/VPS)

technology in the pipeline for commercialisation >>

- >> Technologies at TRL6 (Titanium Implant, Bioplastic, CNG Tank)
- >> Technologies at TRL7 (Fish Aggregation Devices, Portable Procedure Station, Solar Thermal, Anti Acne Treatment, Chytsponge, LPG Tank)
- >> Technologies at TRL8 (BROMAX, Anti-Fungal Cream, Solar Powered Street Light, Bio Natural Gas, Anaerobic Digester)

packaging & security design (PSDC) >>



- >> Trained 1,757 entrepreneurs through Innovative Packaging and Business Transformation Programme
- >> Assisted 50 companies that have entered international market/hypermarkets

## Ensuring **SAFE AND RELIABLE** E&E Equipment



**Ir. Anita Marzuki**  
*Head of Technical Support  
Services (Electrical),  
Testing Services  
Department, SIRIM QAS  
International Sdn Bhd*

*As long as we keep trying  
our best to provide better  
service to our clients, I  
believe that we will be able  
to extend our offerings and  
exceed their expectations.*

**At** SIRIM, we test the safety and efficiency of electrical and electronic equipment to ensure that they are safe to use and able to perform optimally before they enter the marketplace, as well as conducting inspections and sampling.

With 20 years of experience at SIRIM under her belt, **Ir. Anita Marzuki** heads the Technical Support Service for electrical equipment. Equipped with a laboratory that is both MS/ISO 17025-accredited and IECEE CB Scheme-certified, her section plays a key role in supporting Malaysia's Energy Commission (ST) in evaluating relevant foreign and local test reports on electrical and electronic (E&E) equipment to ensure their compliance with national requirements. This enables importers and manufacturers of the E&E equipment to obtain their import permits.



*We purchase random communication equipment as samples and analyse the test results and the certification/labelling status. The results will then be reported to MCMC.*



**national/international  
recognition** >>



>> **ISO 17025** – the key standard for testing and calibration laboratories to ensure they have met a set of management and technical requirements, providing confidence that they are competent to conduct the testing and calibration activities.

>> **IECEE CB Scheme** – an international system by the IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE) for mutual acceptance of test reports/certificates covering the safety and performance for a wide variety of equipment.

They also conduct market surveillance on behalf of the Malaysian Communications and Multimedia Commission (MCMC). "We purchase random communication equipment as samples and analyse the test results and the certification/labelling status. The results will then be reported to MCMC," she explained.

Additionally, the section is in charge of issuing SIRIM's batch consignment labels to the respective applicants after ensuring that they have adhered to certain requirements. This is the SIRIM label that consumers will see being affixed on electrical appliances.

As a technical support service provider, her team also offers guides and entertains enquiries related to the testing and importation of E&E equipment. "We help to guide industry players in their applications to test their equipment and advise them on how they can get their import permits," she added.



*We help to guide industry players in their applications to test their equipment and advise them on how they can get their import permits.*





## international benchmarks for e&e appliances >>

With smart homes and electronics becoming more prevalent, the safety of home appliances has become more important than ever. The IEC 60335 standard addresses this. There are two parts to this international standard that focuses on the safety requirements for electrical/electronic household appliances and similar appliances. >>

- >> *IEC 60335-1 series* is the first part, covering appliances with up to 250V for single phase and up to 480V for multiphase.
- >> *IEC 60335-2 series* is the second part with additional requirements for over 100 specific appliance types, including electrical irons, vacuum cleaner, ovens, fans, washing machines, refrigerators, etc.

SIRIM's clientele base in this area is primarily comprised of E&E equipment importers and manufacturers in the country. These include names like Panasonic, Toshiba, Khind, LG, Sony and Elba.

According to Anita, familiarity with the various national and international standards is also important to enable them to assist their clients effectively. This is because a main part of the team's job scope is to ensure that, at the very least, all electrical equipment meet the minimum requirements of the relevant standards. "This way, we are able to make sure that the users of the electrical or electronic equipment are provided with safer and more efficient options."

### Building Relationships

SIRIM has close links with various government ministries and agencies such as the Ministry of International Trade and Industry (MITI), Ministry of Domestic Trade and Consumer Affairs (KPDNHEP), ST, MCMC and the Department of Standards Malaysia. "We get first-hand information on any updates or new developments regarding related rules, regulations, guidelines or acts. This allows us to enhance our skills and knowledge more easily so that we are able to serve our clients better," said Anita.



*We get first-hand information on any updates or new developments regarding related rules, regulations, guidelines or acts. This allows us to enhance our skills and knowledge more easily so that we are able to serve our clients better.*



She laments that many retailers and consumers do not realise the importance of the SIRIM label. "One of our bigger challenges is to make sure that the industry players and public are aware that the safety and efficiency of their equipment should take priority."

One way that SIRIM tries to increase awareness is by approaching the retailers directly and providing them with information on why the SIRIM label is needed and how it can be obtained with the hope that the retailers will go on to share this information with their suppliers.

Furthermore, with the COVID-19 pandemic, many consumers have turned to online platforms to make their purchases, which could make it difficult for them to affirm if the equipment have been approved by SIRIM.

To ascertain if equipment purchased online or in physical stores is certified by SIRIM, one can download the SIRIM QAS mobile application for free. Thereafter, consumers will just have to key in the relevant equipment details to find out its status.

"Just make sure that your equipment has been certified. Don't settle for substandard E&E equipment!" said Anita.



*One of our bigger challenges is to make sure that the industry players and public are aware that the safety and efficiency of their equipment should take priority."*

*"Just make sure that your equipment has been certified. Don't settle for substandard E&E equipment!"*



# Providing ENGINEERING EXCELLENCE



Zuriani Usop,  
General Manager,  
Machinery Technology  
Centre, SIRIM Industrial  
Research

*SIRIM has everything. If you want to serve industries or support the country's socioeconomic development, this is the place to be!*

**Much** more than developing machines for industries, we also possess the capacity for testing and localisation. We can provide more cost-effective and environmentally friendly solutions for Malaysians.

*I am ecstatic that SIRIM is able to do our part in supporting the first local monorail builder.*

*We were just users initially. With the knowledge and skills gained, we were able to become a manufacturer in the true sense. Now we are able to advise industry players and help them. Before, we were considered followers. Now, we can work to elevate the nation towards becoming a leader.*

Having been a part of the SIRIM family since 1996, **Zuriani Usop** has played an instrumental role in growing the expertise and capabilities of its Machinery Technology Centre. One of the more significant achievements recently is its collaboration with a local builder to provide monorail trains to Prasarana Malaysia Berhad.

Zuriani anticipates that SIRIM will be supporting this project for the next 30 years. Currently, it is doing the machining and fabrication to provide the relevant components and will thereafter offer maintenance support and facilitate the localisation of the project further.

"I am ecstatic that SIRIM is able to do our part in supporting the first local monorail builder," she enthused. "This is a historic local project, and the company will require local support in terms of maintenance and replacement parts, for example, in the long term. Our collaboration commenced this year with us providing engineering services that include the fabrication of parts for them."



The Machinery Technology Centre is also currently working with oil & gas giant Petronas on a localisation project to minimise import materials.

Earlier in her career, Zuriani was involved in a technology transfer project between SIRIM and Taiwan to learn about the computerised numerical control (CNC) machine, which she reflects on with pride today. Back in Malaysia, her team was able to build one themselves.

"We were just users initially. With the knowledge and skills gained, we were able to become a manufacturer in the true sense. Now we are able to advise industry players and help them," she added.

Today, SIRIM's Machinery Technology Centre has a competent team with the necessary knowledge, facilities and technology to support and advise industry players.

"Before, we were considered followers. Now, we can work to elevate the nation towards becoming a leader," concluded Zuriani.



A Comprehensive

# REFERENCE POINT



**Salmah Mohd Nordin**  
Head for WTO/TBT  
Enquiry Point, Technical  
Information and  
Consultancy Section,  
Standard Research  
and Development  
Department, SIRIM STS  
Sdn Bhd



*Many opportunities can be found at SIRIM, whether it is training to hone our soft skills or even the chance to participate in global-level meetings, workshops and meetings.*

**SIRIM** is Malaysia's WTO/TBT enquiry point. We are also responsible for standards development as well as the provision of related consultancy and training services, and manage a massive technical library.



