



Issue 4 · July 2026

Engage with UNITEN Research & Innovation



We are pleased to share Issue 4 of the UNITEN Research & Innovation Newsletter, featuring recent research achievements, funded projects, strategic collaborations and high-impact publications across the UNITEN research community.

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IN FOCUS

AI, the Earth and Our Energy Future

UNITEN Hosts Tan Sri Leo Moggie 6th Lecture Series 2026 on AI and the Future of Energy



[Universiti Tenaga Nasional \(UNITEN\)](#) hosted the Tan Sri Leo Moggie 6th Lecture Series 2026 on 24 June at the National Energy Centre, under the Tan Sri Leo Moggie Distinguished Chair in Energy Informatics. Professor Cedric John of Queen Mary University of London delivered the keynote, "Beneath the Surface: AI, The Earth and Our Energy Future," exploring how artificial intelligence helps geologists locate critical minerals and convert them into usable energy, supporting Malaysia's energy transition.

Welcoming attendees, Emeritus Professor Dato' Dr. Halimah Badioze Zaman said AI helps researchers uncover patterns once invisible to traditional methods, while Professor John reminded students that AI is powerful but lacks genuine human intelligence. UNITEN's Board of Governors, TNB leadership and students attended, reflecting the university's commitment to student exposure to global research expertise.

[Read the full story >](#)

INTERNATIONAL SYMPOSIA AND PARTNERSHIPS

Global Research Engagement

AUSTRALIA · RMIT UNIVERSITY, MELBOURNE

UNITEN and NEC Strengthen International Research Collaboration with RMIT University



UNITEN, together with the National Energy Centre (NEC), marked a milestone in international research collaboration with the EV Living Lab at RMIT University, Melbourne, Australia, on 24 July 2025. The collaboration focuses on research in AI and energy across three strategic areas: Intelligent Grid Planning and Management, Market Integration and Grid Flexibility, and Transport Electrification. The engagement opens the door to joint research projects, talent development and future institutional partnerships in AI and energy.

[Read the full story >](#)

INDIA · SPARC WORKSHOP, CHENNAI

UNITEN Deputy Vice-Chancellor Speaks at International SPARC Workshop on Sustainable Mobility



Prof. Ir. Dr. Vigna Kumaran Ramachandaramurthy, FASc, Deputy Vice-Chancellor (Research & Innovation), gave a keynote at the international SPARC workshop on sustainable mobility in Chennai, India, on 6 July 2026. Organised by SRM Institute of Science and Technology with the University of Nottingham under the SPARC Scheme, the workshop convened academics from around the world to advance research in electric mobility and sustainable energy systems, reflecting UNITEN's expanding international research network.

[Read the full story >](#)

RUSSIA · NEO PROGRAMME

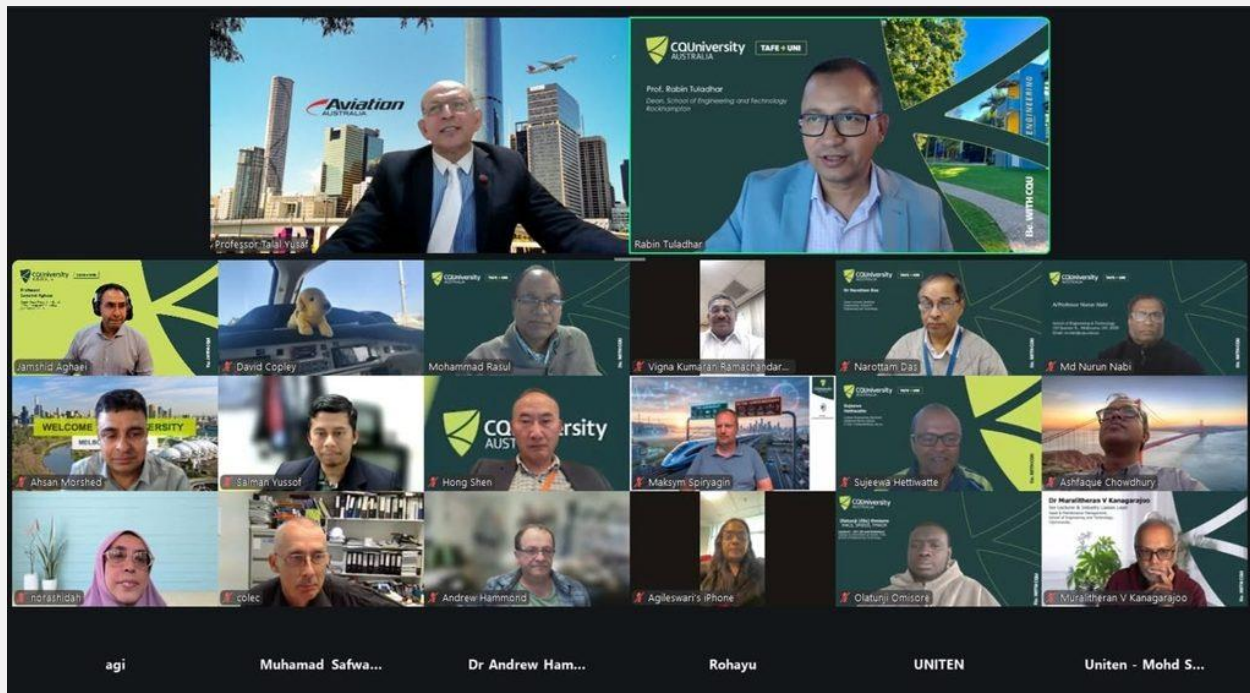
UNITEN Strengthens International Engagement in Nuclear Education



