THE 3RD VIETNAM-KOREA INTERNATIONAL SYMPOSIUM ON POWER ELECTRONICS - THE 2026 SPRING WORKSHOP ON POWER ELECTRONICS AND APPLICATIONS

VKSPE-SWPEA

2026

CONFERENCE PROGRAM

Nha Trang University, Khanh Hoa, Vietnam

01 – 03 Feb, 2026

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WELCOME MESSAGE

Prof. Pham Quoc Hung,
Vice President of Nha Trang University

Distinguished Guests, Esteemed Scholars, and Dear Colleagues,
Good morning.
It is my great pleasure and distinct honor to welcome you all to Nha Trang University - a campus known not only for its academic excellence but also for its beautiful and inspiring coastal settings. We are gathered here for the 3rd Vietnam-Korea Symposium on Power Electronics and the 2026 Spring Workshop on Power Electronics and Applications. These prestigious events are proudly co-organized by Nha Trang University and the Korea Institute of Power Electronics (KIPE) – Vietnam Chapter, Ho Chi Minh City University of Technology and Engineering (HCM-UTE), Ho Chi Minh City University of Industry and Trade (HUIT), Ho Chi Minh City University of Technology (HCMUT), Vietnam Power Electronics Community (VPEC).

This gathering of brilliant minds represents an exciting opportunity to exchange knowledge, foster international collaborations, and push the boundaries of power electronics.
In an era where power electronics technology is more critical than ever, this symposium serves as an essential platform for more than 100 experts, researchers, and industry leaders from Korea, Vietnam, and across the globe. Together, we will share insights, discuss complex challenges, and explore new frontiers. The synergy between our two nations has consistently driven progress in this field. I am confident that the research presented here will not only address the pressing issues of today but also pave the way for future innovations in smart grids, renewable energy, and robotics and automation systems.
On behalf of the organizing committee, I would like to extend our sincere gratitude to the KIPE, HCM-UTE, HUIT, HCMUT, VPEC, as well as our distinguished speakers and reviewers, whose dedication has made this event possible.
We also wish to express our special thanks to our sponsors: VATEC Energy Engineering Consulting Company, Maihi Vietnam Company (INEWSOLAR), Tumiki Joint Stock Company, Quynh An Construction and Technology Company, Vietnam Electricity Corporation (EVN), and the Korean Company - Zeta Electric. Your generous financial support and partnership are invaluable to the success of this symposium.
Once again, welcome to the 3rd VKSPE-SWPEA 2026! I wish you all a productive, successful, and enriching conference.
Thank you very much.