As Head of the country's World Trade Organization Technical Barriers to Trade (WTO/TBT) enquiry point, **Salmah Mohd Nordin**, who has been with SIRIM for 26 years, considers this responsibility as one of the many unique capabilities of the organisation. In upholding this role, SIRIM has an upper hand in assisting the local business communities, particularly when they are looking to penetrate the global marketplace.

"We help to provide them with information on the requirements they need to fulfil to export their products to the different countries, and also ensure that the requirements comply with those of WTO/TBT," she explained.

She cited an incident where an organisation looking at exporting to Chile discovered that the country required all the packaging to include Spanish labelling. "We countered this and after consideration, Chile chose not to go ahead with that requirement," she added



*We help to provide them with information on the requirements they need to fulfil to export their products to the different countries, and also ensure that the requirements comply with those of WTO/TBT.*

As part of the Standard Research and Development Department at SIRIM, another primary responsibility that Salmah holds is in the area of standards. Among others, SIRIM had a project with Malaysia's Social Security Organization (SOCISO) in 2016.

Concerned about an increasing number of commuting accidents, SOCISO approached SIRIM, which then proposed the development of a Good Practice for Community Safety Management standard. SIRIM went to 10 organisations to study their commuting practices, compiling the relevant details into a standard. "It was the first of its kind in the world!" exclaimed Salmah.

Subsequently, it was proposed to be adopted as an International Organization for Standardization (ISO) standard. This materialised in early 2020, when the ISO standard debuted with 80% of SIRIM's content. "This is a significant milestone for us as it recognises our work at a global level," said Salmah.

SIRIM also owns the SIRIM Technical Library. Comprising substantial collections of databases, researches and other technical information, it offers a wealth of knowledge to businesses, professional institutions and researchers from diverse fields.

According to Salmah, SIRIM's true advantage lies in its collaborative environment. "Our counterparts are able to offer advice and feedback in diverse areas. For example, if the standard we are developing involves calibration, we can consult with our colleagues from the National Metrology Institute of Malaysia (NMIM). We also have access to the library for information on standards. Having all this within easy reach makes our task of providing services such as consultancy and standards development much easier," she said.



Upholding Malaysia's

# MEASUREMENT CAPABILITIES



**Dr. Mohd Nasir Zainal Abidin**  
Senior Principal  
Metrologist, National  
Metrology Institute of  
Malaysia

*As a metrologist, you are always at the frontier of science and technology; where there is no equipment, system or technique available yet, you have to come up with them.*

**One** of the responsibilities of the National Metrology Institute of Malaysia (NMIM) is in developing standards for measurement in all areas, including time and frequency, flow measurement and acoustic and vibration.

A metrologist at the National Metrology Institute of Malaysia (NMIM) for over 35 years, **Dr. Mohd Nasir Zainal Abidin** has made many contributions to the country's metrology sector. One of the most significant ones is in the area of flow measurement, when he and his team developed the Flow Measurement Criteria for the crude oil and natural gas measurements.

*All the stakeholders – from the oil companies to the government – looked to SIRIM to decide on the enhancement and optimisation of the evaluation techniques to fulfil the country's needs. This motivated us to conceive an efficient and robust calculation method. Until today, our method has remained unchallenged.*

## did you know >>

According to the International Bureau of Weights and Measures (BIPM), metrology is "the science of measurement, embracing both experimental and theoretical determinations at any level of uncertainty in any field of science and technology."

According to him, when he first started at NMIM, he realised that there were no specific criteria for the upstream crude oil measurement. Together with his colleagues, he set out to specify the criteria in ensuring the calculation of the measurement of crude oil volume for export complies with the accuracy and precision set-up by the government. A Petroleum Measurement Committee, comprising key industry players like Petronas, Shell, Carigali and Esso, surveyors and the Royal Malaysian Customs Department, with SIRIM as the secretary, was formed for this purpose, and after a few years of study, the Alir 01 and 02 criteria were presented in the late 1980s. These criteria were instrumental in safeguarding the revenues of Malaysia's growing oil and natural gas industries.

"All the stakeholders – from the oil companies to the government – looked to SIRIM to decide on the enhancement and optimisation of the evaluation techniques to fulfil the

## standardised flow >>

At a crude oil terminal, the oil companies will calculate the volume and value of the crude oil they are exporting. These figures are then used by the Royal Malaysian Customs Department for taxation purposes. There are many ways of calculating the volume, such as by using ship meters or shore tanks volumes. Previously, the Customs would typically decide on whichever method that would yield the highest figure. The system was formulated, enhanced, adopted and later approved for use by the Royal Customs and Excise Department after being studied for a few years, providing consistency which allows for better and repeatable accuracy in calculating the value of the country's crude oil exports.



country’s needs. This motivated us to conceive an efficient and robust calculation method. Until today, our method has remained unchallenged,” he shared.

The Alir criteria were developed with no prior experience in petroleum measurements nor were there any existing ISO standards on measurement uncertainty. The related documents available to guide them along were American Petroleum Institute (API) and Institute of Petroleum (IP) recommendations. However, Dr. Mohd Nasir considers this to be the nature of metrology in industry, where metrologists develop new measurement standards to address industry needs and suited for the benefits of the country.

**Diverse Measurement Services**

NMIM offers a myriad of services to a diverse array of clients. One of these is NMIM’s measurement capability in the area of time and frequency, where the Calibration and Measurement Capabilities (CMC) has been accepted by the International Bureau of Weights and Measures (BIPM). The institute services companies with calibration of time and frequency equipment and provides time services, such as the Malaysia Standard Time web time display, which can be accessed at [mst.sirim.my](http://mst.sirim.my).

“Our web time display can be displayed on a monitor and has even been used to start and end examinations. The network time protocol services are provided free to those within the same time region,” explained Dr. Mohd Nasir.

He was also involved in the development of digital time stamping for certification authorities like DigiCert, MSC Trustgate and even Telekom Malaysia, and helped to develop digital time stamping standards for the Malaysian Administrative Modernisation and Management Planning Unit (MAMPU) and Malaysian Communication and Multimedia Commission (MCMC), as well as being one of the legal metrology advisors for the Ministry of Domestic Trade and Consumer Affairs (KPDNHEP).

In the area of acoustic and vibration, he designed a microphones comparison coupler, which was built in the late

1980s and is still being used as it is today. With the issue of noise pollution gaining more prominence in the early 1990s, and also with the issues of noise level compliances of automotive parts, NMIM was also approached by Proton vendors to help them in fulfilling the requirements set by Proton.