Assoc. Prof. Dr. Nora Yusma Mohamed Yusoff, Director of the Institute of Energy Policy and Research (IEPRe), represented UNITEN and Malaysia at the Nuclear Education Outreach Programme for Newcomer Countries in Moscow, Russia, from 22 to 27 June 2026. Organised by the Rosatom Corporate Academy with the IAEA, the programme strengthens human capital development and capacity building for nuclear energy education, supporting Malaysia's readiness to explore nuclear energy as part of its energy transition.

AUSTRALIA · CQU & AVIATION AUSTRALIA

UNITEN Strengthens Global Research Collaboration through Joint Symposium on Industry 5.0



UNITEN, together with CQUniversity Australia (CQU) and Aviation Australia, co-organised the CQU–UNITEN–Aviation Australia Joint Symposium on Industry 5.0-Driven Transition in Critical Infrastructure Systems on 25 June 2026. Held online, the symposium explored energy transition, drone technology, artificial intelligence and quantum technologies.

UNITEN's keynote speakers were Prof. Ir. Dr. Vigna Kumaran Ramachandaramurthy; Prof. Ir. Dr. Shaliza Binti Ibrahim; Prof. Ir. Dr. Agileswari Ramasamy; Prof. Dato' Ir. Dr. Norashidah Md Din; and Prof. Ir. Dr. Salman Bin Yussof. The symposium marked another step forward in academia–industry collaboration on Industry 5.0.

[Read the full story >](#)

INSTITUTIONAL LEADERSHIP

Research Leadership at UNITEN

AAIBE CHAIR SPOTLIGHT



Prof. Ir. Dr. Shaliza Ibrahim, CEng, FIChemE, FASc

AAIBE Chair of Renewable Energy

Institute of Sustainable Energy, Universiti Tenaga Nasional

UNITEN is proud to feature Prof. Ir. Dr. Shaliza Ibrahim, AAIBE Chair of Renewable Energy at the Institute of Sustainable Energy. A distinguished chemical engineer, researcher and academic leader, she brings 36 years of experience from Universiti Malaya, where her leadership journey culminated in her appointment as Deputy Vice-Chancellor (Research and Innovation).

Prof. Shaliza is internationally recognised for her contributions to multiphase mixing and hydrodynamics, anaerobic bioprocess engineering, waste-to-resource conversion and biohydrogen production. Her work has advanced sustainable approaches for transforming organic waste streams into valuable energy resources, supporting circular economy practices and low-carbon energy systems.

At UNITEN, she provides strategic leadership in renewable energy research encompassing biofuels, biomass valorisation, biochar, green hydrogen and enabling clean-energy technologies. Her expertise will further strengthen UNITEN's contribution to Malaysia's clean-energy transition and resource sustainability agenda.

Beyond UNITEN, Prof. Shaliza is a Fellow and Council Member of the Academy of Sciences Malaysia, Co-Chair of the Malaysia Open Science Alliance and Malaysia's Focal Point for UNESCO's Recommendation on Open Science. She also serves as Sector Lead for Renewable Energy under the Malaysia Blue Economy Blueprint and contributes internationally to responsible research assessment and publishing reform.