VKSPE - SWPEA 2026 PROGRAM AT A GLANCE

Program at Glance of VKSPE-SWPEA 2026													
1 Feb		Reception at Convention Hall No.1, Nha Trang University (2 Nguyen Dinh Chieu St., North Nha Trang ward, Khanh Hoa, Vietnam)											
Time		8:30 Feb 1, 2026											
8:30 – 17:00		**Early Registration**											
13:00	14:00	**Tutorial Session A** Chairs: Dr. Duy-Dinh Nguyen (HUST) Dr. Nguyen Thanh Phuong (NTU)		**Tutorial 1: Interconnection Studies, Experience from North America's Power Systems** Dr. Thinh Pham (PSEG Long Island, USA) (online)									
14:00	15:00			**Tutorial 2: Electromagnetic Transient Modelling for Interconnection and Operation Studies** Dr. Thanh T. Nguyen (New York, USA) (online)									
15:00	15:15	Coffee Break											
15:15	16:15	**Tutorial Session B** Chairs: Dr. Nguyen Thanh Phuong (NTU) Dr. Duy-Dinh Nguyen (HUST)		**Tutorial 3: Actuation Research for Future Industries - Challenges and Opportunities** Dr. Trung M. Duong (ABB Corp. Research, Germany) (offline)									
16:15	17:15			**Tutorial 4: From Concept to Market - Navigating the Journey from Ideas to Products** Dr. Duy-Dinh Nguyen (Hanoi University of Science and Technology, Vietnam) (offline)									
		Welcome Party (*Note: limited seats*)											
2 Feb		Reception at Convention Hall No.1, Nha Trang University											
Time		8:30 Feb 2, 2026											
8:30 – 17:00		**Registration**											
8:30	9:00	**Opening Ceremony** 8:30–8:40: **Speech 1**, Prof. Pham Quoc Hung (Vice President of Nha Trang University) 8:40–8:50: **Speech 2**, Prof. Seung-Ho Song (Kwangwoon University, President of KIPE) 8:50–9:00: **Speech 3 on brief report/information of symposium**, Assoc. Prof. Nguyen Gia Minh Thao (Shimane University)											
9:00	9:30	**Photo session with all participants, 30 mins**											
9:30	10:00	**Keynote Session A** Chair: Assoc. Prof. Nguyen Gia Minh Thao (Shimane University)		**Keynote Lecture 1: Modelling and Grid Support Control of Wind Power Plant** Prof. Seung-Ho Song (Kwangwoon University, President of KIPE)									
10:00	10:30			**Keynote Lecture 2: Interdisciplinary Research in Kazakhstan: from Electric Drives to Magnetic Particle Imaging**, Prof. Ton Duc Do (Nazarbayev University, VPEC Chairman)									
10:30	10:45	Coffee Break											
10:45	11:15	**Keynote Session B** Chair: Assoc. Prof. Phan Quoc Dung (HCMC University of Technology)		**Keynote Lecture 3: Magnetic Material Characteristics for Improving Performance of Permanent Magnet Motors**, Prof. Jang-Young Choi (Chungnam National University)									
11:15	11:45			**Keynote Lecture 4: AI-Assisted Reliability for Next-Generation Electric Powertrains in the Renewable Energy Transition**, Prof. Van Khang Huynh (University of Agder)									
11:50 – 13:00		Lunch											
2 Feb		Room 1 (**Workshop #1**)			Room 2 (Session 1-A)		Room 3 (Session 2)		Room 4 (Session 3-A)		Room 5 (Session 4)		
Time		PID. No	Chair		PID. No	Chair	PID. No	Chair	PID. No	Chair	PID. No		
13:00	13:20	01	**Prof. Van Khang Huynh** (University of Agder) & **Prof. Sungmin Kim** (Hanyang University ERICA Campus)		322	**Assoc. Prof. Tan Luong Van** (HCMC University of Industry and Trade)	311	**Prof. Ton Duc Do** (Nazarbayev University)	275	**Dr. Trung M. Duong** (ABB Corp. Research)	289	**Dr. Duy-Dinh Nguyen** (Hanoi University of Science and Technology)	
13:20	13:40	02			327		355		407		402		
13:40	14:00	03			339		371		335		377		
14:00	14:20	04			345		436		450		378		
14:20	14:40	05			347		468						
14:40 – 15:20		Poster Session 1 - Chair: **Dr. Nguyen Dinh Hoa** (Hanoi University of Science & Technology, Visiting Assoc. Prof. at Kyushu Univ.)											
		Coffee Break											

2 Feb	Room 1 (**Workshop #2**)		Room 2 (Session 1-B)		Room 3 (Session 6-A)		Room 4 (Session 3-B)		Room 5 (Session 5)	
Time	PID. No	Chair	PID. No	Chair	PID. No	Chair	PID. No	Chair	PID. No	Chair
15:20 – 15:40	06	**Prof. Ton Duc Do** (Nazarbayev University) & **Prof. Hag-Wone Kim** (Korea National Univ. of Transportation)	380	**Assoc. Prof. Tan Luong Van** (HCMC University of Industry and Trade)	396	**Dr. Nguyen Thanh Phuong** (Nha Trang University)	323	**Dr. Huynh Thanh Anh** (University of Nottingham)	343	**Dr. Trinh Hoai An** (HCMC University of Technology and Engineering)
15:40 – 16:00	07		313		277		390		384	
16:00 – 16:20	08		412		315		403		443	
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16:40 – 17:00	10				313				305	
17:00 – 17:30	Poster Session 2 - Chair: **Dr. Le Minh Thanh** (Vinh Long University of Technology Education)									
18:00 – 20:00	Gala Banquet									