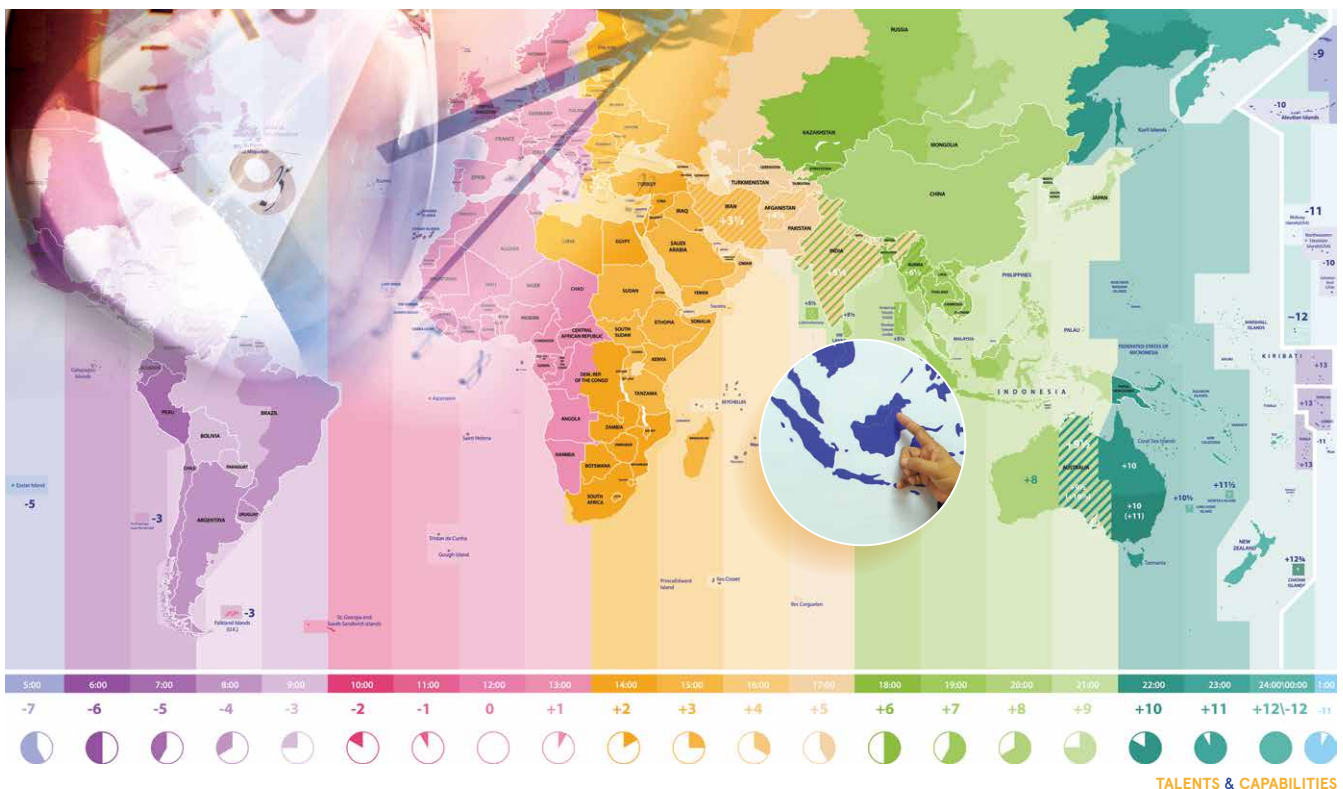
With NMIM’s extensive capabilities being published in the BIPM, companies from abroad are able to approach it. For one, its capabilities in acoustics and vibration played a significant role in bringing Bosch to Malaysia.

Presently, Dr. Mohd Nasir is focusing on developing the primary standards for radio frequency and microwave measurements. “Since we have the standard for quantum DC voltage, this is a good opportunity to develop our very own radio frequency primary standard in Malaysia.”

He expects to deliver up to 18 GHz this year, and increase the capability to 50 GHz by next year to ensure that it is able to cover the upcoming needs of the government, measuring radio frequency and microwave power in activities related to 5G and Internet of Things (IoT), and meet other requirements under future development areas.

“At NMIM, we are responsible for a vast range of measurements in different fields, and what we do here is widely recognised. This is a testimony of how highly regarded we are by both the government and industries,” he said.

*At NMIM, we are responsible for a vast range of measurements in different fields, and what we do here is widely recognised. This is a testimony of how highly regarded we are by both the government and industries.*





# Premier FIRE PROTECTION

Testing Solutions



**Azmi Musa**  
Head, Fire Protection  
Section, Testing Services  
Department, SIRIM QAS  
International Sdn Bhd

*I've gotten to visit some of the world's most established fire laboratories; I get first-hand information on the latest technologies and opportunities to upgrade my skills and knowledge.*

**We** are a pioneer organisation that has been recognised by the Fire and Rescue Department of Malaysia and other regional authorities, such as the Singapore Civil Defence Force (SCDF).

According to **Azmi Musa**, the Head of SIRIM's Fire Protection Testing Section, there are not many fire protection testing services available in Malaysia. SIRIM's fire protection testing laboratory is the first in the country that has garnered the ISO/IEC 17025 accreditation from the Department of Standards Malaysia. But that is not all. "We are unique. There is no other laboratory in the country like ours," he said.



*We are unique. There is no other laboratory in the country like ours.*



## fire protection testing >>

The Fire Protection Testing section aims to:

- >> assist the government/authorities in implementing rules and regulations
- >> support the research and development activities of various industries
- >> assist exporters in meeting the importing countries' regulatory requirements
- >> ensure that only products of acceptable quality are imported or locally produced
- >> protect the interest of consumers
- >> safeguard product quality, safety and technical standards to meet health, safety and environment requirements
- >> enhance the image of the nation and industry

Among others, SIRIM is the first in South East Asia to offer a fire performance testing service for external cladding systems. It is also the only one in the region with a tilting furnace that allows it to test both horizontal (e.g. floors and ceilings) and vertical (e.g. walls) samples, and the knowledge and facilities to conduct ducting tests.

"Furthermore, our laboratory was set up in the 1990s. After more than two decades, our testing facilities, along with our competent and knowledgeable team, have gained the trust and confidence of industry players," he added.

## did you know >>

There are only three fire protection testing laboratories in Malaysia, including SIRIM. The other two are at the Forest Research Institute Malaysia (FRIM) and Fire Research Centre (PUSPEK), Fire and Rescue Department of Malaysia.



*Furthermore, our laboratory was set up in the 1990s. After more than two decades, our testing facilities, along with our competent and knowledgeable team, have gained the trust and confidence of industry players.*





The Fire Protection Testing section primarily conducts fire testing for diverse products against national and international standards. There is a myriad of fire tests that can be categorised into active and passive fire testing. The first refers to testing on fire-fighting equipment like fire extinguishers, fire hose reels and reel hoses.



Passive fire testing, on the other hand, consists of fire resistant tests and reaction to fire tests. "The former includes testing fire doors, lift landing doors, roller shutters, ducting systems and walls, for example. The latter covers materials fire characteristics testing such as material combustibility, surface spread of flames and fire propagation," explained Azmi.



SIRIM is also working with the Fire Research Centre (PUSPEK) at the Fire and Rescue Department of Malaysia to develop the necessary facilities to test sprinklers. Besides that, in 2020, it introduced a new service called the Assessment Test Report that caters to design variations of products against tested samples.

"Let's say we have a test report for a door. But the design was later tweaked slightly. Instead of having to retest the entire product, we can do some calculations and produce the Assessment Test Report that will allow for this design variation. Previously, the assessment would have to be carried out by another party, usually in Europe, but now we can do it all here," shared Azmi.

His clientele base consists mainly of product manufacturers, system designers, engineers, architects and researchers. "In Malaysia, architects have to submit the fire safety features of a building to the Fire and Rescue Department to get the building permit. Researchers, on the other hand, will generally come to us for the reaction to fire tests, for example, when they develop a new material," he said.

Other clients include building owners and developers, as well as certification bodies.

### Upholding Safety

A main issue faced by the country is a lack of awareness, knowledge and commitment on fire safety among the public, which affects the effectiveness of the implementation of fire protection systems in buildings. For example, a fire door has to be shut at all times to provide a protective barrier should a fire break out. Nevertheless, it is sometimes kept ajar.

Similarly, many places with sprinkler systems are used as storage areas, where boxes are stacked right up to the ceiling to optimise space. The issue with this is that the sprinklers get covered and will not be able to function effectively should the need arise. Likewise, access to fire extinguishers may get blocked.

One way he addresses this issue is by giving talks to the relevant parties. Manufacturers, for instance, need to understand why they should not simply change out the materials used once a product has already been tested and approved, as a small discrepancy could make a big difference when it comes to saving lives.

"There are gaps between standards/regulations and the actual condition of the fire protection systems. We need to make people understand how important this is, as there are lives at stake!" he declared.

*There are gaps between standards/ regulations and the actual condition of the fire protection systems. We need to make people understand how important this is, as there are lives at stake!*

# Going to GREAT LENGTHS



**Razman Mohd Halim**  
Senior Metrologist/Head  
of Length Laboratory/  
Mechanical Group,  
National Metrology  
Institute of Malaysia

*As a metrologist, the knowledge you gain is something that cannot be bought. You also get to embrace your patriotic side and do your part in contributing to the country.*

## The most unique part is in ascertaining that all measurements in Malaysia are traceable to both national and international standards to ensure compatibility and harmonisation among countries around the world.

As the Head of Length Laboratory at the National Metrology Institute of Malaysia (NMIM), **Razman Mohd Halim** leads, innovates and maintains national length standards, developing methodologies to keep up to date with the technological advancements in the industry and ensuring compliance with the National Measurement Systems Act 2007, Weights and Measures Act 1972 and other related acts.

