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HIGHLIGHTS

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Charting Malaysia's Journey
Towards a Net-Zero Future

Isnazunita Ismail

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New Capabilities to Empower
Malaysian Industry

*Ts. Dr. Mohd Fazrulhisyam Mohd Nor
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SIRIM: THE NEW CHAPTER

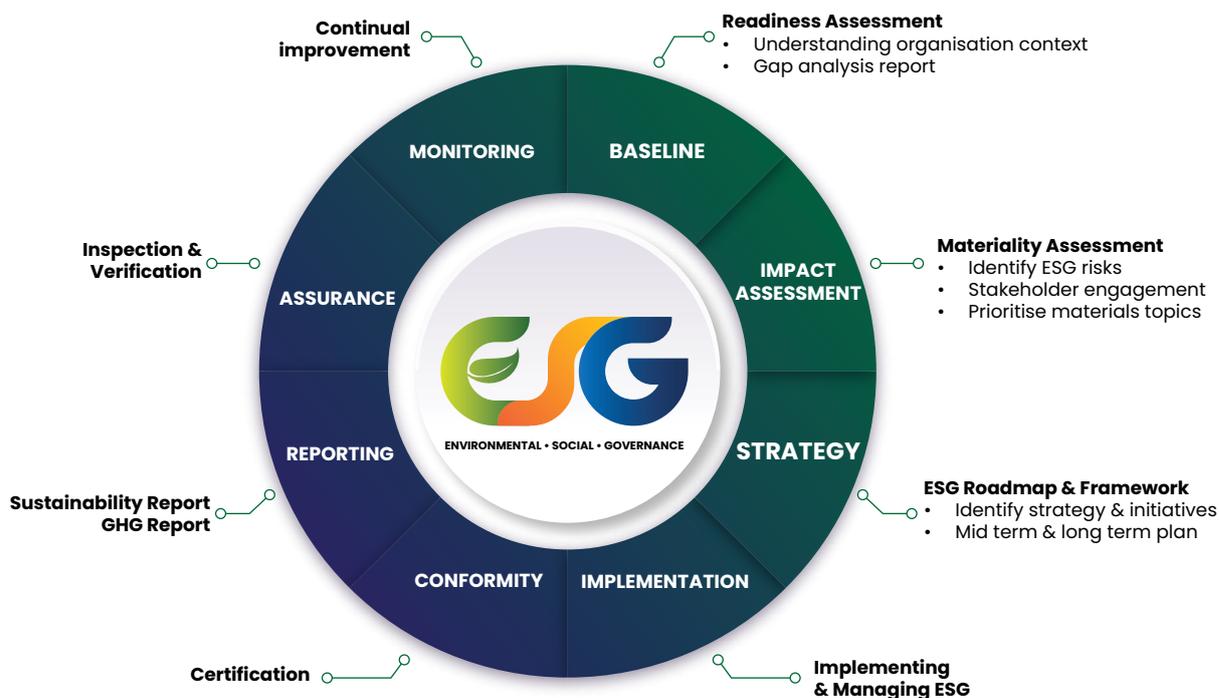
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Driving ESG to Advance The Nation

ESG Ecosystem *(client requirements)*



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ACCELERATING THE MOMENTUM OF TRANSFORMATION

Malaysia is charting an ambitious path towards becoming a high-income, innovation-driven economy. Strategic frameworks like the 13th Malaysia Plan and the New Industrial Master Plan (NIMP) 2030, alongside our country's commitment to net-zero carbon goals, underscore a clear imperative: to harness technology, champion sustainability and strengthen industrial competitiveness as engines of national growth.

In this transformative journey, SIRIM takes an active role in shaping Malaysia's development story. With an eye on the future, we are embarking on a bold new chapter of growth and innovation by reinforcing our core fundamentals and introducing a suite of initiatives designed to support and accelerate the nation's progress. These encompass future-focused blueprints conceived to take our team to the next level, enhanced calibration and measurement capabilities (CMCs), progress towards net-zero carbon and advanced electromagnetic compatibility (EMC) testing as well as expanded offerings in digital, in-situ and remote calibration services, including standards consultancy and training.

We are continuously pushing boundaries to drive national growth and industrial advancement. Every initiative reflects our commitment to doing more, reaching higher and driving measurable impact. It is a demonstration of how innovation, technology and sustainability can intersect to not just meet, but exceed the aspirations set forth in Malaysia's development roadmap.

We are excited to contribute, learn and grow alongside Malaysia as the nation accelerates towards a future defined by opportunity, resilience and global competitiveness. Together, we are actively creating a thriving future for all.



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Head of RF & EMC Testing Section,
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SIRIM QAS International Sdn Bhd

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NEW CAPABILITIES TO EMPOWER MALAYSIAN INDUSTRY



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AZHAR DOLLAH
*Head of the Standards Development
& Consultancy Section,
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With advances in green hydrogen, carbon circularity, digitisation and electrification, the world is moving closer to a cleaner industrial future. For Malaysia, this global shift aligns perfectly with its own ambitious journey towards net zero emissions by 2050.

We are very optimistic that we are progressing on the right track. As the research and development (R&D) arm of SIRIM under the Ministry of Investment, Trade and Industry (MITI), we are focused on the development of low-carbon, circular and data-driven technologies that support sustainable industrial transformation.

CHARTING MALAYSIA'S JOURNEY TOWARDS A NET-ZERO FUTURE

by
Isnazunita Ismail
Senior Director, Energy & Environment Centre (EEC), SIRIM Berhad

The next decade could mark a pivotal turning point in how industries reduce their carbon footprint. For example, by the early 2030s, green hydrogen is expected to become cost-competitive with fossil fuels, opening the door for major emission reductions in energy-intensive sectors like steel, cement and petrochemicals.

Malaysia is on a parallel path, striding forward purposefully with national policies that drive its climate goals. These frameworks are helping the country move steadily towards its target of reducing emissions intensity by 45% against its gross domestic product (GDP) by 2030, as part of its ongoing commitment under the Paris Agreement.

POLICIES FOR A LOW CARBON FUTURE

- The National Energy Transition Roadmap (NETR) serves as a key policy framework to balance carbon emissions by identifying where they occur and outlining the technical solutions needed to address them.
- The National Energy Policy (NEP) 2022–2040 positions Malaysia's energy sector as a key engine of sustainable growth, driving progress through low-carbon development, efficient resource use and environmental sustainability.
- The Low Carbon Nation Aspiration 2040 promotes green investments and policies, encouraging greater adoption of low-carbon technologies and positioning Malaysia as a leader in the transition to a cleaner economy.



With a mission of making Malaysia's Net Zero 2050 vision attainable, SIRIM Industrial Research (SIRIM IR) plays an instrumental role in translating this growing momentum into action through industrial innovation and applied research.

"We are very optimistic that we are progressing on the right track. As the research and development (R&D) arm of SIRIM under the Ministry of Investment, Trade and Industry (MITI), we are focused on the development of low-carbon, circular and data-driven technologies that support sustainable industrial transformation," said Isnazunita Ismail, Senior Director of the Energy & Environment Centre (EEC), SIRIM Berhad.

journey
towards
a net-zero
future



A notable milestone was the launch of the Bursa Malaysia Carbon Exchange (BCX) in 2023, which held its first carbon credit auction to support businesses in offsetting emissions. The BCX stands out as the world's first shariah-compliant exchange for renewable energy certificates (RECs), providing a transparent and voluntary market mechanism that encourages wider participation in the low-carbon transition.

Malaysia's progress in renewable energy further reflects this commitment. The country's installed capacity has already surpassed five gigawatts and is expected to reach 30GW by 2035.

Building on this, initiatives such as eco-industrial parks and electric vehicle (EV) incentives are further accelerating Malaysia's shift towards a low-carbon economy. Since 2022, EV owners have been exempted from road tax, a benefit that will remain in place until December 31, 2025. Beginning in 2026, a new, lower tax rate calculated based on the vehicle's power output will take effect, ensuring continued encouragement for sustainable mobility and cleaner transport solutions.

"However, challenges remain, including our continued dependence on fossil fuels, industrial emissions and the significant RM1.85 trillion in transition financing that would be required for Malaysia to achieve 100% renewable energy by 2050," explained Isnazunita.

SHAPING THE FUTURE OF DECARBONISATION

In helping Malaysian businesses move beyond adoption to lead the transition towards a carbon-neutral and circular industrial future by 2035, research centres like SIRIM IR will shape the decarbonised industrial future not just by inventing technologies but by making them credible, adoptable and inclusive.

"We are the bridge between science, industry and society, ensuring that decarbonisation becomes both a competitive advantage and a national responsibility," added Isnazunita.

The beauty of being an agency of MITI is that in addition to adhering to policies being put in place, SIRIM also collaborates with other key agencies to advance shared national objectives.

"Through initiatives such as low-carbon manufacturing, energy audits and the use of renewable energy like biomethane and solar thermal, we support companies in reducing waste and improving resource efficiency. We are also working closely with PETRONAS, academia and international partners to strengthen Malaysia's readiness for carbon capture, utilisation and storage (CCUS) technologies," she elaborated.



DRIVING INDUSTRIAL GROWTH

Isnazunita is leading the development of the Eco-Industrial Park (EIP) platform, SIRIM's flagship initiative under the EIP Transformation Programme with MITI and the World Bank Group.