3 Feb	Room 1 (**Workshop #3**)		Room 2 (Session 1-C)		Room 3 (Session 6-B)		Room 4 (Section 7)		Room 5 (**Workshop #4**)	
Time	PID. No	Chair	PID. No	Chair	PID. No	Chair	PID. No	Chair	Time	Chair
8:30 – 8:50	11	**Assoc. Prof. Phan Quoc Dung** (HCMC University of Technology) & **Prof. Seung-Ho Song** (Kwangwoon University)	278	**Assoc. Prof. Do Duc Tri** (HCMC University of Technology and Engineering)	387	**Dr. Nguyen Thanh Phuong** (Nha Trang University)	317	**Dr. Nguyen Phuc Khai** (HCMC University of Technology)	10:10 – 11:50 (PID. No 16 – 20)	**Assoc. Prof. Nguyen Van Nho** (HCMC University of Technology) & **Prof. Hong-Je Ryoo** (Chung-Ang University)
8:50 – 9:10	12		455		273		328			
9:10 – 9:30	13		457		409		354			
9:30 – 9:50	14		397		411		274			
9:50 – 10:10	15				349					
10:10 – 10:40	Poster Session 3 - Chair: **Dr. Ngo Duc Kien** (University of Technology and Education - The University of Danang)									
	Coffee Break									
11:50 – 12:05	**Closing Remarks**									

Session

(Session 1). Power converter Topologies, Design and Control
(Session 2). Electrical Systems and Renewable Energy
(Session 3). Electric Machines and Drives
(Session 4). Electric Vehicle (EV) and battery charging systems
(Session 5). Smart grid, Micro-grid.
(Session 6). Internet of Things (IoTs) and Artificial Intelligence (AI)
(Session 7). Other selected topics

(Poster session). PID. No:

Poster Session 1	291	292	301	310	331	336	362	395	420
Poster Session 2	350	337	365	373	446	293	363		
Poster Session 3	348	424	383	413	415	465	451	325	361

KEYNOTE SPEECHES

(Monday morning, 2nd Feb 2026)

Keynote Session A

Chair: **Assoc. Prof. Nguyen Gia Minh Thao** (Shimane University)

Keynote Session B

Chair: **Assoc. Prof. Phan Quoc Dung** (HCMC University of Technology)

VKSPE-SWPEA

2026

https://vkspe2026.ntu.edu.vn/

KEYNOTE LECTURE 1

Modelling and Grid Support Control of Wind Power Plant

Prof. Seung-Ho Song
Kwangwoon University

Abstract

The increase in IBR (inverter-based resources) due to the expansion of renewable energy has a significant impact on the stability of the power system. To address this, the grid support function of IBR, particularly the provision of synthetic inertia, is essential. Recently, the power system has been facing increasing issues with the decline of synchronous generators and inertia due to the expansion of renewable energy. This has led to a growing need for PID-generation resources to maintain power system stability. This presentation presents the results of developing control technology necessary to support the power system stability of wind turbine synthetic inertia. Through demonstration testing, we demonstrated the synthetic inertia characteristics of wind turbines in a real-world power generation environment, including a 10% or greater increase in output compared to the active power immediately before an event, a rise time of less than 1 second, and a hold time of more than 10 seconds.

KEYNOTE LECTURE 2

Interdisciplinary Research in Kazakhstan: from Electric Drives to Magnetic Particle Imaging

Prof. Ton Duc Do
Nazarbayev University, Kazakhstan VPEC Chairman

Abstract

Interdisciplinary research is increasingly essential for advancing science, innovation, and national technological capacity. In this keynote, I will share my research journey in Kazakhstan and illustrate how diverse scientific domains can be strategically integrated to generate impactful outcomes. I will begin with advanced control engineering, focusing on optimal and observer-based control schemes for high-performance electric motor drives. These efforts include disturbance-observer design, optimal state estimation, and robust control structures that enable precise and efficient actuation across industrial applications.

Building on these foundations, the talk will then extend into renewable energy systems, where control theory, data-driven modeling, and optimization are combined to address pressing challenges in wind-energy extraction and forecasting. Through the development of hybrid learning–model approaches, we have implemented improved prediction frameworks and maximum power point tracking strategies suitable for Kazakhstan's rapidly evolving energy landscape.

Finally, I will move into the emerging biomedical imaging field of Magnetic Particle Imaging (MPI), highlighting how principles from control, electromagnetics, signal processing, and mechanical design converge in this transformative modality. Alongside theoretical investigations into nonlinear magnetization dynamics and scanning trajectories such as Cartesian and Lissajous patterns, our group is developing the first MPI prototype in Kazakhstan. This effort demonstrates how interdisciplinary collaboration can accelerate frontier research, foster local capacity building, and open new pathways for scientific and technological leadership.

Through these examples, the presentation will reflect on the enabling conditions, collaborative structures, and research environments that support successful interdisciplinary development within Kazakhstan's academic ecosystem.