According to him, NMIM's length measurement services in particular focus on the calibration of length standards such as gauge blocks, diameter standards, line scales with different materials, surface roughness specimens and small dimensional tools. Additionally, it also involves the measurement and calibration of length measuring instruments such as the universal length measuring instrument, coordinate measuring machine, angle instruments and frequency stabilised laser.

## length metrology >>

can be defined as the science of calibrating and using physical measurement equipment to calculate the size of or distance from a particular object. In other words, it involves the measurement of length, namely the distance between two points.



*A metrologist measuring an item or calibrating an instrument needs to do it with integrity to avoid any loss.*

In the provision of these services, it is imperative for a metrology institute to be reliable. As such, integrity becomes an important trait among metrologists. "A metrologist measuring an item or calibrating an instrument needs to do it with integrity to avoid any loss," he added.

This is also where possessing state-of-the-art facilities and equipment will go a long way. As a premier research institute, SIRIM is home to a wide range of high-tech equipment, including a variety of high-end instruments dedicated to length and dimensional metrology, such as the laser interferometer and nanoscale measuring machine. For primary length standards, there is the iodine stabilised He-Ne 633 nm laser; meanwhile, a laboratory-grade coordinating measuring machine is used to measure 3D complex geometry devices.

Taking pride of place is the recently developed 25m linear interferometer bench, which is used to cater for the calibration of tape measures, laser distance meters, ultrasonic distance meters and steel rules. "Developed from the experience of the NMIM team as well as knowledge acquired from other national metrology institutes, it meets the requirements of legal activities under the Weights and Measures Act 1972, and caters to the needs of industries involved in building, oil and gas and land surveying activities," said Razman.

The 25m linear interferometer bench was constructed locally with stringent supervision and testing being conducted by Razman and his team throughout the process to ensure that parameters like straightness, flatness and linearity were met.



*Developed from the experience of the NMIM team as well as knowledge acquired from other national metrology institutes, it meets the requirements of legal activities under the Weights and Measures Act 1972, and caters to the needs of industries involved in building, oil and gas and land surveying activities.*



"We have to show that our capabilities are on par with those in other developed countries so that we are able to achieve a degree of equivalency. When you measure in Malaysia, it has to be equal to that in the UK or Japan, for example," he elaborated.

## 5 typical parameters >>

There are five typical parameters in length measurement: angle, form, length, complex geometry and surface metrology. One of the newer kids on the block that is fast becoming a global trend is the nanoscale.

### International Recognition

With its services registered under the Key Comparison Database (KCDB) and as a member of the CIPM Mutual Recognition Arrangement (CIPM-MRA), NMIM is recognised globally. According to Razman, the Length Laboratory provides a range of measurement and length standard calibration services to numerous developing countries, such as Sri Lanka, Pakistan and the Philippines. "The countries can decide to engage NMIM instead of going to the national metrology institute in Japan, for instance. They still enjoy the same capabilities but at different price points."

The Length Laboratory has clients from diverse industries including semiconductor, oil and gas, automotive, aerospace and academia as well as secondary laboratories under the Skim Akreditasi Makmal Malaysia (SAMM) and government agencies dealing with legal requirements.

Among others, it has worked with prominent names like Petronas, Pejabat Mufti Melaka and Honda. The project with Petronas involved measuring engine parts to facilitate its endeavours in expanding its business. In 2016, it embarked on a project with Pejabat Mufti Melaka to provide a traceable praying device for ascertaining the qiblat direction. The team also played an integral role in supporting the quality department of Honda Sdn Bhd.

Razman considers it a duty to share knowledge about metrology. Among others, they provide internship programmes to university students and also plan to offer sabbaticals to lecturers looking to gain experience in this area. Additionally, NMIM staff members are also sent to national metrology institutes in other countries like Switzerland, Turkey and Korea to encourage knowledge transfer. "This will ensure the sustainability of our metrology capabilities, which will indirectly help to facilitate the growth of our economy," he said.



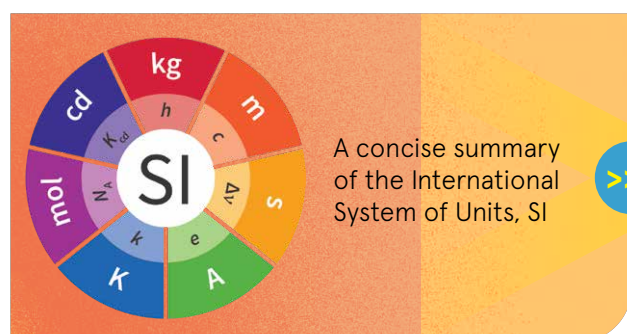
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*This will ensure the sustainability of our metrology capabilities, which will indirectly help to facilitate the growth of our economy.*



25m Linear Interferometer Bench System at the Dimensional Laboratory



A concise summary of the International System of Units, SI





# A GOLDEN TOUCH

SIRIM  
LINK  
VOL 3  
2020



Ts. Dr. Fazrul Mohd Nor  
Senior Metrologist,  
National Metrology  
Institute of Malaysia

*In the field of metrology, we are the highest authority. Sometimes, the industry or technology evolves rapidly; we have to be at the forefront at all times to be relevant.*

**Based** on Act 675, it is our duty to safeguard Malaysia's measurement standards. In fact, the National Metrology Institute of Malaysia (NMIM) is the only one in the country that has been given this role.

Without a proper standard for gold, curbing incidences of fraudulence can be difficult. In Malaysia, it fell upon the National Metrology Institute of Malaysia's (NMIM) shoulders to develop one. **Ts. Dr. Fazrul Mohd Nor**, a Senior Metrologist who has been at NMIM for 20 years, considers this to be one of the unique things about the institute.

"We develop measurement standards according to industry needs. As such, we need to be prepared to venture into uncharted territories. Before, there was no gold standard; but we saw a demand for one a few years ago," he explained.

This occurred in the year 2016 when NMIM invited 14 Islamic pawnbrokers (*Ar Rahnu*) to participate in a dialogue. Upon conversing with them, the NMIM team discovered that all but one of them had encountered issues of fake gold before. With that, it concluded that a gold standard was needed to ascertain the purity of gold.

## a glittering trade >>

Pawnbroking in Malaysia can be segmented into two categories: Islamic (*Ar Rahnu*) pawnbroking and conventional pawnbroking. The former falls under the care of the Cooperative Commission of Malaysia (SKM) and Central Bank of Malaysia (BNM) while the latter is under the care of the Ministry of Housing and Local Government (KPKT). This sector is governed by the Pawnbroking Act 1972.

Ts. Dr. Fazrul acknowledges that measurements can benefit both industry players and the public. For one, NMIM can help in terms of ensuring the accuracy of measurements so that manufacturers and retailers are able to confirm that their products meet the necessary requirements. The public, on the other hand, will be able to verify their gold purchases.

Today, NMIM also receives requests for training on the gold standard from government agencies like the Ministry of Domestic Trade and Consumer Affairs (KPDNHEP) and the Cooperative Commission of Malaysia (SKM).

### Benchmarking Excellence

Ts. Dr. Fazrul reveals that industry at large looks to SIRIM for benchmarks. "They come to us if they have any problems. They get our advice and depend on us to help them adhere to standard operating procedures and make sure they have the necessary measuring instruments to verify the purity of their gold."

According to him, "We don't just come up with standards as we please. We have to find out what the industry needs. That is why being able to engage with stakeholders is important. From there, we utilise the knowledge, technologies and equipment we have on hand to help them."

For example, just a few months ago, NMIM was contacted by an individual who was questioning the purity of their gold jewellery. This is where hallmarking might have been beneficial. Hallmarking refers to an imprint made on the jewellery that reveals selected details. In certain countries like the UK, this includes its maker, purity and assayer. However, in Malaysia, only the purity is shown, if even that. The lack of the maker's or assayer's identity makes it easier for fraudulent cases to occur.



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After meeting with the Director General of the Public Complaints Bureau (BPA), NMIM realised that while proper hallmarking could be an effective deterrent against incidences involving fake gold, there is no entity taking charge of this in Malaysia. "Now, we are in discussion for NMIM to come up with a hallmarking scheme for the country," said Ts. Dr. Fazrul.