However, challenges remain, including our continued dependence on fossil fuels, industrial emissions and the significant RM1.85 trillion in transition financing that would be required for Malaysia to achieve 100% renewable energy by 2050.

BUILDING THE BACKBONE FOR A LOW-CARBON ECONOMY

SIRIM IR's efforts also include:

DIGITAL DECARBONISATION

- Real-time monitoring with internet-of-things (IoT) and blockchain

DEVELOPMENT OF SUSTAINABLE MATERIALS

- Like bio-based polymers and green composites

Through initiatives such as low-carbon manufacturing, energy audits and the use of renewable energy like biomethane and solar thermal, we support companies in reducing waste and improving resource efficiency. We are also working closely with PETRONAS, academia and international partners to strengthen Malaysia's readiness for carbon capture, utilisation and storage (CCUS) technologies.

We are driving the evolution of industrial parks to adopt best practices that prioritise environmental protection and social wellbeing, integrating decarbonisation technologies to improve industrial processes, enhance resource efficiency and promote circularity by reintegrating by-products and waste into production cycles.

In essence, every initiative we undertake from piloting carbon capturing to carbon monitoring platforms is a step forward to positioning Malaysia as a regional leader in green innovation.



Malaysia has strong policies, political will and plenty of natural resources. The next big steps are to scale up NETR flagship projects, phase out fossil fuel subsidies, increase carbon pricing and empower industries and SMEs to innovate in support of our low-carbon transition.

The programme is converting industrial zones such as Samalaju and Kota Kinabalu Industrial Park (KKIP) into low-carbon ecosystems through waste-to-resource exchanges, shared utilities and digital EIP dashboards for real-time performance monitoring.

“We are driving the evolution of industrial parks to adopt best practices that prioritise environmental protection and social wellbeing, integrating decarbonisation technologies to improve industrial processes, enhance resource efficiency and promote circularity by reintegrating by-products and waste into production cycles,” she said.

This includes advancing carbon capture and utilisation (CCU) technologies that convert carbon dioxide into useful materials, exploring waste heat recovery systems using the organic Rankine cycle (ORC) for energy-intensive industries in Sarawak, and developing IoT-based Smart Energy and Emission Monitoring Systems (SEEMS) to provide energy baselines for Energy Efficiency and Conservation Act (EECA) compliance and Specific Energy Consumption (SEC) tracking.

In order to promote cleaner production and greener goods, SIRIM IR is also helping companies create technical specifications for by-products, life cycle assessment-based carbon accounting tools and ecodesign criteria. By lowering emissions and increasing resource efficiency, these projects collectively provide a workable and expandable blueprint for industrial decarbonisation.

“In essence, every initiative we undertake from piloting carbon capturing to carbon monitoring platforms is a step forward to positioning Malaysia as a regional leader in green innovation,” said Isnazunita.

TOWARDS BETTER EFFICIENCY

Large-scale industrial decarbonisation faces numerous obstacles, ranging from high capital costs and challenging management of processes to limited data, skill gaps and policy uncertainty. Low-carbon technology can be costly and complex for many companies, particularly small and medium enterprises (SMEs). Additionally, insufficient carbon accounting and infrastructure make progress difficult to measure and finance.

“The steel industry, for example, is one of the most challenging sectors to decarbonise, given its high greenhouse gas (GHG) emissions. To address this, the Steel Industry Roadmap introduces mandatory Environmental Product Declarations (EPD) for imported steel under the Certificate of Approval (COA) process,” shared Isnazunita.

This move sets a clear benchmark between imported and locally produced green steel, encouraging greater transparency and driving the industry towards low-carbon production while helping industries transition towards cleaner and more efficient

“I am fairly optimistic,” she noted. “Malaysia has strong policies, political will and plenty of natural resources. The next big steps are to scale up NETR flagship projects, phase out fossil fuel subsidies, increase carbon pricing and empower industries and SMEs to innovate in support of our low-carbon transition.”

To reduce the risks associated with adoption, SIRIM IR develops and pilots cost-effective local innovations such as biomethane production from agrowaste, carbon mineralisation and waste heat recovery systems within EIPs.

Complementing these initiatives, its carbon accounting, life cycle assessment and certification services establish the trust and data transparency essential for green financing and participation in carbon markets.

“Our focus is to help industries transition towards cleaner and more efficient operations,” stated Isnazunita.

By integrating technological advancement with measurable sustainability tools, SIRIM IR enables industries to transition towards cleaner, more sustainable operations with confidence and accountability.

PAVING THE WAY FOR THE NEXT DECADE

Within the next two years, SIRIM IR will prioritise measurement and capacity building. This includes setting carbon baselines for important industries, expanding energy audits and training professionals in carbon accounting.

Following that, the focus will be on technological implementation, including pilot projects in CCUS, as well as improving circular manufacturing. This can be accomplished through initiatives like SIRIM’s Resource Efficiency and Industrial Symbiosis Opportunity Assessment (REISO) as well as certification of low-carbon products through SIRIM QAS International’s eco-labelling programme.

LOW-CARBON ROADMAP AT A GLANCE

- **2025–2027**
Focus on measurement and capacity building, establishing carbon baselines for key industries, expanding energy audits and training professionals in carbon accounting.
- **2028–2030**
Shift towards technology implementation, including carbon capture pilot projects, circular manufacturing and eco-labelling through SIRIM QAS International’s low-carbon product certification and REISO assessments.
- **2031–2035**
Scale up through the National EIP Framework, integrating industrial symbiosis zones, digital carbon management systems and green financing mechanisms to make decarbonisation both practicable and profitable.

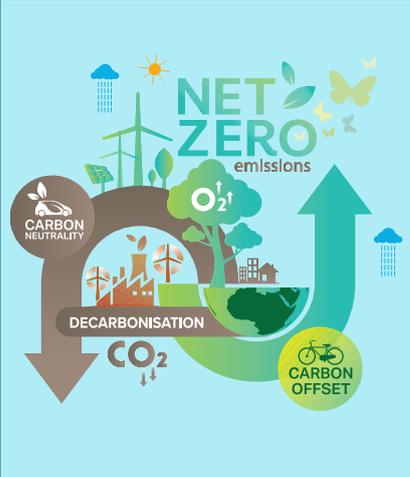
For the transition to be effective and equitable, policy alignment, green financing and human capital must all work together. Stronger policy-technology convergence will boost industry confidence, while increased green financing tools and independent verification from SIRIM IR can reduce investment risk and speed adoption.

“Equally important is developing the necessary skills and mindset through training and capacity building. Together, these aspects lay the groundwork for Malaysia’s successful and inclusive transition to a low-carbon industrial future.

“Beyond technology, decarbonisation demands alignment, accessibility and awareness. At SIRIM IR, our role is to connect technology, policy and people to advance together towards a sustainable Malaysia,” Isnazunita declared.

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Scan to watch the exclusive interview

Competition on the world stage is intense. To thrive, Malaysian businesses need more than ambition; they need a trusted partner with the strength and strategy to drive real results. For SIRIM to champion this mission, it must be empowered with the tools and readiness to adapt to an ever-evolving landscape.

We have been instrumental in the development of Malaysia for five decades, and that legacy now shapes how we prepare for the next 50 years. There is always something new for us to discover and embrace. By upskilling, reskilling and widening our horizons, we ensure that everyone in SIRIM is equipped to meet new frontiers with confidence and capability.

BLUEPRINT FOR A FUTURE-READY MALAYSIA

by
Adi Afuan Zainudin
Group Chief People Officer, Group People and Culture, SIRIM Berhad

In recent years, Malaysia has experienced significant transformation propelled by rapid economic and technological shifts. These developments are reinforced by a range of national initiatives and forward-looking policies aimed at strengthening the country's competitiveness, fostering innovation and building a future-ready nation.

As an agency under the Ministry of Investment, Trade and Industry (MITI), SIRIM works closely with the government to drive national progress. To shoulder this responsibility effectively, it has embarked on its own internal transformation; strengthening its capabilities, modernising its approaches and evolving from within to better support the country's advancement.

"We have been instrumental in the development of Malaysia for five decades, and that legacy now shapes how we prepare for the next 50 years. There is always something new for us to discover and embrace. By upskilling, reskilling and widening our horizons, we ensure that everyone in SIRIM is equipped to meet new frontiers with confidence and capability.



"Our focus is on proactive talent forecasting, anticipating the competencies required for emerging fields like AI and circular economy. By aligning our people development initiatives with SIRIM's long-term national mandates, we empower our expertise and fuel our capacity to guide Malaysian industry into new frontiers," stated Adi Afuan Zainudin, Group Chief People Officer, Group People and Culture, SIRIM.

STRENGTHENING FROM WITHIN

Come 2026, SIRIM will officially embark on a new visionary blueprint crafted to redefine its future. This transformation will introduce new ways of working, fresh perspectives and an evolved organisational structure designed to unlock greater agility and efficiency. The forward-looking plan is anticipated to elevate the organisation's capabilities and position it for enduring impact in the years ahead.

This rollout will follow the organisation's ongoing Culture Transformation Programme. Launched two years ago, this initiative aspires to embed collaboration, innovation and accountability among employees while

future-ready
Malaysia



reinforcing its ALEAD beliefs that were first introduced in 2018.