KEYNOTE LECTURE 3

Magnetic Material Characteristics for Improving Performance of Permanent Magnet Motors

Prof. Jang-Young Choi

Chungnam National University

Abstract

Since the advent of neodymium magnets in the late 1980s, permanent magnet (PM) motors have rapidly replaced magnet free motors such as induction motors (IM) or field-wound synchronous motors (FWSM) throughout the industry. In particular, with the recent advent of electric vehicles, the importance of PM motors has been increasing dramatically due to the electrification of various parts as well as traction motors that replace engines.

The role of magnetic materials is very important for improving the performance of permanent magnet motors such as high efficiency, high torque density, light weight, and high heat resistance. It can be easily achieved by applying permanent magnets with high coercivity and residual magnetic flux density to the rotor of PM motors or applying thin silicon steel sheets with high saturation magnetic flux density and good iron loss characteristics to the stator of PM motors. However, these approaches are easy but not preferred because they greatly affect the increase in the price of PM motors and the resulting increase in the price of the entire product. Therefore, the optimal alternative is to use less expensive magnetic materials to satisfy the motor performance requirements while making the design easy to mass-produce. For this reason, the electromagnetic-mechanical design of permanent magnet motors considering material characteristics is becoming very important, and the importance of CAE coupled analysis, which is a key technology for such a design, has been continuously increasing.

In this presentation, we introduce surface-mounted PM motors used in high speed applications, axial-flux PM motors used in in-wheel systems of electric vehicles, and PM assisted synchronous reluctance motors utilizing powdered PMs, and present the characteristics of magnetic materials required for each motor from the perspective of motor performance.

KEYNOTE LECTURE 4

AI-Assisted Reliability for Next-Generation Electric Powertrains in the Renewable Energy Transition

Prof. Van Khang Huynh

University of Agder, Norway; Associate Editor for IEEE Transactions on Transportation Electrification.

Abstract

Next-generation electric powertrains play a central role in the renewable energy transition, driving the need for highly reliable inverter-fed electrical machines, particularly permanent magnet synchronous machines (PMSMs). These machines operate under increasingly dynamic and harsh conditions, and are therefore susceptible to diverse fault mechanisms, including stator winding inter-turn faults, rotor demagnetization, bearing faults, and inverter failures. Ensuring their continuous and safe operation requires advanced condition-monitoring strategies beyond traditional ISO-based maintenance practices.

This keynote presents recent advances in AI-driven fault diagnosis and health monitoring for inverter-fed machines. After reviewing model-based and signal-processing approaches, the talk highlights modern data-driven techniques that leverage machine learning, deep learning, transfer learning, and hybrid frameworks. Practical challenges, including noisy measurements, unbalanced datasets, limited or restricted data, are discussed together with strategies for overcoming them. The effectiveness and robustness of these AI models across realistic operating scenarios are demonstrated through experimental results from real PMSM and multilevel inverter testbeds.

The presentation further highlights the growing role of open datasets, IoT-based data acquisition, and digitalization in predictive maintenance for future electric powertrains. Ongoing applications in wind turbines, hydropower plants, and industrial drives illustrate the impact of AI-enabled condition monitoring on asset integrity management and operational safety. The talk aims to share ongoing insights and stimulate discussion among researchers and industry practitioners on the opportunities and challenges of applying artificial intelligence to future reliable electric powertrains in the renewable energy transition.

DETAILED TECHNICAL SESSIONS
(Monday afternoon, 02nd Feb 2026)

PRESENTATION GUIDELINE

Presentation time: Within 20 minutes.

All session rooms are equipped with a projector, a laptop, a screen, and a laser pointer. The laptops support audio playback. Presenters are required to use only the provided laptop computers. The laptop computers operate on Windows, not macOS. Please be reminded that presenters whose presentation files include audio must notify the technician in advance.

STUDENT PRESENTATION AWARDS

To encourage and recognize outstanding student contributions, the VKSPE-SWPEA 2026 will present the following awards:

- **Best Student Oral Presentation Award**
- **Best Student Poster Presentation Award**

The awards will be evaluated and decided by the Conference Scientific Committee based on the quality of research, clarity of presentation, and overall performance. The award recipients will be announced during the conference closing session.