NMIM's expertise in this area also extends to other precious metals. In fact, it is in the midst of developing new reference materials for silver, platinum and palladium. Furthermore, in the near future, gold measurement equipment brought in to Malaysia will have to be pattern approved by the institute.



*Now, we are in discussion for NMIM to come up with a hallmarking scheme for the country. In the end, the equipment at these laboratories will be traceable to us.*



**If there is uncertainty about the purity of gold items:**

ASSAY LABORATORIES  
(obtain relevant certification of purity of gold) → Satisfied ✓ OK

↓  
Not Satisfied ✗

↓  
MINISTRY OF DOMESTIC TRADE  
AND CONSUMER AFFAIRS  
(lodge report)

Meanwhile, Ts. Dr. Fazrul recommends for those who want to verify the purity of their gold products to go to assayer laboratories, where they can obtain the necessary certifications before going to KPDNHEP to lodge a report. "In the end, the equipment at these laboratories will be traceable to us," he added.

"Industries trust us; we have to be able to sustain this trust by doing our level best at all times," he concluded.

**did you know >>**

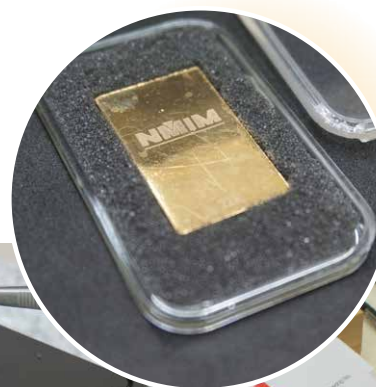
Considered a form of consumer protection, gold hallmarking certifies the purity of the gold used in a piece of gold jewellery. Through the ages, various systems to clearly identify the purity and origin of the gold products have been introduced around the world with each nation having its own requirements and distinctive hallmarks. While hallmarking is mandatory in certain countries, it is a voluntary practice in many other countries.



Gold product **MUST** be hallmarked at one of four assay offices in London, Birmingham, Sheffield & Edinburgh



Gold product's purity does **NOT** need to be marked on the piece itself, but can be identified by signage near the piece or verbally





# ACCELERATING INNOVATIONS

to Reach the Marketplace Faster



**Ir. Mohd Salleh Drus**  
Head of  
Commercialisation  
Services, SIRIM Tech  
Venture Sdn Bhd

*I am constantly exposed to new technologies that are not yet available in the marketplace, and get to explore how to add commercial value to them.*

**We** are akin to a bridge between innovation and commercialisation. As a business entity, we primarily endeavour to commercialise SIRIM's technologies before passing them on to small and medium enterprises (SMEs).

**Ir. Mohd Salleh Drus** has been with SIRIM for 13 years, and is currently the Head of Commercialisation Section at SIRIM Tech Venture Sdn Bhd (STV), a subsidiary of SIRIM Berhad. According to him, STV essentially connects the innovation and commercialisation processes together. In other words, it facilitates the efforts of researchers and innovators in taking their technologies to the marketplace. This is done by adding value to various technological innovations to increase their Technology Readiness Levels (TRL), Business Readiness Level (BRL) and Manufacturing Readiness Level (MRL).

"At STV, our role is to facilitate the commercialisation of the technology. We typically encounter technologies at around TRL4 and proceed to enhance their value to get them ready for the commercialisation process. We work closely with SIRIM Industrial Research (SIRIM IR), higher learning institutions, research institutions and inventors to make this happen," he explained.

Among the services provided by STV are technology assessments, market opportunity evaluations, business linkages, techno-economic feasibility studies, technology valuation as well as funding and bursary assistance and advisories. It was also endorsed as a Certified Patent Valuation Analyst (CPVA) recently and is offering this technology valuation service with better credentials.

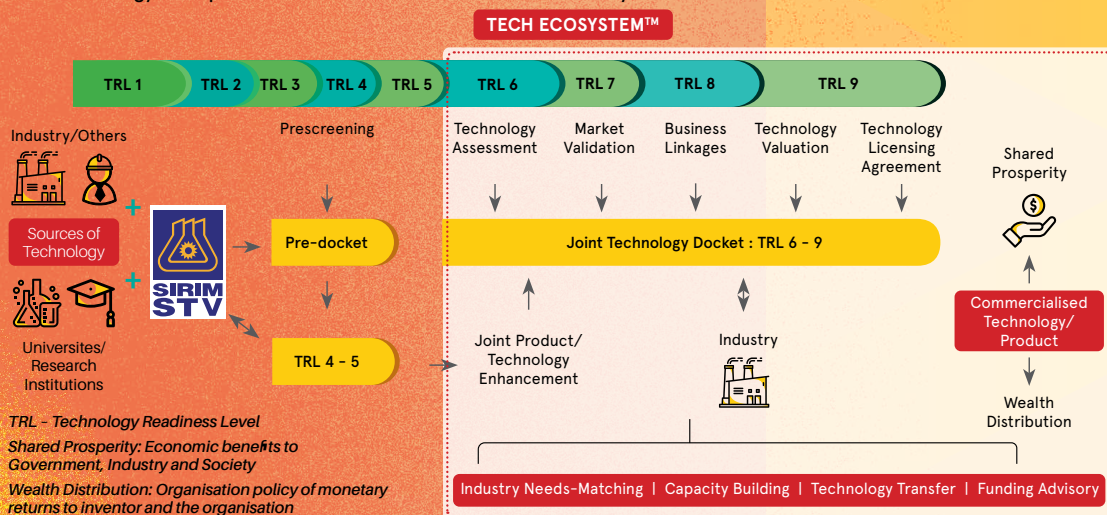


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defining technology maturity >>

First coined in the 1970s by the National Aeronautics and Space Administration (NASA), Technology Readiness Levels (TRL) are a methodology of assessing the maturity level of a specific technology during the acquisition process. There are nine levels within the scale; Level 1 is the ideation stage while at Level 9, the technology is ready for commercial-scale production.

Technology Enterprise and Commercialisation Hub (TECH) Ecosystem™ **CONNECT + COLLABORATE + CO-CREATE**







*We basically straddle both the technical and business aspects, subsequently partnering with small and medium enterprises (SMEs) to equip them with technical and business strategies; together, we mitigate business risks in commercialising the technologies.*



*The focus at STV is on innovation and commercialisation as we attempt to lift SMEs to another level. We want to propel the SMEs to become technology-based companies as this will help them to sustain and face challenges better in the long run.*



“We basically straddle both the technical and business aspects, subsequently partnering with small and medium enterprises (SMEs) to equip them with technical and business strategies; together, we mitigate business risks in commercialising the technologies,” said Mohd Salleh.

He mentions that many SMEs do not have sustainable funds to be able to embark on the commercialisation process successfully. As such, STV comes in to help them raise the necessary funds. “In most cases, we facilitate SMEs’ endeavours to obtain government funding or other relevant financing. During such instances, the SMEs will focus on drafting the technical aspect of the proposal, while STV will synergise with the business perspective,” he added.

For Mohd Salleh, being able to connect, form strategic collaborations and co-create through STV’s Tech Ecosystem™ platform, not just with SMEs but also universities and research institutions across Malaysia, is a rewarding aspect of work.

“The focus at STV is on innovation and commercialisation as we attempt to lift SMEs to another level. We want to propel the SMEs to become technology-based companies as this will help them to sustain and face challenges better in the long run,” he said.

At the end of the commercialisation process, there will typically be a type of agreement to ink, such as one for technology licensing, to complete the process. This is part of STV’s technology ecosystem model.

To date, STV has helped to commercialise around seven technologies in biotechnology, machinery and energy sectors. Its technology commercialisation clients include LD Micro, Alion

Nation Solution, ENSU Lifesciences, Zarra Zafeena, Hussein Khamis and Chytoplast Sdn. Bhd.

The organisation is also working with a prominent national university on its dye solar cell technology, providing the necessary equipment and engineering advice for its product development stage together with commercialisation strategies. Instead of being affixed on rooftops like regular solar panels, this technology allows the panels to be assembled on glass windows and captures the sun’s energy at a 30% rate.

“This is a special technology owned by the university and we are working with them to commercialise it. It is currently at TRL9. We began our collaboration in 2018 and hope that the technology will be ready to enter the market by 2022,” shared Mohd Salleh.