As AAIBE Chair of Renewable Energy, Prof. Shaliza brings extensive research expertise, strategic leadership and strong national and international networks that will enhance UNITEN's research excellence, interdisciplinary collaboration and thought leadership in sustainable energy.

PRINCIPAL FELLOW SPOTLIGHT



Ir. Dr. Sanjayan Velautham

Principal Fellow, Universiti Tenaga Nasional

UNITEN is proud to feature Ir. Dr. Sanjayan Velautham, Principal Fellow, whose distinguished career spans more than 35 years across academia, government, industry and international organisations.

A recognised leader in the energy sector, Ir. Dr. Sanjayan has contributed extensively to energy policy and regulation, renewable energy, energy efficiency, sustainable infrastructure, ESG integration and regional energy cooperation. His career includes senior roles with Tenaga Nasional Berhad, the ASEAN Centre for Energy, the Sustainable Energy Development Authority Malaysia, the Energy Commission, the United Nations Development Programme, A*STAR Singapore, General Electric and Universiti Teknologi Malaysia.

Internationally, he has served on the Advisory Board of the Asia Pacific Energy Research Centre, the World Economic Forum's Global Future Council on Energy and the United Nations ESCAP Asia-Pacific Network of Energy Think Tanks. In 2019, he received the ASEAN Excellence in Energy Management – Individual Award.

As UNITEN's Principal Fellow, Ir. Dr. Sanjayan brings extensive strategic expertise, international experience and strong professional networks that will strengthen the university's research excellence, industry collaboration and thought leadership in supporting Malaysia's sustainable energy transition and low-carbon development agenda.

NATIONAL AND INTERNATIONAL GRANTS

Research Funding and Project Awards

UNITEN Researchers Secure GET Grant 2026 (Cycle 1)



Congratulations!
to the Recipients of
GET GRANT 2026 (Cycle 1)
Geran Penyelidikan Eksploratori dan Transformatif (GET) Tahun 2026

UNIVERSITI TENAGA NASIONAL
The Energy University

REC
Research Excellence Centre

 Ts. Dr. Wong Leong Sing Institute of Energy Infrastructure (IEI) / College of Engineering (COE) PROJECT TITLE Synergistic Effects of Wood Sawdust Fibers and One-Part Geopolymer Cement with Calcined Wood Sawdust Ash on the Bonding Mechanism of Geopolymer Concrete for Sustainable Waste-to-Wealth Construction ALLOCATION RM 167,800.00	 Ir. Dr. Azfarizal Bin Mukhtar Institute of Sustainable Energy (ISE) / College of Engineering (COE) PROJECT TITLE Investigating Hydrodynamic Mechanisms and Wavelength-Size Correlations of Breakwater Oscillating Water Columns in Malaysian Coastal Conditions ALLOCATION RM 129,020.00	 Assoc. Prof. Dr. Chai Mee Kin Institute of Sustainable Energy (ISE) / College of Engineering (COE) PROJECT TITLE Investigation of the Correlation between the Physicochemical Properties of Wet Microalgae Biomass with Extraction Performance of Microwave-Assisted Lipid Extraction for Biofuel Production ALLOCATION RM 80,000.00
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UNIVERSITI TENAGA NASIONAL
(UNITEN)

Grant awarded by the Ministry of
Higher Education, Malaysia

Total Grant Allocation Awarded:
RM376,820.00

Three UNITEN researchers have secured the Geran Penyelidikan Eksploratori dan Transformatif (GET) 2026, Cycle 1, from the Kementerian Pendidikan Tinggi, Malaysia. Congratulations to Ts. Dr. Wong Leong Sing, Ir. Dr. Azfarizal Bin Mukhtar and Assoc. Prof. Dr. Chai Mee Kin, whose projects span sustainable construction, coastal engineering and biofuel production.

[Read the full story >](#)

UNITEN Researchers Awarded DSRG and DSRGX Grants from MCMC

Congratulations!