WORKSHOP #1

Grid Converter

Room G4-01 **13:00 - 14:40**

Chair: **Prof. Van Khang Huynh**
University of Agder
Prof. Sungmin Kim
Hanyang University ERICA Campus

Times	ID Papers	Paper titles
13:00 - 13:20	PID-01	A Comprehensive Review and Comparative Analysis of MPPT Techniques for Photovoltaic Systems Under Uniform and Partial Shading Conditions *Nhan Bon Nguyen*, Thuc Minh Bui and Thanh Lam Le*
13:20 - 13:40	PID-02	Grid-Forming Converter Control Method for Active Power Ripple Reduction Under Unbalanced Grid Conditions *Eui-Cheol Nho**
13:40 - 14:00	PID-03	Load Power Prediction in Smart Solar Microgrid based Gated Recurrent Unit *Nguyen Thanh Phuong**
14:00 - 14:20	PID-04	Design and Control of a Medium-Voltage AC/DC Grid-Interfaced Modular Converter *Sungmin Kim**
14:20 - 14:40	PID-05	Capacitance Minimization In Single-Phase Onboard Battery Charger *Hoang-Vu Nguyen*

WORKSHOP #2

Inverter 1

Room G4-01 **15:20 - 17:00**

Chair: **Prof. Ton Duc Do**
Nazarbayev University
Prof. Hag-Wone Kim
Korea National Univ. of Transportation

Times	ID Papers	Paper titles
15:20 - 15:40	PID-06	Minimum Copper Loss Strategy for Asymmetric Dual Three-Phase PMSMs under Multiple Open-Phase and Switch Faults *Dong-Choon Lee**
15:40 - 16:00	PID-07	Analysis of Torque Pulsation in Permanent Magnet-Assisted Synchronous Machines with Different Permanent Magnet Configurations *Duc-Kien Ngo**
16:00 - 16:20	PID-08	Hybrid Dual-Loop Control for Mitigating Voltage Distortion and Unbalance in Auxiliary Power Unit Inverters of Electric Locomotives *Hag-Wone Kim **
16:20 - 16:40	PID-09	Adaptive Speed Control of Induction Motors Using RBF Neural Network–Assisted PI and Super-Twisting Sliding Mode Control *Ngoc Pham**
16:40 - 17:00	PID-10	Phase Voltage Measurement Independent of Grid Filter Location and Sensor Error Compensation for PWM Converters *Jang-Mok Kim**

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INTERNATIONAL SYMPOSIUM

The Vietnam-Korea Symposium on Power Electronics
The 2026 Spring workshop on Power Electronics And Applications
VKSPE – SWPEA 2026

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SESSION 1-A
Power converter Topologies, Design and Control

Room G4-02 **13:00 - 14:40**

Chair: **Assoc. Prof. Tan Luong Van**
HCMC University of Industry and Trade

Times	ID Papers	Paper titles
13:00 - 13:20	PID-322	Modified Decentralized Phase-Shifted Carrier Modulation for Cascade Modular Multilevel Power Converters *Phu Cong Nguyen and Quoc Dung Phan*
13:20 - 13:40	PID-327	Space Vector Modulation Method for a New Three-Level Five Phase VSI Supplying Open-End Loads *Huu-Cong Vu, Duc-Khanh Hoang, and Quoc-Hoan Tran**
13:40 - 14:00	PID-339	An Digital Implementation of Adaptive PI Controller for DC–DC Boost Converter Based on Reinforcement Learning *Vi-Do Tran and Anh Khoi Tran*
14:00 - 14:20	PID-345	Analysis of Heat Loss and Open Circuit Fault on T-NPC Inverter in Wind Energy Coversion System *Vo Quoc Thai, Nguyen Cong Khai, Ngo Hieu Nghia, Bui Thanh Hieu and Le Minh Thanh*
14:20 - 14:40	PID-347	Optimization of Efficiency and Loss Reduction in LLC Resonant Converters using Soft-Switching and Half-Bridge Rectification *Khan Van Nguyen*, Tam Hoang Huynh, Phu Thanh Thien Ung, Su Thanh Luong, Tinh Thanh Truong, and Tuyen Dinh Nguyen*

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SESSION 1-B
Power converter Topologies, Design and Control