“Fundamentally, our aim is to cultivate a high-performance culture with a cohesive and motivated workforce prepared to build a ‘New SIRIM’ that is stronger, more resilient and fully prepared to tackle future challenges. This will not only strengthen the organisation internally but also position us to deliver greater impact and value to all stakeholders,” shared Adi Afuan.

With a goal to strengthen its foundation so it can operate efficiently, innovate continuously and help sharpen Malaysia’s competitive edge, SIRIM recognises the need to transform its organisational structure. The new blueprint was conceived to address these priorities, focusing on several key pillars.

“Process improvement is a central focus, ensuring that workflows are streamlined, efficient and capable of supporting growth. Digital technology and systems are another critical area, with investments aimed at modernising operations, enhancing productivity and enabling data-driven decision-making,” Adi Afuan explained.

Equally important is the facilitation of staff evolution, the structure of roles and responsibilities, and talent nurturing to meet new organisational demands. Compliance and statutory management also become a priority to ensure that the organisation remains robust, accountable and future-ready.

“Besides that, internal and external communication strategies need to be strengthened to ensure that change is clearly conveyed, understood and embraced across the organisation and its stakeholders. By addressing these pillars holistically, we will be well-positioned to move to the next level and meet both current and future challenges with confidence,” he continued.

A CULTURE FOR CONTINUOUS LEARNING

Beyond structured programmes, fostering a self-sustaining culture of curiosity and knowledge-sharing is paramount. The Group People and Culture department is dedicated to creating an ecosystem where continuous learning and innovation are naturally inspired and enthusiastically pursued by every employee.

“We are building what we call a ‘learning organisation’. This means creating platforms and opportunities that empower our people to take ownership of their growth. It is about moving from a ‘push’ of training to a ‘pull’ of curiosity,” noted Adi Afuan.

This vision is brought to life through several key initiatives: a digital knowledge hub where experts share insights, cross-functional project teams that solve complex problems and regular innovation challenges that invite ideas from all levels of the organisation.

In a competitive landscape for specialised talent, SIRIM has crafted a compelling value proposition that transcends conventional compensation. The strategy is built on articulating a powerful sense of purpose, offering unparalleled professional growth and fostering a culture where employees see a long-term future.

“The opportunity to work on projects that have a tangible impact on national security, industrial advancement and public wellbeing is a

POWERED BY PRINCIPLES

SIRIM's core beliefs

-  Achieve Sustainability
-  Lead Innovation
-  Engage Teamwork
-  Act Fast
-  Deliver Excellence

Our focus is on proactive talent forecasting, anticipating the competencies required for emerging fields like AI and circular economy. By aligning our people development initiatives with SIRIM's long-term national mandates, we empower our expertise and fuel our capacity to guide Malaysian industry into new frontiers.



We are building what we call a ‘learning organisation’. This means creating platforms and opportunities that empower our people to take ownership of their growth. It is about moving from a ‘push’ of training to a ‘pull’ of curiosity.

2%

Turnover Rate

93%

Employee Satisfaction

SILVER AWARD

Excellence in Leadership Development

The opportunity to work on projects that have a tangible impact on national security, industrial advancement and public wellbeing is a powerful draw for top talent who seek meaningful work. This sense of purpose is the cornerstone of SIRIM.

We invest in technology, our people and our long-term strength. However, the investment must be done prudently. Our focus is not only on generating revenue, but on cultivating a true high-performance culture. These commitments are what drive SIRIM towards becoming future-ready. Today, we are deeply focused on developing our leaders and strengthening organisational readiness to carry SIRIM forward.



Scan to watch the exclusive interview

powerful draw for top talent who seek meaningful work. This sense of purpose is the cornerstone of SIRIM,” explained Adi Afuan.

To retain this talent, SIRIM has clear career pathways for every employee, ensuring that their growth is recognised and rewarded. This is supported by initiatives like professional development funds for further studies, a performance management system that actively identifies and nurtures high-potential employees, and generous benefits that encourage work-life integration.

“Retention is about continuous engagement and showing a genuine commitment to their career journey. By providing a clear vision for their future within SIRIM and investing in their development, we build loyalty that goes beyond the paycheck, ensuring that our most valuable assets, our people, choose to grow with us for the long haul,” he added.

The organisation’s exceptionally low turnover rate, with only two percent of employees leaving each year, underscores this. Complementing this is the consistently positive feedback from regular engagement surveys, which report employee satisfaction levels above 90%. Furthermore, just last year, it was honoured with the Silver Award for Excellence in Leadership Development category at the HR Excellence Awards 2024, reflecting its commitment to driving performance and long-term success.

LINKING TALENT DEVELOPMENT TO NATIONAL PROGRESS

Part of the Group People and Culture department’s strategy lies in demonstrating a clear and compelling return on investment. Success is quantified by directly linking talent development initiatives to tangible organisational outcomes and, ultimately, to SIRIM’s broader contribution to Malaysian industry.

“We invest in technology, our people and our long-term strength. However, the investment must be done prudently. Our focus is not only on generating revenue, but on cultivating a true high-performance culture. These commitments are what drive SIRIM towards becoming future-ready. Today, we are deeply focused on developing our leaders and strengthening organisational readiness to carry SIRIM forward,” declared Adi Afuan.

The strategic initiatives undertaken by SIRIM’s Group People and Culture department represent a profound commitment to building an organisation that is as agile and forward-looking as the industries it serves. By transforming its role into a strategic talent architect, implementing precision upskilling programmes, fostering a self-sustaining learning culture and crafting a compelling value proposition, the department is ensuring that SIRIM’s workforce remains its greatest competitive advantage.

This comprehensive focus on human capital development does more than future-proof the organisation; it directly amplifies SIRIM’s capacity to drive innovation, uphold excellence and catalyse growth across the Malaysian industrial landscape, securing its role as a vital engine of national progress for years to come.

A STRATEGIC EVOLUTION TO FORGE A NEW NARRATIVE

by
 Shanizar Ahmad Shahar
 General Manager of Corporate Relations Department,
 SIRIM Berhad

In the intricate ecosystem of Malaysia’s economic development, few names carry the weight of SIRIM. For decades, it has been the silent guarantor of quality, its iconic “Ada SIRIM, Baru Beli” tagline etched into the national consciousness. In an era defined by rapid technological advancement and globalised competition, SIRIM’s legacy of quality has become an even greater asset, presenting an opportunity for it to be embraced as a catalyst for the nation’s innovative future.

Steering this effort is SIRIM’s Corporate Relations Department (CRD), which was formally established in March and is now being strategically revitalised under the leadership of Shanizar Ahmad Shahar, General Manager of Corporate Relations.

“My mission is clear: to systematically elevate SIRIM’s brand equity and solidify our position as Malaysia’s best partner for innovation and industrial research by directing our department’s focus on becoming the central heartbeat of SIRIM’s strategic storytelling engine,” she said.



CREATING THE NARRATIVE

At the core of the CRD’s new direction is the deliberate and meticulous crafting of SIRIM’s story. The goal is to position the organisation unequivocally as the trusted and “best partner for innovation.” This goes beyond mere publicity or issuing press releases to build lasting brand equity that resonates with a diverse and extensive network of stakeholders.

The CRD is transforming into the central architect of SIRIM’s narrative, ensuring that every communication, from a social media post to an annual report, reinforces its credibility and multifaceted value.

For this to work, the narrative must unfold through a series of strategic conversations supported by consistent and believable messaging. The CRD’s stakeholder map is broad and carefully defined, covering several

SIRIM has long been a cornerstone in Malaysia’s industrial and economic growth. As the landscape evolves, it becomes increasingly pivotal to foster strong, transparent connections with its diverse stakeholders, ensuring alignment as the nation heads towards a more developed and prosperous future.

DIVERSE STAKEHOLDERS

- Governmental Bodies
- Industry Players
- General Public
- International Bodies

My mission is clear: to systematically elevate SIRIM’s brand equity and solidify our position as Malaysia’s best partner for innovation and industrial research by directing our department’s focus on becoming the central heartbeat of SIRIM’s strategic storytelling engine.

strategic evolution
 to forge a new narrative



THE INSIGHT

While SIRIM is widely known, the sheer breadth of its offerings often makes it unclear to the public exactly what it does. SIRIM's work spans so many areas that the breadth itself sometimes obscures the full picture.

THE SOLUTION

SIRIM focuses on making its capabilities more visible and understandable. This includes breaking down its services into clear, easy-to-understand pillars, sharing real-world success stories that demonstrate the value it provides and tailoring messages for different stakeholder groups, so each sees the relevance to them. It also needs to consider leveraging on visuals, infographics and digital spaces while maintaining regular engagement and storytelling that reinforces the full scope of what it does.



Our strategy to fortify this trust is threefold, built on a foundation of clarity and consistency in messaging, active and genuine stakeholder engagement, and the rigorous backing of all narratives with verifiable facts, figures and proven results, such as client testimonials and international accreditations.

key groups: the media, who help amplify SIRIM's voice and strengthen credibility; government bodies such as federal agencies, the Ministry of Investment, Trade and Industry (MITI) and the Prime Minister's Office; industry players who depend on SIRIM as their best partner for innovation; the general public, whose trust forms the foundation of the SIRIM brand; and international stakeholders including embassies, chambers of commerce and trade commissions, who are essential in shaping SIRIM's global presence.