Assoc. Prof. Ts. Dr. Amar Hisham Bin Jaaffar
Institute of Energy Policy & Research (IEPR) | UNITEN Business School (UBS)

Digital Society Research Grant (DSRG)
Strengthening Postal Security in Malaysia in the Era of E-Commerce and Digitalisation

Total Amount of
RM 10,000
From Malaysian Communications and Multimedia Commission (MCMC)

Dr. Wan Noordiana Wan Hanafi
Institute of Energy Policy & Research (IEPR) | UNITEN Business School (UBS)

Digital Society Research Grant for Industry (DSRGX)
Digital Access and Equity in Communications and Multimedia Services for Malaysia's Underserved Groups

Total Amount of
RM 10,000
From Malaysian Communications and Multimedia Commission (MCMC)

www.uniten.edu.my facebook.com/uniten

Assoc. Prof. Ts. Dr. Amar Hisham Bin Jaaffar and Dr. Wan Noordiana Wan Hanafi, from UNITEN Business School (UBS) and the Institute of Energy Policy and Research (IEPR), have been awarded research grants from the Malaysian Communications and Multimedia Commission (MCMC), covering postal security in the e-commerce era and digital access and equity for underserved groups.

[Read the full story >](#)

YAYASAN CANSOLOR UNITEN (YCU)

YCU Awards RM300,000 to Launch 17 Community Energy Projects



Congratulations!

YCUCE 2026

Grant Recipients

— Yayasan Canselor Universiti Tenaga Nasional Community Energy Grant —

17 Project Leaders

RM300,000 Total Awarded

COE College of Engineering

Mr. Wong Jee Khai	IEI
STEM Education for Orang Asli	
Dr. Filzah Hazirah Binti Jaffar	INE
Development of a Community-Based Sustainable Energy Literacy Module Incorporating Nuclear Energy Awareness	
Dr. Nurlaia Binti Syamsul Bahri	INE
NextGen Voices: Future Energy Public Speaking Challenge 2026	
Ms. Nurainaa binti Kabilmihharbi	INE
Workplace Occupational Risk Knowledge (WORK+) among office workers in Grab HQ Malaysia	
Ts. Dr. Safwan Bin Shalbi	INE
Empowering Communities Through Accessible Radiation Education Kits	
Ms. Ayuniza binti Ahmad	IPE
Empowering Orang Asli Through Robotics and STEM Education	

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CCI College of Computing & Informatics

Ts. Marina binti Md. Din	IICE
AI-Driven Smart Classroom Energy Monitoring Using IoT	
Ts. Dr. Lim Kok Cheng	IICE
Towards a Smart Sustainable Island: An AI-ESG Digital Twin Framework for Tourism Management in Langkawi, Malaysia	
Dr. Nur Aimi Syagilah binti Aziz	IICE
A Community-Oriented Microbit Solar Cell Off-Grid Kit for Hands-On STEM and Sustainable Energy Education	
Dr. Norshuhani binti Zamin	IICE
IndieBots: Empowering Young Indigenous STEM Innovators through Renewable Energy Robotics Programmes	
Ts. Dr. Noor Akma binti Abu Bakar	IICE
Empowering Future Engineers through Smart Energy STEM Workshop and STEM Excellence Camp for Technical School Students	
Ts. Dr. Neesha a/p Jothi	IICE
Enhancing AI Readiness Among Neglected Children Through a Smart AI Literacy Mobile Application	
Ms. Nur Izzati Binti Ab Kader	IICE
SmartMind Youth: A Digital Wellness Framework for Mental Health Literacy Among Teenagers	

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UBS UNITEN Business School

Pn. Juliana Anis binti Ramli	IEPR
Energy-Smart Youth: Empowering Students for Sustainable Electricity Use and Community Energy Awareness	
Ms. Sahaida Laily binti Md Hashim	IEPR
Enhancing Carbon Pricing Literacy Among Future Finance and FinTech Professionals in Pahang Towards Equitable Energy Transition	

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CCeD College of Continuing Education

Dr. Nurulbahiah binti Awang	IEI
Strengthening Community Resilience through Flood Awareness and Energy Sustainability: A Community Intervention Model Integrating People, Planet, and Prosperity (3Ps)	
Dr. Yee Chiew Ling @ Vivian	IEPR
The Effect of Energy Literacy Content Intervention based on the Integrated Behaviour Model (IBM) on Energy Transition: A Social Media Based Study	

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Our sincere appreciation goes to Yayasan Canselor Universiti Tenaga Nasional (YCU) for its generous funding support for YCUCE 2026.

Yayasan Canselor Universiti Tenaga Nasional (YCU) has awarded RM300,000 to support 17 community-focused energy projects under YCUCE 2026. The projects span flood resilience, energy literacy, STEM and AI education, digital wellness, carbon-pricing awareness and radiation safety, led by researchers across UNITEN's Colleges of Engineering, Computing and Informatics, UNITEN Business School, and Continuing Education. UNITEN thanks YCU for its generous support and congratulates all 17 recipients.