Room G4-02 **15:20 - 17:00**

Chair: **Assoc. Prof. Tan Luong Van**
HCMC University of Industry and Trade

Times	ID Papers	Paper titles
15:20 - 15:40	PID-380	Design and Implementation of a Single-Phase Boost DC/AC Inverter *Trong-Tri Nguyen, Quoc-Anh Le and Hoang-Vu Nguyen*
15:40 - 16:00	PID-406	Evaluation of a Three-Phase Interleaved Boost Converter for Fuel Cell Applications *Phuong Vy Tran, Duy Kha Pham, Nguyen Phi Long Lam, Minh Nhat Phan, Ngoc Bao Tran Huynh, and Quoc Anh Le*
16:00 - 16:20	PID-408	Input Performance Enhanced Based Predictive Concept and Space Vector for Matrix Rectifier *Hoang-Long Dang and Tan Luong Van**
16:20 - 16:40	PID-412	A Simplified Hybrid SVPWM to Reduce Common-Mode Voltage for Two-Level Inverter *Nguyen Thi Kieu, Truong Phuoc Hoa, Nguyen Van Nho*
16:40 - 17:00	PID-304	Control of A Harmonic Current Compensator for Power Quality Improvement *Thanh-Lam Le, Minh Thuan Tran, Hong Nhut Nguyen, Nhan Bon Nguyen, Minh-Hoc Duong Le, Viet Tan Nguyen and Thuc Minh Bui*

SESSION 2
Electrical Systems and Renewable Energy

Room G4-03 **13:00 - 14:40**

Chair: **Prof. Ton Duc Do**
Nazarbayev University, Republic of Kazakhstan

Times	ID Papers	Paper titles
13:00 - 13:20	PID-311	Development of an IoT-Based Monitoring System for Solar and Wind Energy *Quang-Minh Tran, Vu Thi Ngoc Han Danh, Khac-Duy Nguyen, Manh-Tuan Nguyen, Tran-Phu Nguyen, Xuan-Vien Nguyen and Van-Trung Nguyen**
13:20 - 13:40	PID-355	Research on DC-BUS Voltage Stability of Three-Phase Grid-Tied Photovoltaic Inverter using PI–Fuzzy Control *Tran Minh Duc* and Chau Minh Thuyen*
13:40 - 14:00	PID-371	Determined in Optimal Location and Size of Charging Stations in The Installation Space Constraints *Thien Vo Minh*, Tien Doan Thi Kieu, Hau Nguyen Van and Dieu Vo Ngoc*
14:00 - 14:20	PID-436	Impact of Hyperparameters on CNN Performance for Short-Term Electricity Load Forecasting *Tuan Anh Nguyen*, Thanh Ngoc Tran, Thanh Thuan Nguyen*
14:20 - 14:40	PID-468	Development of Digital Models for Determining The Modes of The DC Traction Power Supply System *Nguyen Quoc Hieu*, Kryukov A. V., Suslov K. V. and Mai Khanh Dương*

SESSION 6-A
Electrical Systems and Renewable Energy

Room G4-03 **15:20 - 17:00**

Chair: **Dr. Nguyen Thanh Phuong**
Nha Trang University

Times	ID Papers	Paper titles
15:20 - 15:40	PID-396	Optical Wireless Power Transfer Between Oblique Planes of Transmitters and Receivers *Hoa Dinh Nguyen*
15:40 - 16:00	PID-277	Understanding Wholesale Client Behavior at a Vietnamese Garment Outsourcing Factory *Lu Thi Kim Phung*
16:00 - 16:20	PID-315	Data-Driven Metallic Object Detection Without Dedicated Sensors for Wireless Power Transfer Systems *Dat Nguyen Khanh, Kun Che-Ho* and Chen-Xun Wu*
16:20 - 16:40	PID-346	Research on a Hand Gesture Recognition Model to Optimize Robotic Hand Control *Bui Thi Ngoc Han and Vi-Do Tran*
16:40 - 17:00	PID-313	A Hybrid CWT–CNN Approach for Power Quality Disturbance Classification *Nhan Bon Nguyen and Thuc Minh Bui, Anh Duy Bui and Thanh Lam Le*

SESSION 3-A
Electric Machines and Drives

Room G4-04 **13:00 - 14:40**

Chair: **Dr. Trung M. Duong**
ABB Corp. Research

Times	ID Papers	Paper titles
13:00 - 13:20	PID-275	Attitude Control and Stabilization of Satellites using Reaction Wheels *Vu Van Thu, Hoang Anh Phuong, Nguyen Thanh Thao, Ngo Quyet Tien*
13:20 - 13:40	PID-407	Improved Speed Regulation of SPMSM Drives using Novel Global Fast Terminal Sliding Mode Surface–Based Sliding Mode Control *Tran Thanh Tuyen, Truong Quang Dang Khoa, and Nguyen Gia Minh Thao**
13:40 - 14:00	PID-335	Building Of An Ontology For Integration Of Sustainable Energy System *Quyet D. Nguyen*
14:00 - 14:20	PID-450	A Deep Learning Approach for Driver Fatigue Detection *Li Zhenyang, Nguyen Dinh Hoa*