Anchoring all this should be an overarching message centred on trust — and on positioning SIRIM as the best partner for innovation. From there, each pillar will carry its own strategic messaging to highlight SIRIM's role and strengths within each stakeholder group.

“Building on that, our role becomes clear: in this complex ecosystem, we act as the strategic facilitator that brings all these connections to life. For example, on the international front, we don't wait for opportunities to surface. Instead, we proactively cultivate relationships with foreign trade commissions, understand their priorities and seamlessly link them with the right subject-matter experts within SIRIM's business units. We build the bridge, and our technical experts drive the collaboration,” Shanizar explained.

Navigating this vast and varied landscape is the department's central challenge and its greatest opportunity. As Shanizar noted, “Our SIRIM ‘universe’ necessitates a nuanced, almost surgical approach to communication, ensuring the right message reaches the right audience through the most effective channels.”

This is the direct answer for expanding the brand's impact. The “Ada SIRIM, Baru Beli” campaign was a monumental success in building public awareness, capturing the strength of the brand and paving the way for showcasing the full breadth of SIRIM's influence in the development of industry.

This allows for messaging that is precisely tailored. For government stakeholders, the narrative demonstrates alignment with national policies. For industry players, it showcases specialised, tangible solutions to their business challenges and pain points. For the public, it articulates the tangible national benefits, such as safe home appliances or opportunities for entrepreneurship in high-tech fields.

“People know about SIRIM, but they are not clear about what we really do. The key is for the message to be tailor-made to the different stakeholder categories without getting diluted. This approach allows us to focus on a core area to deliver better impact across all levels of our audience,” added Shanizar.

By prioritising and simplifying the narrative, the CRD aims to build a more complete and accurate understanding of SIRIM's multifaceted contributions to Malaysia.

EVOLVING COMMUNICATIONS

In an era of information overload and deep digital skepticism, building and maintaining trust is paramount. For an organisation whose very foundation is built on standards, quality and assurance, credibility is SIRIM's most valuable asset.

“Our strategy to fortify this trust is threefold, built on a foundation of clarity and consistency in messaging, active and genuine stakeholder engagement, and the rigorous backing of all narratives with verifiable

facts, figures and proven results, such as client testimonials and international accreditations,” Shanizar explained.

STRATEGY TO CULTIVATE TRUST

- Clear and consistent messaging
- Active and genuine stakeholder engagement
- Proven credibility

The department is tasked with translating the advanced, technical work of SIRIM’s engineers and scientists into clear, engaging stories that people can relate to. The guiding principle is simplicity and relevance: presenting SIRIM’s work in a way that connects with everyday lives and aligns with national priorities, without overwhelming the audience with technical jargon.

“Instead of using complex language and big words, our focus is on making the message clear and accessible. We want to make it simple so we can reach a larger audience. The most important thing is that they understand us,” she added.

This principle extends to a deliberate digital strategy. Instead of spreading efforts thin, the focus will be on maximising a few key platforms, with LinkedIn highlighted as a primary channel for reaching substance-driven audiences like industry players and international partners. The ultimate aim is to humanise the SIRIM brand, shifting from purely corporate announcements to sharing stories about the people behind the innovations and their real-world impact, thereby making the brand more relatable and trusted.

A NEW CHAPTER

The CRD is ready to reshape how SIRIM connects with its stakeholders. Its approach is straightforward and practical: focus messaging on the most relevant strategies, concentrate its efforts on a few high-impact storytelling platforms rather than spreading itself too thin, and bring a human touch to the SIRIM brand at every point of engagement.

Looking forward, SIRIM’s vision involves a continued evolution from conventional, reactive communications to a more dynamic and savvy approach.

“Much more than merely sharing SIRIM’s work, we are bringing it to life. By investing in talented storytellers and nurturing spokespeople across our teams, we ensure our expertise is seen and understood. At the same time, through strategic, long-term partnerships with key media outlets, we are positioning SIRIM as the trusted voice and go-to source for insights on national innovation. This is how we connect our cutting-edge work to all our stakeholders,” said Shanizar.

Ultimately, this comprehensive effort is a strategic function that directly supports SIRIM’s commercial ambitions and its vital national objectives. A better-understood brand attracts better talent, fosters more meaningful partnerships and secures its social license to operate and grow.

By executing this modern, proactive and trusted communication strategy, the CRD is ensuring that SIRIM’s story is as robust, impactful and forward-looking as the cutting-edge services it provides. In doing so, it is not just forging a new narrative; it is securing SIRIM’s place at the very heart of Malaysia’s journey into an innovative and prosperous future.

Instead of using complex language and big words, our focus is on making the message clear and accessible. We want to make it simple so we can reach a larger audience. The most important thing is that they understand us.

Much more than merely sharing SIRIM’s work, we are bringing it to life. By investing in talented storytellers and nurturing spokespeople across our teams, we ensure our expertise is seen and understood. At the same time, through strategic, long-term partnerships with key media outlets, we are positioning SIRIM as the trusted voice and go-to source for insights on national innovation. This is how we connect our cutting-edge work to all our stakeholders.



Scan to watch the exclusive interview

Precision, safety and reliability are non-negotiable in high-tech industries such as semiconductors. In this context, rigorous testing and conformity assessments play a crucial role.

Companies sometimes struggle to identify which standard should be applied to their product. This is where SIRIM QAS International Sdn Bhd (SIRIM QAS International) comes in, offering technical support from the early stages of development to pre-compliance testing.

Our laboratory facilities are well-equipped to support compliance with both national and international standards, helping Malaysia's semiconductor products achieve global market access with confidence.

TESTING FOR TOMORROW TO POWER MALAYSIA'S GLOBAL SEMICONDUCTOR AMBITION

by
Zarismaul Abdul Rahman
Head of RF & EMC Testing Section, Testing Services Department,
SIRIM QAS International Sdn Bhd

In its goal to become a prominent force in the global semiconductor industry, Malaysia has to ensure that every component meets established benchmarks to maintain consistency and quality. To facilitate access to global markets, local players must not only comply with national regulations set by regulatory bodies like the Malaysian Communications and Multimedia Commission (MCMC) and Energy Commission but also meet international standards such as those established by the International Electrotechnical Commission (IEC) and International Organization for Standardization (ISO). These standards are essential for obtaining certifications like the European Conformity (CE) mark for Europe and the Federal Communications Commission (FCC) mark for the US — key credentials that enhance market credibility and competitiveness.

The main challenges for many businesses lie in keeping up with rapid technological advancements and the evolving regulatory frameworks that accompany them.



“Companies sometimes struggle to identify which standard should be applied to their product. This is where SIRIM QAS International Sdn Bhd (SIRIM QAS International) comes in, offering technical support from the early stages of development to pre-compliance testing.

“Our laboratory facilities are well-equipped to support compliance with both national and international standards, helping Malaysia's semiconductor products achieve global market access with confidence,” said Zarismaul Abdul Rahman, Head of RF & EMC Testing Section of the Testing Services Department at SIRIM QAS International.

Laboratory rentals are available to assist businesses in research and development, which will speed up market entry and ensure a smooth certification procedure. This service is especially beneficial for small and medium enterprises (SMEs) that may not have the facilities or resources to validate their designs internally.

Malaysia's
global
semiconductor
ambition



By using these laboratory facilities, companies can test different design iterations, make technical adjustments or even explore cost reduction strategies, such as changing certain components without compromising performance or safety.

“Sometimes, they may want to modify or replace a component to reduce production costs. In such cases, they can use our laboratory rental service to carry out pre-compliance testing and evaluate the results,” Zarismail added.

During the pre-compliance testing stage, no formal test report is provided to clients. Instead, they receive detailed data sheets and graphical outputs that are useful technical references for further product development.

“We provide them with data to study their product performance. This allows them to make informed design decisions before submitting the product for final testing and certification,” he explained.

Building on this, SIRIM QAS International provides comprehensive testing services that include radio frequency (RF) and electromagnetic compatibility (EMC) assessments, low voltage directive evaluations and environmental reliability testing.

“For example, to meet CE mark requirements, products must comply with the Radio Equipment Regulation, EMC Directive, Low Voltage Directive and Restriction of Hazardous Substances (RoHS) requirements. At SIRIM QAS International, we provide the full spectrum of testing to help the industry meet international compliance standards,” he continued.

ENCOURAGING INDUSTRY COMPLIANCE AND GROWTH:

- **Keeping up with change:** Helping companies adapt to evolving regulatory standards
- **Early-stage support:** Technical guidance from product development through pre-compliance testing
- **R&D Facilitation:** Laboratory rental services to accelerate product readiness
- **Extensive testing:** RF & EMC, Low Voltage and environmental reliability testing

With these test reports, clients can then complete their technical file and make a self-declaration that their product complies with CE mark requirements. Once this process is completed, the product can be affixed with the CE marking and exported to the European market.

NAVIGATING COMPLEXITY WITH TECHNICAL EXPERTISE

To stay ahead of evolving regulations, SIRIM QAS International consistently invests in upgrading its testing facilities to ensure they remain aligned with the latest regulations, highlighting the organisation’s dedication to delivering exceptional service and maintaining high-quality compliance.