[Read the full story >](#)

SINGAPORE · NAIHE

Ir. Dr. Chua Yaw Long Appointed Co-Investigator in International Research Project



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NASIONAL**
The Energy University

REC
Research Excellence Centre

Congratulations'-'

Ir. Dr. Chua Yaw Long
Institute of Sustainable Energy (ISE)
College of Engineering (COE)

on his appointment as

**Co-Investigator in an
International Research Project**

 Funded under the
**NAIHE Small Research
Project Grant (SRPG) 2026**

 Led by Associate Professor
Dr. Koh Yit Yan,
Newcastle Australia Institute of
Higher Education (NAIHE), Singapore

 Grant Amount
SGD 4,100

 Project Title:
**Perceptions of Staff and Students
Towards Special and Inclusive Education
in Higher Education Institutions in
Singapore and Malaysia: An Analysis
of Policies and Practice**

Ir. Dr. Chua Yaw Long has been appointed Co-Investigator in an international research project funded under the NAIHE Small Research Project Grant (SRPG) 2026 by the Newcastle Australia Institute of Higher Education, Singapore. Led by Associate Professor Dr. Koh Yit Yan of NAIHE, the project examines inclusive education policies and practices for staff and students across Singapore and Malaysia, contributing to a broader understanding of inclusive education in both countries.

[Read the full story >](#)

GLOBAL PLATFORMS AND EXPERT ROLES

Appointments, Recognition and Innovation

TÜRKIYE · GİTEX AI

Ts. Dr. Wong Leong Sing to Showcase WoodAshGeoDuraCrete at Global Leaders Conference and GİTEX AI Türkiye 2026

Congratulations'

UNIVERSITI TEKNOLOGI MALAYSIA

REC
The Energy University Research Excellence Centre

Ts. Dr. Wong Leong Sing

Institute of Energy Infrastructure (IEI)
College of Engineering (COE)

Selected to Represent the
**Malaysia LIF
Alumni Chapter**
at the Global Leaders Conference
and GİTEX AI Türkiye 2026

 **GLOBAL LEADERS CONFERENCE**
Istanbul, Türkiye
7–11 September 2026

 **GLOBAL PARTICIPATION**
63 innovators and
professionals from
21 countries

 **INNOVATION SHOWCASE**
WoodAshGeoDuraCrete

 **FULLY SPONSORED**
By the Royal Academy
of Engineering, UK,
including travel and
programme support

Ts. Dr. Wong Leong Sing has been selected to represent the Malaysia Leaders in Innovation Fellowship (LIF) Alumni Country Chapter at the Royal Academy of Engineering's Global Leaders Conference and GİTEX AI Türkiye 2026 in Istanbul from 7 to 11 September 2026. He will showcase his innovation, WoodAshGeoDuraCrete, to an international community of innovators. His participation is fully sponsored by the Royal Academy of Engineering, United Kingdom.

[Read the full story >](#)

FEATURED PUBLICATIONS

Research in Web of Science Q1 Journals

UNITEN researchers continue to advance knowledge across diverse fields, with their work published in leading Web of Science Q1 journals. Featured below is a selection of recent publications.

1. Rare-earth titanates as tunable titanium-based oxide frameworks for sustainable energy conversion and storage

Mohamed N.A., et al. · *Coordination Chemistry Reviews*

This review examines how rare-earth elements can enhance titanium-based oxides for cleaner energy conversion and storage by improving their structural, electronic and catalytic performance.

[View Publication >](#)

2. Next-generation fuel cell technologies empowered by covalent organic frameworks-based materials: A review on emerging potential of COFs for functional membranes and catalytic advancements

Husain A., et al. · *Coordination Chemistry Reviews*

This review explores how covalent organic frameworks can improve fuel cells by enabling more efficient proton-conducting membranes and high-performance catalysts for cleaner energy generation.

[View Publication >](#)

3. Advancing climate change impact assessment on global hydropower systems: Methodologies, models, and recommendations

Raja Abd Jalil R.F., et al. · *Renewable and Sustainable Energy Reviews*

This review examines methods and models for assessing climate change impacts on hydropower and recommends improved data, monitoring and predictive tools to support more resilient water and energy management.