STV is also working with SIRIM Berhad on wound management products for various kinds of wounds, namely surface wounds, inner wounds and deep wounds. Among others, it is looking at raising funds to facilitate the commercialisation of the innovation. Additionally, STV collaborates with SMEs to help them comply with various standards and compliances from relevant local and global authorities.

Mohd Salleh acknowledges that trying to bring a technology to TRL9 could be a challenging path, observing that the entire process could take several years, as there is a myriad of challenges and risks that one will encounter and need to address. “You need to be patient when you deal with the technology commercialisation process. You have to treat it like your baby; feed the technology and make it stronger, reliable, viable and sustainable. It’s a long journey!”

Improving the

# COMPETITIVENESS OF PLASTICS



**Rahmad Abd Shukor,**  
Head of the Plastics and  
Composite Materials  
Section, SIRIM QAS  
International Sdn Bhd

*SIRIM provides a lot of room for me to upgrade myself. I am able to lead research projects and help industry players as well as communities at large.*

**We** are basically a one-stop centre for composite material testing as well as providing advisory services to the plastic industry players. This is one way that we are able to help them enhance their competitiveness.



*As we have the capability to distinguish between the good and bad parts of plastic materials, we are able to analyse products and even assist the government in plastic dumping issues.*



**Rahmad Abd Shukor** has been with SIRIM for 36 years, and currently heads the Plastics and Composite Materials Section at SIRIM QAS International Sdn Bhd, which provides comprehensive testing and consultancy services to plastic manufacturers in particular. Its ISO 17025-accredited laboratories are well-equipped to ensure the compliance of various plastic materials and products with national and international standards. "This helps industry players to become more competitive, increase their sales and penetrate global markets," he explained.

He reveals that SIRIM is able to provide comprehensive durability testing for a wide range of cards, including identification cards and smart bank cards, among others. These tests include delamination, chemical, materials identification, lamination layers, burning, microsection analysis, cyclic, physical, weathering and colour fastness testing.

"As we have the capability to distinguish between the good and bad parts of plastic materials, we are able to analyse products and even assist the government in plastic dumping issues," he elaborated.

Rahmad counts his research on plastic film employing nano materials as a significant achievement. The film slows down oxidation and has the potential to improve the shelf life of food items like bread and vegetables. "I get many queries regarding this," he said.

Besides that, he played an integral role in testing and approving parts for a pioneering aerospace project. SIRIM is currently also in the process of being audited to test plastic parts for Proton and Geely.

Rahmad concedes that there are numerous misconceptions regarding plastic materials. "For one, people tend to consider plastic as just one material. In actual fact, there are more than a thousand varieties of plastics!" Plastic is also often portrayed in a bad light. However, from an environmental aspect, for example, using the material could actually be a better alternative than having to cut down trees.

To date, over a thousand plastic companies have gone to SIRIM to have their products tested. "We encourage industry players to come to SIRIM to test their materials. Don't just make claims by yourself. Do the necessary testing so that you can substantiate your claims properly," he concluded.





The Expertise to Help

# ORGANISATIONS GROW



**Mohd Azanuddin Salleh**  
Chief Executive Officer,  
SIRIM QAS International  
Sdn Bhd

*We focus on establishing the right mindset, culture, and technical capabilities and competencies to transform our people to become the best that they can be.*

**ONE** of the strengths of the people at SIRIM is that they truly love the organisation and working here.

SIRIM QAS International Sdn Bhd (SIRIM QAS) has been growing in leaps and bounds in terms of providing world-class testing, inspection and certification services to a diverse range of local and international clients. According to **Mohd Azanuddin Salleh**, the Chief Executive Officer of SIRIM QAS, this can be attributed to its people, who form about one-third of the entire workforce at SIRIM.

For one, SIRIM QAS has a younger population, with more than half of them aged below 40. This is mainly due to the physical demands and travelling requirements of conformity assessment tasks. "With a staff population within this age group, you get energy and dynamism. When combined with our older staff, we get an interesting mix of enthusiasm and experience," he explained.



*The younger individuals will have the drive to try something new and inject a bit of life into the organisation's endeavours while our more experienced staff members are able to share their wisdom.*



**enhancing  
businesses** >>

A wholly owned subsidiary of SIRIM Berhad, SIRIM QAS International Sdn Bhd is a leading testing, inspection and certification body in Malaysia. It is accredited by numerous local and international bodies, including the National Accreditation Body, the Department of Standards Malaysia and the United Kingdom Accreditation Service (UKAS), reflecting its high degree of competency, impartiality and credibility. It also facilitates greater market acceptance of products in Malaysia and abroad.



This is necessary in a volatile business climate where you need a team that is agile and bold yet anchored by a strong foundation. "The younger individuals will have the drive to try something new and inject a bit of life into the organisation's endeavours while our more experienced staff members are able to share their wisdom," he quipped.

An example of the organisation's agility in action was when movement restrictions were put in place in an effort to stem the spread of the COVID-19 pandemic, and its remote inspection and remote audit services were able to help businesses continue with their certification seamlessly.

Additionally, Mohd Azanuddin acknowledges that SIRIM has instilled a strong sense of pride among its people, which has resulted in a very low attrition rate. As such, those who are employed at SIRIM tend to stay on there because of the vibrant working environment, as well as career progression and other development opportunities offered by the Group.

He cites the organisation's solid roots as another competitive advantage. "SIRIM as a whole has established a very strong legacy through the years and is considered a champion of quality. I think SIRIM QAS is very lucky in this respect to be part of SIRIM right from the beginning. We are blessed to have 'inherited' the relevant competencies, systems and infrastructure as well as organisation culture."

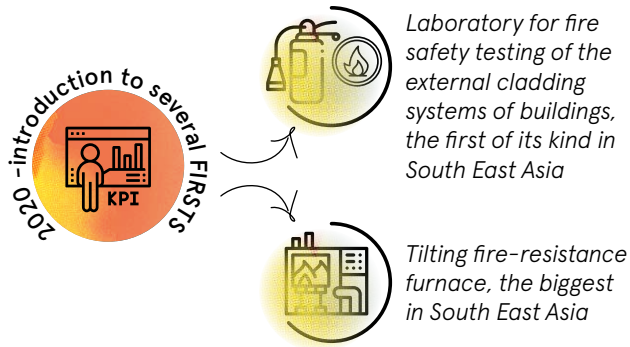


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## At the Forefront

One of SIRIM QAS's annual key performance indicators is the implementation of new innovations and services, and the organisation has delivered exceptionally by introducing several 'firsts'. For one, it unveiled its laboratory for fire safety testing of the external cladding systems of buildings – the first of its kind in South East Asia. In the same light, it also has a tilting fire-resistance furnace, which is currently the biggest in South East Asia.



As the trend for fire safety testing has been leaning towards active fire protection, SIRIM QAS is also building up its competencies in this area by sending its staff to pursue Master degrees in fire safety. "The Master degrees complement their field experience; now they get to explore the assessment and theoretical part of it. This makes the team better-rounded," explained Mohd Azanuddin.

SIRIM QAS also runs Malaysia's only testing facilities for photovoltaic (PV) and insulated glass unit (IGU) testing. "Malaysia is one of the top producers of solar panels in the world; we currently have about seven big solar panel manufacturers in the country. With this facility, they won't have to send their solar panels overseas for testing. This will help to reduce their costs," he shared.



*Malaysia is one of the top producers of solar panels in the world; we currently have about seven big solar panel manufacturers in the country. With this facility, they won't have to send their solar panels overseas for testing. This will help to reduce their costs.*

The IGU facility, on the other hand, is the result of a collaborative effort with the Malaysia Glass Association, offering testing services for double-glazed glass window components.

Besides that, SIRIM QAS serves as an important link between regulatory authorities and industry players by getting feedback from industry that is able to help regulators to come up with more efficient regulatory systems and, conversely, relaying important information from the regulators to the industry players.

The organisation is also currently the sole Asia-based IECEx certification body, offering conformity assessment services specific to safety in an explosive environment. In fact, it offers the full range of IECEx certification and assessment services.

According to Mohd Azanuddin, "There is a growing demand for this service globally. It is mainly applied in the oil and gas industry currently, but with some support from regulators, I think this service can be extended to other industries where there are potential explosive hazards, albeit lower, such as petrol stations."