Typically, when a new standard is introduced, there is a one to three year grace period before it becomes fully enforced. This window enables SIRIM QAS International to equip its laboratories to meet the new requirements.

“Currently, our facilities are fully equipped to cater to both local and regional players in the semiconductor industry,” emphasised Zarismail.

One of SIRIM QAS International’s key strengths is its ability to provide testing, inspection and certification services all under one roof. Having all these services integrated allows for greater consistency across tests

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In the automotive sector, EMC testing is essential to ascertain that advanced electronic systems, like sensors, control units and infotainment systems, operate safely. Similarly, in the medical sector, this is especially vital for life-support and intensive care unit (ICU) equipment, as electromagnetic interference could affect critical functions.



By next year, we will be adding another 10-metre anechoic chamber capable of full vehicle testing. Our 10-metre anechoic chamber is currently focused on EMC testing, but as electric vehicles become more advanced and move towards autonomous technology, we also need to prepare for new testing requirements.

and certifications. Furthermore, SIRIM has been designated by the government as the national regulatory agency for product compliance.

“Because of this, MCMC recognises our reports, which helps businesses to comply with national market requirements. We also offer guidance on additional testing and requirements for international markets,” commented Zarismail.

EFFICIENCY THROUGH DIGITALISATION

As part of its continuous effort to improve customer experience and service delivery, SIRIM QAS International digitalises its operations to guarantee that testing procedures are carried out effectively. As a result, online applications, simplified documentation and flexible scheduling are part of the digital transformation to better serve customers.

Previously, laboratory staff had to record test data manually on paper worksheets before transferring the information into a report, a process that could take up to two days to complete. With digitalisation, this step has been streamlined, and data from digital worksheets are directly transferred into the test report.

“This automation not only eliminates manual handling and reduces the risk of errors but also shortens report preparation time from days to just a few hours,” explained Zarismail.

RISING DEMAND ACROSS AUTOMOTIVE AND MEDICAL SECTORS

One crucial aspect of testing and conformity assessment is EMC, which plays a vital role in the semiconductor industry. EMC ensures that semiconductor devices and systems can operate correctly without causing interference with other electronic equipment. By managing susceptibility to external electromagnetic interference, manufacturers can ensure that their products meet regulatory standards and function effectively in diverse environments.

Demand for EMC testing is also rising across multiple sectors, particularly in the automotive and medical industries. With electronics now embedded in nearly every function, ensuring electromagnetic compatibility is critical to product safety and performance.

“In the automotive sector, EMC testing is essential to ascertain that advanced electronic systems, like sensors, control units and infotainment systems, operate safely. Similarly, in the medical sector, this is especially vital for life-support and intensive care unit (ICU) equipment, as electromagnetic interference could affect critical functions,” said Zarismail.

To address this growing demand, SIRIM QAS International has expanded its testing facilities. The Shah Alam laboratory currently houses a three-metre anechoic chamber, while the Bayan Lepas facility, operated in collaboration with the Penang Skills Development Centre (PSDC), features a 10-metre chamber.

“By next year, we will be adding another 10-metre anechoic chamber capable of full vehicle testing. Our 10-metre anechoic chamber is currently focused on EMC testing, but as electric vehicles become more advanced and move towards autonomous technology, we also need to prepare for new testing requirements,” revealed Zarismail.

ADAPTING TO THE CHALLENGES OF INDUSTRY 4.0

With the advancement of Industry 4.0 technologies, SIRIM QAS International is adapting to an increasingly connected and intelligent industrial world. Its facilities are currently equipped for testing up to 5G requirements, using advanced simulators to evaluate 5G-enabled devices.

“When testing 5G gadgets, we use a dedicated simulator to meet transmitter and signal requirements. As the world moves towards 6G, we are also preparing our systems to be ready for the next generation of connectivity,” said Zarismail.

In addition to RF and EMC testing, SIRIM QAS International offers Internet Protocol version 6 (IPv6) compliance testing for telecommunications and internet-of-things (IoT) products, in line with MCMC requirements. IPv6 ensures that connected devices have unique and secure IP addresses, an essential feature for the expanding ecosystem.

Understanding the growing importance of cybersecurity, SIRIM QAS International is fortifying its expertise in this area.

“We have begun building our internal competency for cybersecurity testing. Our goal is to ensure that IoT-connected and telecommunications products are not only functional but also protected against potential threats,” noted Zarismail.



STRENGTHENING CAPABILITIES FOR A GLOBAL FUTURE

Looking ahead, SIRIM QAS International’s strategic aims include improving technical expertise, broadening recognition and accelerating digital transformation.

“We want to ensure that our facilities, equipment and personnel remain current with the latest technological requirement. We also strive to anticipate future industry needs, so we are always ready to meet new testing demands as technologies evolve,” remarked Zarismail.

To achieve this, SIRIM QAS International continues to expand its national and worldwide recognition through closer collaboration with industry stakeholders and regulators. These partnerships are critical to aligning Malaysia’s testing ecosystem with global standards and supporting the country’s rising role in the semiconductor value chain.

He declared, “SIRIM QAS International will remain committed to supporting national priorities, empowering local industries and building global confidence in Malaysian-made products through innovation, quality and customer-centric services.”

As the country moves towards a smarter, more connected future, SIRIM QAS International is confident of serving as a trusted partner, ensuring that local innovations satisfy global standards while creating trust, competitiveness and long-term success across industries.

EXPEDITING EMC CAPABILITIES

Current:

- 3-metre anechoic chamber in Shah Alam
- 10-metre anechoic chamber in Penang

Upcoming:

- 10-metre anechoic chamber with full vehicle testing capabilities

We have begun building our internal competency for cybersecurity testing. Our goal is to ensure that IoT-connected and telecommunications products are not only functional but also protected against potential threats.

SIRIM QAS International will remain committed to supporting national priorities, empowering local industries and building global confidence in Malaysian-made products through innovation, quality and customer-centric services.



Scan to watch the exclusive interview

Calibration and measurement capabilities (CMCs) are vital to a country's economic, scientific and regulatory activities. By enhancing these capabilities, a nation can ensure its measurements align with international standards, fostering greater trust in domestic industries and improving global competitiveness.

The CMCs establish a stronger foundation for national innovation, export growth and measurement sovereignty, representing a crucial step forward in enhancing Malaysia's industrial capabilities and global competitiveness as well as reinforcing NMIM's role in supporting quality standards and economic advancement.

NEW CAPABILITIES TO EMPOWER MALAYSIAN INDUSTRY

by

Ts. Dr. Mohd Fazlulhisyam Mohd Nor, Deputy Director, National Metrology Institute of Malaysia
Haslina Abdul Kadir, Deputy Director of the Chemical Group, National Metrology Institute of Malaysia

Malaysia is actively advancing its metrology infrastructure to introduce more calibration and measurement capabilities (CMCs), positioning itself to better integrate with global standards and support high-precision industries. This initiative will strengthen Malaysia's manufacturing, scientific research and regulatory frameworks, driving progress in diverse sectors.

In a significant leap forward for Malaysia's scientific and industrial infrastructure, the National Metrology Institute of Malaysia (NMIM) has announced the debut of 11 new CMCs. This enhancement expands our capabilities to include nine temperature measurement ranges and two chemical metrology services, specifically for ethanol-in-water and methane gas.

"The CMCs establish a stronger foundation for national innovation, export growth and measurement sovereignty, representing a crucial step forward in enhancing Malaysia's industrial capabilities and global competitiveness as well as reinforcing NMIM's role in supporting quality standards and economic advancement," said Ts. Dr. Mohd Fazlulhisyam Mohd Nor, Deputy Director at NMIM.



NMIM recently introduced 11 new CMCs, including:

- 3 for radiation thermometer sensors with a temperature range of 30 to 300°C
- 6 for resistance temperature for liquid glass with a range of -80 to 300°C
- 1 in chemical metrology for ethanol in water
- 1 in chemical metrology for methane gas

BUILDING GLOBAL TRUST AND NATIONAL SOVEREIGNTY

The journey to establishing a new CMC is a rigorous, internationally recognised process designed to ensure global equivalence. This

**empower
Malaysian industry**



exhaustive pathway involves international comparisons and peer-review, culminating in publication by the International Bureau of Weights and Measures (BIPM) and signifying that NMIM's measurements are fully traceable to the International System of Units (SI).

This pursuit of international recognition is strategically driven by a dual mandate: to serve local industry and ensure national self-reliance. By developing these capabilities in-house, Malaysia mitigates the high costs, long delays and risks associated with sending equipment abroad, while also safeguarding against potential geopolitical barriers that could break the nation's traceability chain. Furthermore, this foundational metrology infrastructure is a powerful tool for attracting foreign direct investment, as it lowers technical barriers and costs for high-tech industries considering Malaysia as a destination.

“The development of CMCs is driven not only by the country’s broader needs but, more critically, by the specific requirements of key industries. By strengthening our national metrology infrastructure, we aim to reduce reliance on overseas capabilities and ensure that local industries have access to the precise measurement tools they need to thrive in a competitive global market,” explained Dr. Mohd Fazrulhisyam.