[View Publication >](#)

4. Toward high-performance Li-ion batteries for EVs: A review of fast charging barriers and emerging BTMS solutions

Mohammed A.G., et al. · *Renewable and Sustainable Energy Reviews*

This review examines the barriers to fast charging in electric vehicle batteries and explores advanced thermal management solutions for safer, more efficient and longer-lasting performance.

[View Publication >](#)

5. An adaptive column-level smart power optimizer with hybrid sensing and black-winged kite algorithm for rooftop PV systems under non-uniform irradiance

Satpathy P.R., et al. · *Energy*

This study introduces a smart power optimizer that improves rooftop solar performance under uneven sunlight while reducing system complexity, cost and energy losses.

[View Publication >](#)

6. Large area ternary TiO₂/CdS/g-C₃N₄ photoanode for hydrogen evolution by photoelectrochemical water splitting

Mohamad Noh M.F., et al. · *Renewable Energy*

This study develops a scalable photoanode that enhances solar-driven hydrogen production by improving light absorption, charge transfer and performance in large-area water-splitting systems.

[View Publication >](#)

7. Advanced carbon and non-carbon supports for high performance direct ethanol fuel cells: a comprehensive review

Ramli Z.A.C., et al. · *Fuel*

This review examines advanced catalyst-support materials that improve the performance, durability and cost-effectiveness of direct ethanol fuel cells for practical clean-energy applications.

[View Publication >](#)

8. Mechanistic insights into hydrogen storage in MoSe₂-Ni(OH)₂-g-C₃N₄ via optimized weak chemisorption

Rameshbabu R., et al. · *Fuel*

This study develops a composite material that improves hydrogen storage by enabling faster hydrogen release at lower temperatures under moderate operating conditions.

[View Publication >](#)

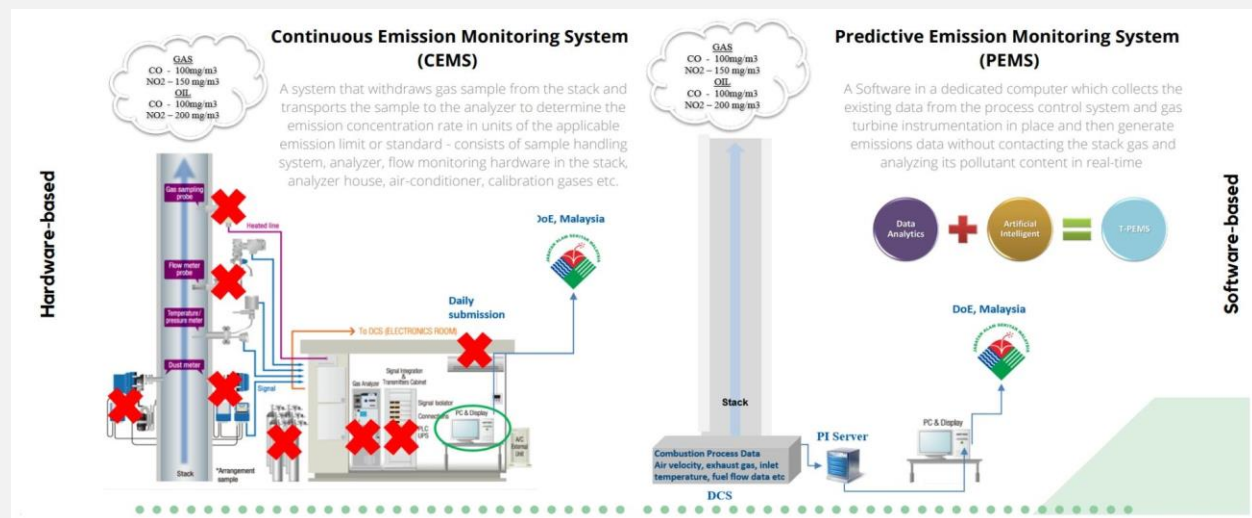
INNOVATION IN ACTION

URND Innovation Products: Research Translated into Real-World Solutions

UNITEN R&D Sdn. Bhd. (URND) continues to transform research into practical innovations that address industry needs and create value for society.

ENVIRONMENTAL MONITORING TECHNOLOGY

TNB Predictive Emission Monitoring System



TPEMS is a data-driven system that predicts and estimates environmental emissions in near real time. Developed with TNB Research Sdn. Bhd., it supports regulatory compliance and more efficient environmental monitoring in the energy and industrial sectors.