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Apart from that, SIRIM QAS makes it a point to introduce new certification schemes every year. This year, they included the ISO 41001 facility management system certification, ISO 18788 security operations management scheme, MSPO Supply Chain Certification System (MSPO SCCS) Scheme and ISO 17679 Wellness Spa Certification Scheme.

"Some organisations have dedicated facility management teams to take care of their physical properties and facilities. The ISO 41001 will help the organisations to realise the economic benefit of improving the team's overall efficiency and effectiveness. ISO 18788, on the other hand, is relevant for organisations looking to demonstrate a high conduct of professionalism in the security aspect of their operations.







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*"The MSPO SCCS scheme is for palm oil-related industries to complement the current MSPO certification, while the ISO 17679 Wellness Spa certification scheme is a little out of the ordinary, targeting wellness spas that wish to demonstrate their commitment to customer-focused quality spa service."*



"The MSPO SCCS scheme is for palm oil-related industries to complement the current MSPO certification, while the ISO 17679 Wellness Spa certification scheme is a little out of the ordinary, targeting wellness spas that wish to demonstrate their commitment to customer-focused quality spa service," elaborated Mohd Azanuddin.



*We have to keep improving our turnaround time in terms of service delivery to enhance our customers' experience. One way we are looking at that is via the adoption of digital innovations to facilitate and accelerate delivery. Our focus is on speed, and we hope that the various digital transformation initiatives that we are implementing will help us along."*



According to him, while the viability of the schemes is important, making money is not SIRIM QAS's utmost priority. "If we have a service that the industry needs, then the industry will be able to flourish. When the industry grows, the industry players are able to make more money and pay more taxes to the government. More jobs will be created. Overall, our economy will benefit. This will mean that we have done our job!"

#### Consistently Making Improvements

Mohd Azanuddin concedes that the COVID-19 pandemic has been tough on everybody, and SIRIM QAS is no exception. In the short term, the organisation will attempt to weather through the tribulations of the pandemic with the hope that things will return to normal by mid-2021 and the doors for global trade will reopen. This is essential as it is looking towards international trade for its business to grow.

The organisation's mid-term focus, on the other hand, falls on its people and delivery system. "We have to keep improving our turnaround time in terms of service delivery to enhance our customers' experience. One way we are looking at that is via the adoption of digital innovations to facilitate and accelerate delivery. Our focus is on speed, and we hope that the various digital transformation initiatives that we are implementing will help us along," he explained.

For the long term, SIRIM QAS will look into pursuing new business and geographical areas. Currently 95% of the organisation is concentrated locally, but it has plans to expand to other regions like the Middle East, China and other ASEAN countries.

"Political and regulatory changes, and now, COVID-19, have hampered our plans in exploring other parts of the world, but this is something that we have to embark on, moving forward. We look forward to identifying niche markets where we will have a competitive edge in rendering our services to these places," he remarked.

Mohd Azanuddin reiterates that success is determined by people who have the right mindset, and encourages people to not just take things easy in life.

"You have to keep challenging yourself by striving for the difficult endeavours. This way you will achieve more and it will be more satisfying in the long run," he advised.



*We look forward to identifying niche markets where we will have a competitive edge in rendering our services to these places."*

*"You have to keep challenging yourself by striving for the difficult endeavours. This way you will achieve more and it will be more satisfying in the long run."*



Raising Malaysia's

# MEASUREMENT STANDARDS

to the Next Level



**Dr. Osman Zakaria**  
Senior Director, National  
Metrology Institute of  
Malaysia

*I look forward to elevating NMIM towards becoming a national centre of excellence in measurement to accelerate the process of industrialisation.*

## METROLOGISTS

are experts who are dedicated to their respective fields. They each possess a distinct set of knowledge and capabilities culminating from their diverse backgrounds and field experiences.

At the heart of the National Metrology Institute of Malaysia (NMIM) are the unique competencies and immense dedication of its people. As metrology is a very technical field, the team at NMIM possesses specialised knowledge that encompasses a broad spectrum of expertise in various areas, including electrical and electronic, mechanical and chemical disciplines.



*They are the experts in their fields. Because the different areas in metrology are very specialised, you won't be able to find another expert elsewhere in the country.*



### the national metrology institute of malaysia >>

The National Metrology Institute of Malaysia comprises seven groups that are segmented into two categories:

#### NON-TECHNICAL (Metrology Corporate Services)

- >> Operations Research Group
- >> Metrology Advisory and Support Group

#### TECHNICAL

- >> Electrical Group
- >> Thermophysical Group
- >> Chemical Group
- >> Mechanical Group
- >> Flow Group

**Dr. Osman Zakaria**, Senior Director of NMIM, affirms this. "They are the experts in their fields. Because the different areas in metrology are very specialised, you won't be able to find another expert elsewhere in the country," he shared.

This is why it is important to nurture their talent. Among others, NMIM arranges for its staff members to be sent to other national metrology institutes in developed countries for a selected period of time, ranging from a few months to a year. This gives them the opportunity to gain more experience and hone their expertise in an international metrology environment.

NMIM also encourages its team to further their studies. This includes sending them to pursue PhD programmes at the Korea Research Institute of Standards and Science (KRISS).

"We try to send around three to four staff each year so that they are able to hone their understanding of metrology from a developed national metrology institute and delve deeper into formal metrology education in other countries," said Dr. Osman.



*We try to send around three to four staff each year so that they are able to hone their understanding of metrology from a developed national metrology institute and delve deeper into formal metrology education in other countries.*



Besides that, they participate in numerous symposiums and seminars, and are in close contact with their peers from around the Asia Pacific and the International Bureau of Weights and Measures (BIPM) via online platforms as well as various Asia Pacific Metrology Programme (APMP) and BIPM events and meetings.



## Nurturing the Talent Pool

Dr. Osman reveals that NMIM is in the midst of coming up with a talent development plan for NMIM metrologists to enhance their skills and nurture their talents.

“This is one way that we can develop our people’s capabilities to cope with industry demands and support their progress. Subsequently, we will be able to ensure that no one is left behind in our endeavours to achieve our goal of being the best partner,” explained Dr. Osman.

There is also a need for the team at NMIM to keep abreast on the latest technological advancements across the globe.

“One of the things we can do is to establish a cloud for metrology, for instance, where the latest developments and big data on metrology are collected and connected, and stakeholders are able to communicate with each other. This can help us to close the gap between the standards we are currently in possession of and what is actually required by industry players on the ground,” suggested Dr. Osman.



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## Distinct Edge

With an established presence since the 1970s, NMIM has cultivated a strong reputation. Today, NMIM is among the more prolific metrology institutes in the Asia Pacific. For one, it has been appointed as the Asia Pacific Legal Metrology Forum (APLMF) Presidency and Secretariat from the end of 2020 to 2022. “This is a move in the right direction for us to become a leader in legal metrology in the Asia Pacific,” said Dr. Osman.



*This is a move in the right direction for us to become a leader in legal metrology in the Asia Pacific.*



NMIM metrologists have also been recognised as trainers in various legal metrology fields, including pattern approval for water meters, weigh bridges and software. Among those who have gained international prominence is Dr. Mohd Nasir Zainal Abidin, who has over 30 years of experience. He is often invited to share his knowledge with other national metrology institutes. Razman Mohd Halim, on the other hand, is in charge

of the national length standards and is instrumental in the development of a 25m linear interferometer bench recently.

Another success story involves working with the Ministry of Domestic Trade and Consumer Affairs (KPDNHEP) and other ministries to ensure that the manufacturing of various products is in accordance to standards to allow for easier penetration into the international market. This led to NMIM obtaining recognition from the International Organization of Legal Metrology (OIML) in Germany two years ago.

## Progressing to Greater Heights

The current COVID-19 pandemic has placed the focus on medical devices. In line with this, NMIM realised that there is a need to increase its efforts to support the medical device industry, and plans to develop national standards as required by stakeholders and enforcement agencies in the future.

Besides that, it is looking at further strengthening its relationship with local industries and national metrology institutes in the world. “In the short term, we hope to increase engagement with our industries by conducting more seminars and symposiums. We will also keep connecting with other national metrology institutes, particularly within ASEAN, the Asia Pacific and Europe, so that we are able to share our experiences and learn from each other, as well as looking out for any discrepancies and disputes in global business opportunities,” explained Dr. Osman.