This strategic focus on economic growth and independence is underpinned by the global validation the process brings. Haslina Abdul Kadir, Deputy Director of the Chemical Group at NMIM, emphasised this achievement, noting, “Getting the CMC published is actually an international recognition that our capability is at par with any other national metrology institute.”

WHY DOES THIS MATTER FOR MALAYSIA?

- **Sovereignty & Resilience:** Ends costly reliance on foreign calibration, securing our industrial supply chain
- **Global Market Access:** An NMIM certificate is globally accepted, removing technical barriers for Malaysian exports
- **Investment Magnet:** Provides the trusted measurement infrastructure that attracts high-tech industries

REAL-WORLD IMPACT

The true value of a national metrology institute (NMI) is not measured in the number of its published CMCs, but in the tangible impact these capabilities have on public welfare, economic resilience and national prestige. The recent expansion of NMIM’s CMCs is already yielding significant benefits, demonstrating how precision measurement is a critical pillar of a modern society.

The COVID-19 pandemic powerfully demonstrated metrology’s critical role in public health. NMIM’s capabilities proved vital in two key areas. First, the precise calibration of infrared thermometers used for mass screening ensured reliable first-line defence data at borders and public spaces.

Second, and most critically, NMIM safeguarded the vaccine cold chain. “The Pfizer-BioNTech and other mRNA vaccines required storage as low as -70°C, where even a minor temperature deviation could destroy entire batches. We helped to ensure the integrity of vaccines,” said Haslina.

By ensuring the calibration of every temperature monitoring device in storage and transport units, NMIM played an indispensable role in the national vaccination programme’s success, guaranteeing every administered dose was potent and effective.

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CMCs IN ACTION

- Safeguarding public health and safety
- Elevating Malaysia’s stature on the world stage
- Empowering local industry and forging a manufacturing future



An NMIM calibration certificate is accepted by all major economies, eliminating technical trade barriers. This ‘tested once, accepted everywhere’ principle is crucial for exporters, streamlining compliance and boosting the credibility of Malaysian goods worldwide.



We are actively helping other NMIs to develop their metrology capabilities. From Papua New Guinea to Vietnam, we provide specialised training and support, positioning ourselves as a regional hub for metrological excellence.

The goal is to move the nation from being a perpetual consumer of high-precision instruments to becoming a competitive manufacturer and exporter.

Beyond domestic use, NMIM’s growing CMC portfolio elevates Malaysia’s global standing. Each CMC builds an international reputation for reliability, formalised through mutual recognition arrangements (MRAs).

“An NMIM calibration certificate is accepted by all major economies, eliminating technical trade barriers. This ‘tested once, accepted everywhere’ principle is crucial for exporters, streamlining compliance and boosting the credibility of Malaysian goods worldwide,” added Dr. Mohd Fazrulhisyam.

This expertise transforms NMIM from a participant to a leader. The institute now plays a leading role in the Standard Metrology Institute for Islamic Countries (SMIIC) and acts as a ‘pilot laboratory’ for international comparisons. This leadership extends to mentorship.

“We are actively helping other NMIs to develop their metrology capabilities. From Papua New Guinea to Vietnam, we provide specialised training and support, positioning ourselves as a regional hub for metrological excellence,” he noted.

A core, forward-looking part of NMIM’s vision is to leverage its metrological prowess to catalyse a fundamental shift in Malaysia’s industrial ecosystem.

“The goal is to move the nation from being a perpetual consumer of high-precision instruments to becoming a competitive manufacturer and exporter,” continued Dr. Mohd Farzulhisyam.

To do this, NMIM is proactively engaging in strategic joint ventures with local companies. A prime example is its collaboration with a local company, Dpstar Group, which manufactures thermocouples. Rather than simply calibrating Dpstar Group’s products, NMIM is working to upgrade the company’s entire operation, guiding them towards establishing their own accredited laboratory.

“This partnership is multifaceted: NMIM provides the foundational metrology, ensuring the company’s internal standards are traceable to SI units, while also offering expert advice on quality systems and manufacturing processes,” added Haslina.

The strategy extends beyond technical support to active market creation. NMIM leverages its international network and reputation to promote high-quality Malaysian products like Dpstar Group’s thermocouples to other NMIs and industries in developing countries.

When NMIM experts train metrologists in Papua New Guinea or Vietnam, they are also showcasing the reliability of Malaysian-made instruments. This creates a powerful virtuous cycle: the credibility of NMIM rubs off on the local manufacturer, opening up export opportunities and building global confidence in Malaysian engineering.

“This also demonstrates that NMIM’s role is not confined to a laboratory; we are an active agent of industrial transformation. By providing small and medium enterprises (SMEs) with the tools and the credibility to compete at an international level, NMIM is helping to build a new industrial segment within Malaysia that is focused on precision, quality and innovation, and less dependent on foreign technology,” expounded Dr. Mohd Fazrulhisyam.

This not only creates high-value jobs but also repositions Malaysia in the

global value chain, from an assembly hub to a source of critical, high-precision components and instruments.

FUTURE-PROOFING MALAYSIA



The two key fronts to meet tomorrow's challenges:

- **The Digital Shift:** Moving towards digital calibration and proficiency testing certificates to boost speed, efficiency and accessibility for Malaysian industry
- **The New Frontier:** Developing high-precision capabilities to measure emerging contaminants like microplastics, safeguarding public health and the environment

To future-proof the nation's quality infrastructure, NMIM is strategically aligning its capabilities with the demands of a rapidly evolving technological and environmental landscape. A central pillar of this strategy is digitalisation.

"We are currently focused on the digitalisation of metrology, with a particular emphasis on developing digital proficiency testing/measurement audit (PT/MA) and digital calibration certificates. This initiative is a key part of our ongoing efforts to modernise and streamline the certification process," affirmed Dr. Mohd Fazrulhisyam.

The transition aims to significantly enhance operational efficiency, reduce turnaround times and improve accessibility for industries, ensuring metrology services keep pace with the digital economy.

Simultaneously, NMIM is turning its focus to pressing global challenges.

Haslina identified environmental and public health as critical frontiers. "As Malaysia advances industrially, we face increasing challenges related to contamination, waste and air pollution. As such, we are taking proactive steps to address issues like the growing threat of microplastics.

"As accurately measuring emerging contaminants, which also include nanomaterials, demands high precision instruments and a high level of expertise, we are focusing our efforts on building specific capabilities to safeguard both human and environmental health."

Realising this ambitious vision underscore a need for continuous governmental and institutional support to cultivate a robust talent pipeline.

"Sustained investment in human capital is essential for developing new metrological fields, supporting evolving industries and achieving NMIM's goal of holding a top-tier position in ASEAN and the Asia-Pacific region," said Dr. Mohd Fazrulhisyam.

The new CMCs represent far more than additional services; they are fundamental components for building a more resilient, innovative and globally competitive Malaysia. Through strategic foresight, international partnership and an unwavering dedication to industrial needs, NMIM is actively calibrating the nation's future.

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Scan to watch the exclusive interview

Calibration is the invisible foundation of precision in high-tech industries such as semiconductors. Every process — from wafer fabrication to final device testing — relies on measurement accuracy at the nanometre scale.

In the semiconductor industry, our role is to ensure precision at every stage, from the production line to the marketplace. We provide calibration across key measurement domains such as temperature, force, pressure and humidity to keep their operations performing at the highest standards.

That is why consistent and precise calibration is essential. We need to catch these tiny errors before they escalate into costly issues.

ENABLING HIGH-PRECISION INDUSTRIES THROUGH ADVANCED CALIBRATION

by
Mohd Zurani Abdul Wahab
Head of Technical and Operations Department,
SIRIM Calibration Sdn Bhd

As Malaysia sets its sights on becoming a leading player in the global semiconductor industry, supporting sectors like calibration has become increasingly vital. Calibration plays an essential role in ensuring the precision and reliability of semiconductor manufacturing processes, making it a key factor in advancing the industry.

“In the semiconductor industry, our role is to ensure precision at every stage, from the production line to the marketplace. We provide calibration across key measurement domains such as temperature, force, pressure and humidity to keep their operations performing at the highest standards,” said Mohd Zurani Abdul Wahab, Head of Technical and Operations Department at SIRIM Calibration Sdn Bhd (SIRIMCal).

In recent years, calibration has advanced rapidly, thanks to Industry 4.0 technologies that enable automation, real-time monitoring and improved traceability. As a consequence, every new product generation comes with tighter tolerances and more complex specifications that must be measured with absolute accuracy.



Even minor shift in calibration values over time, can disrupt the entire production process. For example, a small deviation in temperature or pressure readings could lead to chips performing below their intended specifications, resulting in lower product reliability or increased production downtime.

“That is why consistent and precise calibration is essential. We need to catch these tiny errors before they escalate into costly issues,” added Mohd Zurani.

The real challenge is finding a balance between the demand for high accuracy and the necessity to meet tight manufacturing deadlines, making sure that calibration work doesn’t slow down production.

“We work with extremely tight tolerances that leave no room for error. Our job is to make sure calibration is perfectly aligned with production

enabling high
precision
industries

through
advanced
calibration



schedules so that everything flows smoothly without any hiccups in the process,” explained Mohd Zurani.