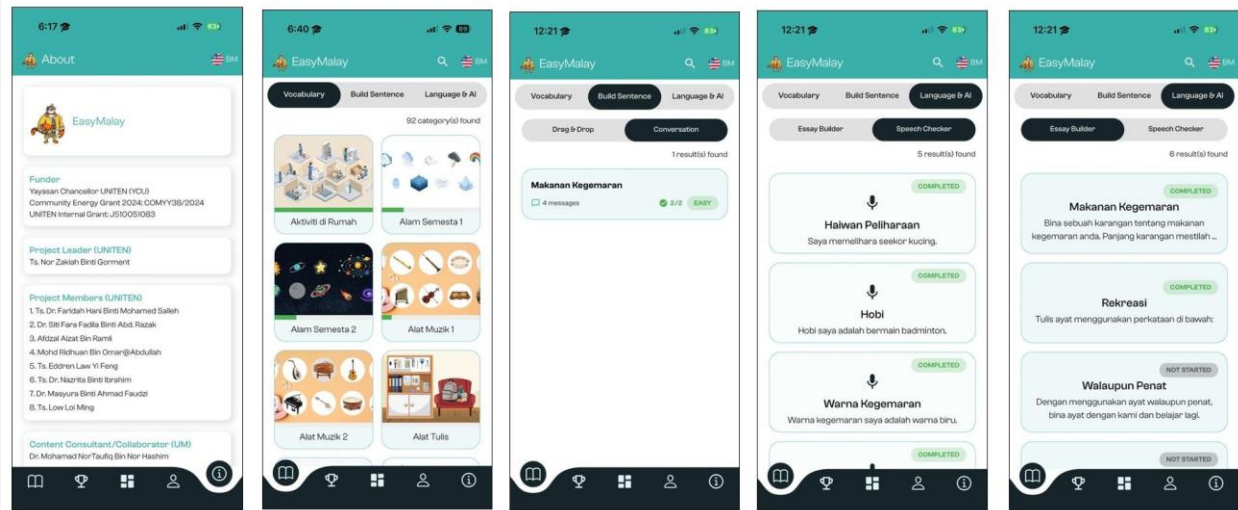
Inventor: Prof. Ir. Ts. Dr. Tiong Sieh Kiong

Key Features:

- Near real-time emission prediction
- Reduced reliance on continuous physical monitoring equipment
- Improved operational efficiency
- Scalable deployment

MOBILE LEARNING APPLICATION

EasyMalay App



EasyMalay is a mobile learning application designed to make Bahasa Malaysia learning more interactive and accessible for international students. Currently used at Xi'an International Studies University, China, the app supports wider adoption of Bahasa Malaysia through digital learning.

Inventor: Ts. Nor Zakiah Binti Gorment

Key Features:

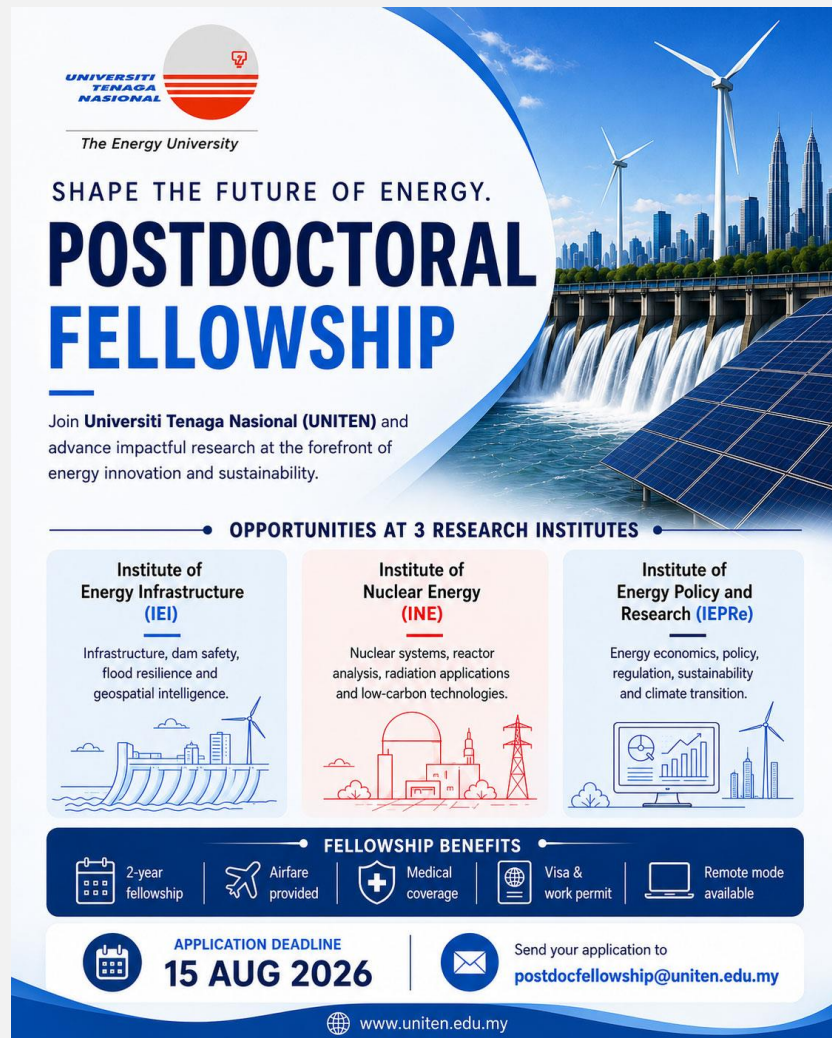
- Interactive lessons
- Personalised pronunciation guidance using lecturers' voices
- Syllabus-aligned content
- Flexible self-paced learning