For the long term, he sees a need to develop a national policy that will forge a path in developing a pool of capable metrologists. This includes collaborating with local universities to increase research activities and create a metrology curriculum, which will facilitate the grooming of new talents who are able to advance their experience and knowledge in the various specialised areas.

“We don’t want to just import technology from other countries. We need to grow so that we in turn are able to export our expertise,” said Dr. Osman.



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*“We need to grow so that we in turn are able to export our expertise.”*



Industrial Research for Boosting

# NATIONAL DEVELOPMENT



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

*My expectation is for my entire team to become visible to the industry. Visibility is important so that we can do our part in developing the nation.*

**SIRIM** Industrial Research's (SIRIM IR) competitive edge is our ability to provide total solutions to industry – from the inception of ideas to market penetration.

## SIRIM Industrial Research >>

SIRIM Industrial Research (SIRIM IR) is a pioneer of technological innovations for various industries in the country. Through technological advancements, SIRIM believes that industries can increase the productivity of their services and products, which will, in turn, support the economic growth and development of the nation.



*SIRIM Industrial Research's (SIRIM IR) main competency lies in our consultancy, training and research & technology activities. We are able to provide comprehensive solutions to industry players.*

## SIRIM Industrial Research >>

### THREE MAIN TECHNOLOGY CENTRES

- >> Industrial Biotechnology Research Centre
- >> Environmental Technology Research Centre
- >> Machinery Technology Centre

### SIX INDUSTRIAL CENTRES OF INNOVATION

- >> Energy Management
- >> Smart Manufacturing
- >> Sensor
- >> Biomedical
- >> Bio-Natural Gas
- >> Nanotechnology

"SIRIM Industrial Research's (SIRIM IR) main competency lies in our consultancy, training and research & technology activities. We are able to provide comprehensive solutions to industry players," declared **Ir. Dr. Mohamad Jamil Sulaiman**, the Vice President of SIRIM IR.



*We want to optimise the productivity of the various industries to ultimately benefit the nation."*

*"Our people are trained from the moment they set foot here as fresh graduates. We equip them with the right mindset and skillset, giving them a strong foundation upon which they can continuously expand their knowledge and expertise."*

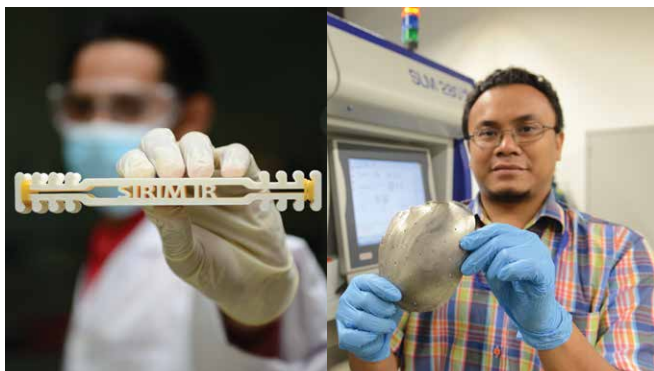
These total solutions encompass the entire manufacturing operations, from the ideation process right until the product enters the marketplace. When the industry approaches SIRIM IR to find out more about technology or business potentials, there are certain methodologies to bring these to fruition. From design to testing and eventually fabrication, the whole process is given due attention to ensure the products are able to meet the required standards. "We want to optimise the productivity of the various industries to ultimately benefit the nation," explained Dr. Mohamad Jamil.

In line with Malaysia's aspirations to become a highly developed nation, it is essential for the country's industries to be able to develop their own equipment and facilities. "The important issue here is the facilitation of the automation process. We want to help the industry players to move away from the traditional approach of doing things manually and embrace automation instead," he said.

### Enhancing Staff Competencies

The process of enhancing the talent pool at SIRIM IR is





*We need the talent so we can do our part in nurturing the growth of the industry. We uphold a very important agenda for the government to ensure economic growth. For the country's gross domestic product (GDP) to increase, the productivity of industries has to increase.*

very structured to ensure that each individual has ample opportunities to fully develop their potential. "Our people are trained from the moment they set foot here as fresh graduates. We equip them with the right mindset and skillset, giving them a strong foundation upon which they can continuously expand their knowledge and expertise," explained Dr. Mohamad Jamil. The next stage is becoming a technical professional, before attaining expert level. After this, they will continue mastering their skills towards becoming an authority in their respective areas.

As part of its competency planning, SIRIM IR encourages a certain percentage of its staff to continue their studies by pursuing their Bachelor's Degree, Master's Degree and PhD. In addition to academic qualifications, there are numerous certified competency programmes on offer.

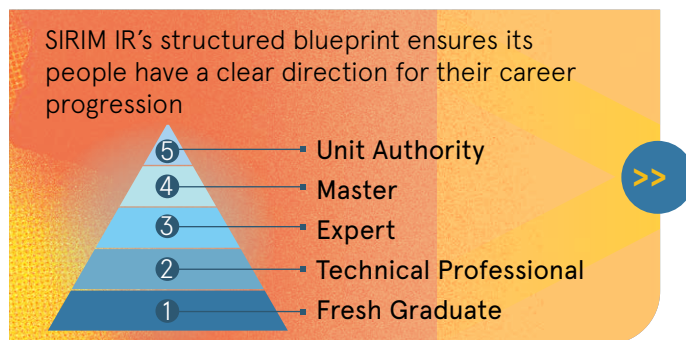
"It is imperative for them to be certified in certain areas according to current trends and needs; for example, with the present focus on the fourth industrial revolution, our researchers and engineers are now being certified as technology auditors by the Fraunhofer Institute," said Dr. Mohamad Jamil.

Under Industry 4.0, industry players need to have qualified readiness assessment auditors to ascertain their readiness level. The aforementioned certification programme will give them the confidence that the auditors from SIRIM IR have both the necessary on-ground experience and theoretical knowledge, as well as being trained by a leading name in the field.

"There are many grants offered by ministries which allows us to work with the industry as part of the process of enhancing our staff competency," added Dr. Mohamad Jamil. He explained that they are also involved in an industry attachment programme with prominent companies in the country to gain additional competencies, insights and experience. "When our people are attached with industry, they can see how others do business in the real world and learn why they are able to achieve their goals.

"We need the talent so we can do our part in nurturing the growth of the industry. We uphold a very important agenda for the government to ensure economic growth. For the country's gross domestic product (GDP) to increase, the productivity of industries has to increase," said Dr. Mohamad Jamil.

"To make sure that we are all aligned when it comes to our business direction, we have a unique Culture Transformation Programme known as ALEAD to help us achieve sustainability. This is part of our long-term planning to ensure our staff members are consistently at the forefront."



#### Achieving Greater Heights

The majority of SIRIM IR's customers are small and medium enterprises (SMEs) as well as universities. "As testing facilities can be a huge investment, we get a lot of research institutes, universities and SMEs approaching us for their testing needs," elaborated Dr. Mohamad Jamil.

The awards and accolades that SIRIM IR has received through the years are proof that its comprehensive talent development plan is worth the investment. Recently, it won the prestigious ASEAN Energy Award 2019. Other awards that it has garnered include the British Inventor and Innovation Award and International Award of Merit Republic of Croatia.

"Some of our staff have also become academic advisors to universities, while others have been selected as judges for several innovation awards," shared Dr. Mohamad Jamil.

According to him, SIRIM IR is also preparing a retention programme to forge an attractive career progression path for its staff. "We have to give our people a clear idea of their future here at SIRIM IR. Once they know where they are headed and how they can get there, they will be keen to stay on," he said.

"We also have to create a challenging and engaging environment for them with projects that involve collaborations with academia and industry. This will give them good exposure and excite them to continue working with SIRIM."

SIRIM IR offers a hybrid of commercial and developmental activities. To maintain the trajectory of its research and development, an Industrial Research Advisory Council (IRAC), in which the members are comprised of industry players, government and ambassadors, was established. "IRAC helps us to chart the roadmap and how SIRIM IR should improve," said Dr. Mohamad Jamil.

"The good news for us is that industry, government and ambassadors are willing to work together with SIRIM to prepare our people at this level of competency," he enthused.



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