Over time, the demand for calibration, especially for new products in semiconductors, is getting higher. A key trend driving this change is data acquisition — turning calibration into a continuous, data-driven process rather than a periodic task.

“With real-time insights and online measurement systems, calibration will soon extend seamlessly from the laboratory to the factory floor,” he said.

TACKLING CALIBRATION CHALLENGES

As devices continue to shrink, achieving traceability at increasingly smaller scales becomes increasingly difficult. Electrical and radio frequency (RF) measuring instruments used in semiconductor testing add a new level of complexity, requiring advanced reference standards and closely regulated environments. At the same time, manufacturers must balance the demand for continuous production uptime and scheduled calibration cycles, which often create operational tension.

According to Mohd Zurani, “Semiconductor manufacturers also face challenges in aligning local calibration capabilities with stringent international standards such as ISO/IEC 17025. There are only a few facilities in the region equipped to meet these exacting requirements.

“Working with accredited calibration partners like SIRIMCal helps keep operations consistent across all sites, giving companies the confidence and edge they need to compete globally.”

SIRIMCal’s strength comes from collaboration across teams with a wide range of specialisations, from industry research to testing, and close partnerships with manufacturers who share their products and specifications. This allows it to provide customised calibration solutions that meet the precise needs of each client.

MAXIMISING CALIBRATION FOR QUALITY PERFORMANCE

“Calibration should be seen as a strategic investment in quality, not just a compliance requirement. By implementing data-driven calibration, predictive maintenance and centralised traceability systems, semiconductor manufacturers can reduce variability, increase production yield and bring products to market faster,” remarked Mohd Zurani.

SIRIMCal provides comprehensive, end-to-end accredited calibration services across a wide range of domains, including electrical, temperature, pressure, mass and RF measurements, which are fully traceable to national and international standards.

“For clients in highly sensitive environments, we offer on-site calibration for cleanrooms, as well as proficiency testing programmes and consultation services to support ISO/IEC 17025 compliance. Our laboratories are backed by the expertise of the National Metrology Institute of Malaysia (NMIM), ensuring that every calibration is performed with the highest level of accuracy and traceability,” he elaborated.

A notable success story included a semiconductor client facing yield inconsistency due to unverified process thermocouples.

“Through SIRIMCal’s precise temperature calibration and traceability audit, the client improved measurement reliability by 15% and reduced downtime by 20%, directly enhancing production efficiency and quality assurance,” Mohd Zurani said.

We work with extremely tight tolerances that leave no room for error. Our job is to make sure calibration is perfectly aligned with production schedules so that everything flows smoothly without any hiccups in the process.

With real-time insights and online measurement systems, calibration will soon extend seamlessly from the laboratory to the factory floor.



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SIRIMCal OFFERS:

- Electrical, temperature, pressure, mass and RF calibration
- On-site cleanroom calibration
- Proficiency testing programmes
- ISO/IEC 17025 compliance consultation
- Full traceability supported by NMIM

Our laboratories are undergoing digital transformation through data integration systems that enhance traceability and reporting accuracy. We also continue to collaborate with NMIM to develop new calibration capabilities for semiconductor-specific parameters, helping to ensure Malaysia remains competitive in high-value manufacturing.

Strong collaboration between calibration providers, manufacturers and regulators will be essential to keep Malaysia's semiconductor sector globally competitive. SIRIMCal remains committed to advancing this ecosystem — where precision drives innovation and trust fuels transformation.



Scan to watch the exclusive interview

In recent years, SIRIMCal has upgraded its labs with advanced thermal and RF calibration systems, high-precision mass comparators and automated environmental chambers to improve measurement stability and repeatability.

“Our laboratories are undergoing digital transformation through data integration systems that enhance traceability and reporting accuracy. We also continue to collaborate with NMIM to develop new calibration capabilities for semiconductor-specific parameters, helping to ensure Malaysia remains competitive in high-value manufacturing,” he continued.

Furthermore, SIRIMCal is expanding its services to meet the evolving needs of the semiconductor industry.

“We are adding in-situ calibration, digital calibration certification and metrology data analytics to our service scope. These initiatives aim to support semiconductor clients in predictive quality management and environmental, social and governance (ESG)-driven efficiency,” shared Mohd Zurani.

Remote calibration is also becoming an important solution for modern manufacturing. By connecting factory equipment directly to calibration standards in the laboratory, measurements and verifications can be performed without physical presence on-site.

“The good thing is that the downtime is minimised, and we are continuously doing the calibration, taking the measurement and verifying the equipment,” he noted.

This approach has already been successfully implemented as a pilot project for a remote frequency measurement method in collaboration with NMIM, enabling precise frequency calibrations to be conducted remotely from the Time and Frequency Lab in Sepang, which is 24/7 traceable to the international time standard, UTC (Coordinated Universal Time). Once this remote measurement method is validated, this new capability will be extended to industry, offering the advantage of remote calibration over traditional calibration, which can eliminate shipping, reduce logistics costs, and lower the risk of transportation damage and operational downtime for customers.

Additionally, SIRIMCal is exploring partnership with industry associations and academic institutions to develop talent in precision metrology and semiconductor calibration.

“A strong semiconductor ecosystem in Malaysia requires manufacturers, calibration providers and regulators to support each other. With the right infrastructure and a skilled workforce developed through targeted education and training, the industry can build a continuous pipeline of talent to sustain precision calibration,” Mohd Zurani commented.

SIRIMCal's goal over the next five years is to become the regional benchmark for precision calibration in advanced manufacturing and electronics. Strategic priorities include expanding international accreditation scopes, adopting AI-assisted calibration analytics and improving digital infrastructure for remote verification and traceability.

“Strong collaboration between calibration providers, manufacturers and regulators will be essential to keep Malaysia's semiconductor sector globally competitive. SIRIMCal remains committed to advancing this ecosystem — where precision drives innovation and trust fuels transformation,” concluded Mohd Zurani.

FORGING MALAYSIA'S COMPETITIVE EDGE THROUGH STANDARDS AND STRATEGIC UPSKILLING

by
Azhar Dollah
Head of the Standards Development & Consultancy Section,
SIRIM Academy Sdn Bhd

In the complex architecture of Malaysia's industrial advancement, SIRIM stands as a cornerstone. Within it, SIRIM Academy Sdn Bhd (SIRIM Academy) operates as a critical engine, dedicated to a singular, vital mission: propelling Malaysian industries onto the global stage.

Azhar Dollah, Head of the Standards Development & Consultancy Section, explained that the Academy's role is comprehensive: "Our function is to develop the standards, disseminate the information and also see how a company can actually implement those standards. This is pivotal in enhancing industry competitiveness, making the SIRIM Academy a strategic partner in national development."



THE BEDROCK OF COMPETITIVENESS

At its core, SIRIM Academy plays a multifaceted role in the ecosystem of Malaysian industry. It is instrumental in the formulation, revision and promotion of standards that enhance quality, safety and sustainability.

This work is supported by a comprehensive suite of International Organization for Standardization (ISO) and standards-based training across sectors. Furthermore, it provides crucial consultancy services to help businesses align with Malaysian Standards, SIRIM Industry Standards and international benchmarks.

The tangible impact of this work is best illustrated by success stories like DSR Taiko Berhad (DSR Taiko), a producer of the prized Musang King durian.

"SIRIM Academy collaborated with DSR Taiko to develop the first Musang King Standard (DSR01:2022), a comprehensive protocol covering the entire growth process from soil and fertiliser to final fruit. The standard, together with the Musang King Integrated Tracking System (MKITS) technology by SIRIM, set new benchmarks for authenticity, traceability

In an increasingly globalised marketplace, Malaysian companies must continuously adapt and innovate to stay ahead of the competition. A critical pathway to achieving sustainable growth and international success lies in enhancing operational excellence and business agility through certification, training and consultation services.

Our function is to develop the standards, disseminate the information and also see how a company can actually implement those standards. This is pivotal in enhancing industry competitiveness, making the SIRIM Academy a strategic partner in national development.

standards
and
strategic
upskilling



SIRIM Academy collaborated with DSR Taiko to develop the first Musang King Standard (DSR01:2022), a comprehensive protocol covering the entire growth process from soil and fertiliser to final fruit. The standard, together with the Musang King Integrated Tracking System (MKITS) technology by SIRIM, set new benchmarks for authenticity, traceability and quality in the durian industry, allowing each durian to be traced back to its specific tree, a feature that was later enhanced with radio frequency identification (RFID) technology.

While adhering to international standards is important, the cost of achieving compliance can sometimes be prohibitive for smaller businesses. This is where SIRIM Academy's role becomes that of a pragmatic facilitator, helping industries develop standards that are more achievable, while still being validated through rigorous conformity assessments.

IMPORTANCE OF COMPLIANCE IN THE EXPORT ECOSYSTEM

- Market Access
- Risk Mitigation
- Trade Facilitation

and quality in the durian industry, allowing each durian to be traced back to its specific tree, a feature that was later enhanced with radio frequency identification (RFID) technology,” explained Azhar.

The result was a dramatic transformation in the company's fortunes. By adopting this standard, DSR Taiko built immense customer trust, met export requirements with ease and saw a significant boost in its brand reputation. The SIRIM-backed standard enabled DSR Taiko to confidently penetrate the competitive China market, reinforcing Malaysia's reputation for world-class agricultural products.