ENGAGE WITH UNITEN

Collaborate, Partner, and Study With Us

WE ARE HIRING

UNITEN Invites Applications for Postdoctoral Fellowships



The banner features a large background image of a dam with water flowing over it, solar panels in the foreground, and a city skyline with wind turbines in the background. The text is overlaid on a white circular graphic on the left side.

UNIVERSITI TENAGA NASIONAL
The Energy University

SHAPE THE FUTURE OF ENERGY.

POSTDOCTORAL FELLOWSHIP

Join **Universiti Tenaga Nasional (UNITEN)** and advance impactful research at the forefront of energy innovation and sustainability.

• OPPORTUNITIES AT 3 RESEARCH INSTITUTES •

Institute of Energy Infrastructure (IEI)

Infrastructure, dam safety, flood resilience and geospatial intelligence.



Institute of Nuclear Energy (INE)

Nuclear systems, reactor analysis, radiation applications and low-carbon technologies.



Institute of Energy Policy and Research (IEPRE)

Energy economics, policy, regulation, sustainability and climate transition.



• FELLOWSHIP BENEFITS •

 2-year fellowship

 Airfare provided

 Medical coverage

 Visa & work permit

 Remote mode available

APPLICATION DEADLINE
15 AUG 2026

Send your application to postdocfellowship@uniten.edu.my

www.uniten.edu.my

UNITEN invites applications for two-year postdoctoral fellowships at the Institute of Energy Infrastructure (IEI), Institute of Nuclear Energy (INE), and Institute of Energy Policy and Research (IEPRE). Research areas include sustainable energy infrastructure, nuclear energy and applications, energy policy, economics, sustainability, and climate transition.

The fellowship may be undertaken either on-site at UNITEN or fully remotely. For on-site fellows, support includes airfare, medical coverage, and assistance with visa and work permit arrangements.

Interested candidates are invited to submit their applications or enquiries to postdocfellowship@uniten.edu.my.

RESEARCH COLLABORATIONS & RESEARCH ATTACHMENTS

Partner With Us

UNITEN welcomes research collaborations, research attachments, and strategic engagements with universities, research institutions, industry partners, government agencies, and relevant organisations.

For collaboration or research attachment discussions, interested parties may contact Prof. Ir. Dr. Vigna Kumaran, FASc, Deputy Vice-Chancellor (Research & Innovation), at Vigna@uniten.edu.my, or Assoc. Prof. Ts. Dr. Jaspaljeet Singh, Director, Research Excellence Centre, at Jaspaljeet@uniten.edu.my.

POSTGRADUATE OPPORTUNITIES

Interested in Postgraduate Study?

UNITEN's College of Graduate Studies offers research-intensive Master's by Research and PhD programmes, with supervision from experienced academics and industry-linked researchers.

Whether you aim to advance knowledge or solve real-world challenges, UNITEN offers the environment to take your research career forward.

UNITEN Research & Innovation

Advancing research. Creating impact. Turning ideas into reality.

UNITEN · Jalan IKRAM-UNITEN · 43000 Kajang · Selangor Darul Ehsan · Malaysia
research@uniten.edu.my