SESSION 3-B
Electric Machines and Drives

Room G4-04 **15:20 - 17:00**

Chair: **Dr. Huynh Thanh Anh**
University of Nottingham

Times	ID Papers	Paper titles
15:20 - 15:40	PID-323	An Observer-Based Sensorless Control Approach for Induction Motor Drives *Thanh-Lam Le, Anh Duy Tran, Thanh Duy Ly, and Thuc Minh Bui*
15:40 - 16:00	PID-390	Electromagnetic Vibration Analysis of Power Transformer Windings:Verification of Structural Models Based on Analytical Modeling *Khanh Le-Tran, Cuong Bui-Cong, Tu Nguyen-Ngoc, Nghia Pham-Dai, Huan Pham-Duy, Tuan Phung-Anh**
16:00 - 16:20	PID-403	Generalized Fault Tolerant Control Method for Dual Three-Phase PMSM using Permutation Reduced-Order Matrix *Pham Le Tam, Nguyen Ngac Ky*
16:20 - 16:40	PID-303	Analysis of Flux Barrier Effects on Magnetic Flux Distribution and Torque Characteristics in Spoke-Type Interior Permanent Magnet Synchronous Motors *Anh Thanh Huynh*, Viet-Vu Do, Minh-Hoc Duong Le, and Min-Fu Hsieh*

SESSION 4
Electric Vehicle (EV) and battery charging systems

Room G4-05 **13:00 - 14:40**

Chair: **Dr. Duy-Dinh Nguyen**
Hanoi University of Science and Technology

Times	ID Papers	Paper titles
13:00 - 13:20	PID-289	Low-Cost Monitoring System for Early Fault Detection in 3S Lithium-Ion Batteries *Chuyen Quang Lam*, Hai Nguyen Thanh, Hung Nguyen Huy, Nghia Nguyen Thanh, Viet Ngo Ba*
13:20 - 13:40	PID-402	State of Charge Estimation for Lithium-Ion Batteries Using EKF and UKF Based on a Temperature-Dependent Thevenin Model *Nguyen Van Long Giang*, Ngo Van Truong, Nguyen Hong Tien and Duc Tri Do*
13:40 - 14:00	PID-377	Adaptive Color Sorting Robot Applying Machine Learning on Embedded Systems *Dan-Huy Truong, Hien Nam Phan Phuc, Thanh-Tuan Nguyen*, Xuan-Huy Nguyen, Mong-Fong Horng, Chin-Shiuh Shieh and Thanh-Lam Nguyen*
14:00 - 14:20	PID-378	Enhancing Sunflower Inspired Solar Trackers using Adaptive Signal Filtering Techniques *Thanh – Tung Nguyen, Son - Truong Ho, Thanh-Tuan Nguyen* Xuan-Huy Nguyen, Mong-Fong Horng, Chin-Shiuh Shieh and Thanh-Lam Nguyen*

SESSION 5
Smart grid, Micro-grid

Room G4-05 **15:20 - 17:00**

Chair: **Dr. Trinh Hoai An**
HCMC University of Technology and Engineering

Times	ID Papers	Paper titles
15:20 - 15:40	PID-343	Deep Learning-Based Vision System for Automated Nipa Palm Flesh Separator using YOLOv11 and OPC-UA Integration *Song-Toan Tran*, Truc-Ly Le, Phuc-Hau Nguyen, Thien-Nhan Mai, and Quoc-Kien Lam*
15:40 - 16:00	PID-384	Adaptive Virtual Synchronous Machine Parameter Tuning for REGFM-B1 Grid-Forming Inverters Under Current Saturation Constraints *Pham Hong Thanh, Le Van Dai**
16:00 - 16:20	PID-443	Comparative Analysis of Control Strategies: Lyapunov and PID-Control Applied for DC-DC Boost Converter *Van Phuoc Nguyen, Dinh Nhon Truong*
16:20 - 16:40	PID-374	Stability-Oriented Control in Renewable DC-AC Energy Systems *Thanh-Lam Le, Gia Bao Nguyen, Quang Duong Nguyen, and Thuc Minh Bui*
16:40 - 17:00	PID-305	An Integrated Converter-Control Scheme for Improved Energy Harvesting in Renewable Energy Systems *Thanh-Lam Le, Khanh Doan Pham, Thanh Lam Nguyen, Phuc Khang Nguyen, Thanh Nhan Nguyen, Hung Nguyen, Van Duong Vang, Le Van Truc, Tran Quoc Dat, and Thuc Minh Bui*