“In fact, they have now diversified their offerings with the introduction of Musang King ice cream. This new product has taken off in China, selling out within days at much higher prices,” he added, highlighting the direct correlation between standards and market success.

DSR Taiko's story proves how standards and certifications can drive global success.

THE DSR TAIKO SUCCESS STORY

Among the benefits that DSR Taiko gained with the development of a dedicated standard were:

- **Higher credibility among customers** – because they meet recognised safety and quality benchmarks
- **Wider market reach** – including international markets that require certified standards
- **Competitive edge** – by showing commitment to high standards and innovation

BRIDGING DOMESTIC NEEDS AND INTERNATIONAL BENCHMARKS

A critical challenge lies in ensuring that the standards developed are both achievable for local businesses and respected internationally. This balance is achieved through rigorous, inclusive processes. Standards are developed according to SIRIM's procedures, which are in line with national and international practices, ensuring the participation of all relevant stakeholders and experts.

“While adhering to international standards is important, the cost of achieving compliance can sometimes be prohibitive for smaller businesses. This is where SIRIM Academy's role becomes that of a pragmatic facilitator, helping industries develop standards that are more achievable, while still being validated through rigorous conformity assessments,” noted Azhar.

NAVIGATING THE EXPORT ECOSYSTEM: COMPLIANCE AND CONFRONTING CHALLENGES

In the global export ecosystem, compliance is the price of entry. Its importance for market access, risk mitigation and trade facilitation cannot be overstated. Non-compliance can lead to rejected shipments, legal liabilities and reputational damage.

“The most common gap is the high cost of compliance, which is a significant financial burden for small and medium enterprises (SMEs). This is compounded by infrastructure limitations, where existing facilities are not designed to meet international requirements,” continued Azhar.

A lack of awareness and expertise about complex export regulations and documentation, alongside navigating geopolitical risks and sanctions, further complicates the journey for local firms.

To address these hurdles, SIRIM Academy offers a robust support system. This includes targeted training programmes on ISO standards and sector-specific compliance, hands-on consultancy to guide businesses through certification and flexible e-learning platforms for accessible upskilling. A key initiative is the certification of personnel, which builds internal capabilities for quality assurance and auditing within companies.

Beyond specific standards, the Academy's Business Transformation Programme (BTP) takes a holistic view. It encompasses Lean Management to reduce waste, Green 5S to enhance workplace productivity, Total Preventive Maintenance to optimise assets, Customer Service Management to delight customers and Innovation to drive competitiveness via training and consultations.

"The Green 5S is a Japanese concept we adapted for the Malaysian industry, which creates organised, efficient and sustainable workspaces. Furthermore, SIRIM Academy helps companies integrate multiple management systems, like quality, environment and safety, allowing them to undergo a single, consolidated audit instead of multiple disruptive ones, saving time and millions in lost production," Azhar elaborated.

INCLUSIVITY AND STRATEGIC ALIGNMENT

For Malaysia to thrive on the global stage, a proactive approach to capability-building is essential. Looking ahead, the nation's industries must cultivate strengths in four critical areas: digital transformation (including artificial intelligence, Internet-of-Things and automation), robust sustainability through Environmental, Social and Governance (ESG) compliance, a culture of continuous innovation and a global, export-ready mindset.

In direct response, SIRIM Academy's training programmes are evolving to be more industry-specific, modular and future-oriented. A deep commitment to upskilling and reskilling is at the heart of this effort.

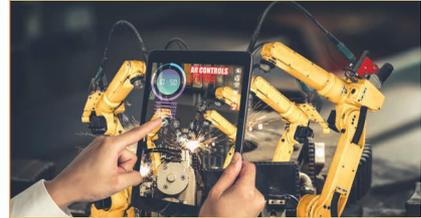
"As we are closely aligned with industry needs, we can better equip graduates and professionals with practical, real-world skills that employers are actively seeking. Strategic collaborations with technical and vocational education training (TVET) institutions and platforms like the Ministry of Human Resources's MyMAHIR play a crucial role in bridging the skills gap, ensuring that the workforce is qualified and ready to meet the demands of today's fast-evolving job market," said Azhar.

SIRIM Academy's vision for this effort is tightly aligned with national priorities. Key goals include expanding training in emerging fields like artificial intelligence, green technology and electric vehicles, and strengthening international partnerships to foster joint ventures and secure global recognition for Malaysia's industry standards.

Underpinning this forward-looking strategy is a commitment to inclusive growth and strategic alignment. This means supporting SMEs and bumiputera entrepreneurs through tailored programmes and ensuring all initiatives are synergised with national policies like the New Industrial Master Plan and MyDIGITAL blueprint.

"Our ultimate mission is one of continuous improvement and active stakeholder engagement, ensuring that SIRIM Academy's work remains relevant, impactful and excellent," asserted Azhar.

By equipping local businesses with the tools to meet and exceed global benchmarks, it is doing more than preparing them for export; it is preparing them to lead.



KEY GOALS

- Strengthening international partnerships
- Expanding training:
 - Artificial Intelligence
 - Green Technology
 - Electric Vehicles

Our ultimate mission is one of continuous improvement and active stakeholder engagement, ensuring that SIRIM Academy's work remains relevant, impactful and excellent.



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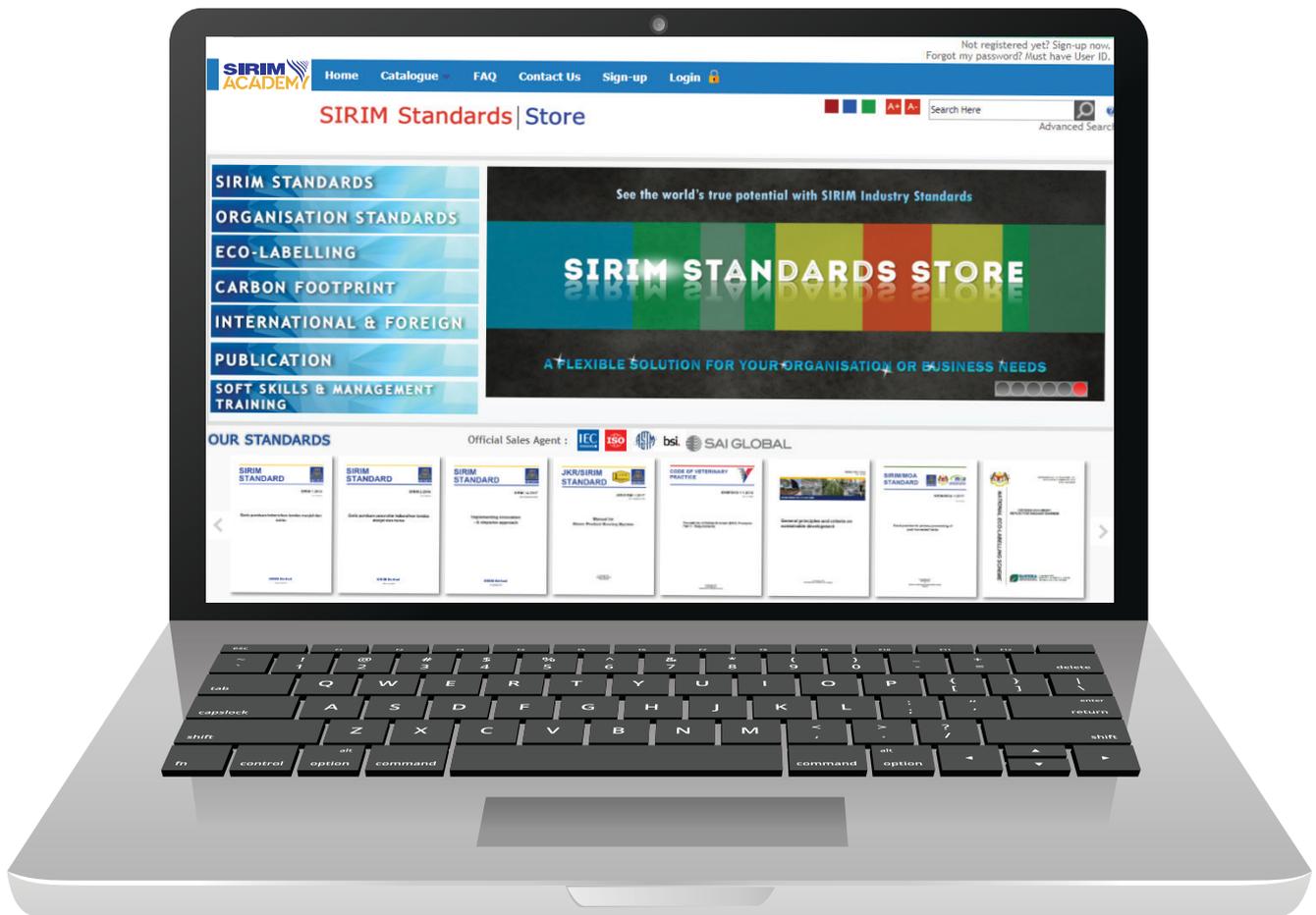
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Journey Towards ESG



Embarking ESG Journey with SIRIM for Sustainable Future

SIRIM is committed to assist and lead industry towards ESG compliances through its comprehensive and holistic sustainability programmes.

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