DETAILED TECHNICAL SESSIONS
(Tuesday morning, 03rd Feb 2026)

WORKSHOP #3
Inverter 2

Room G4-01 **08:30 - 10:10**

Chair: **Assoc. Prof. Phan Quoc Dung**
HCMC University of Technology
Prof. Seung-Ho Song
Kwangwoon University

Times	ID Papers	Paper titles
08:30 - 08:50	PID-11	Evaluation of a Three-Phase Interleaved Boost Converter for Fuel Cell Applications *Quoc Anh Le**
08:50 - 09:10	PID-12	Parallel Operation of Modular PCS *Hanju Cha**
09:10 - 09:30	PID-13	Input Performance Enhanced based Predictive Concept and Space Vector for Matrix Rectifier *Hoang-Long Dang**
09:30 - 09:50	PID-14	A Generalized Multilevel Dual-Buck Converter *Nam-Sup Choi**
09:50 - 10:10	PID-15	Space Vector Modulation Method for a New Three-Level Five Phase VSI for Five-Phase Open-end Winding Load *Huu-Cong Vu**

WORKSHOP #4
Converter

Room G4-01 **10:10 - 11:50**

Chair: **Assoc. Prof. Nguyen Van Nho**
HCMC University of Technology
Prof. Hong-Je Ryoo
Chung-Ang University

Times	ID Papers	Paper titles
10:10 - 10:30	PID-16	Solid-State Modulator and its Industrial Application *Hong-Je Ryoo**
10:30 - 10:50	PID-17	A Reinforcement Learning-based Framework for Remote Adaptive Controller Upgrading in DC–DC Boost Converters *Tran Vi Do**
10:50 - 11:10	PID-18	Calculation of Leakage Inductance for Inductor Integrated Planar Transformer *Se-Kyo Chung**
11:10 - 11:30	PID-19	Optical Wireless Power Transfer Between Oblique Planes of Transmitters and Receivers *Nguyen Dinh Hoa**
11:30 - 11:50	PID-20	Switching Operation Analysis of Optimal Active Rectifying Circuit of Double Side LCC Power Transfer System *Tae-Woong Kim**

SESSION 1-C
Power Converter Topologies, Design and Control

Room G4-02 **08:30 - 10:10**

Chair: **Assoc. Prof. Do Duc Tri**
HCMC University of Technology and Engineering

Times	ID Papers	Paper titles
08:30 - 08:50	PID-278	Quantum-Inspired Probabilistic Aggregation for Complex Systems with Multi-Source Wind Power Uncertainty *Phuong Loan Bui, Viet Anh Truong, Minh Anh Tran, Ngoc Sang Dinh**
08:50 - 09:10	PID-455	A Novel Non-Isolated Buck-Boost Converter based on Zeta and Boost Topologies Integration *Khai-Dat Nguyen and Hao-Dinh Vinh-Le, Van-Ban Nguyen, Thanh-Hai Quach, Nghi-Vo Hong-Pham, Viet-Anh Truong**
09:10 - 09:30	PID-457	A Single-Phase Seven-Level Cascaded H-Bridge Inverter With Wide Input Voltage Operating Range *Xuan-Bach Dang, Anh-Duc Vu, Trong-Nguyen Nguyen, Manh-Hoan Nguyen, Minh-Tan Tran*
09:30 - 09:50	PID-397	Non-isolated DC-DC Converter with increase Voltage Gain for PV Application *Nhat Huy Dang, Ngoc Thao Nguyen Thi, Tan Hung Nguyen and Duc Tri Do**

SESSION 6-B
Electrical Systems and Renewable Energy

Room G4-03 **08:30 - 10:10**

Chair: **Dr. Nguyen Thanh Phuong**
Nha Trang University

Times	ID Papers	Paper titles
08:30 - 08:50	PID-387	Development of IoT Technology for Monitoring Electricity and Water Consumption in Apartment Buildings *Huu Tinh Tran*, Phu Qui Nguyen, Vi Khang Dinh, and Nhut Tien Nguyen*
08:50 - 09:10	PID-273	Computer Vision by YOLOs for Detection of Major Diseases in Vietnamese Custard Apple using Fruit Imagery *Tri Nhut Do and Quoc Tuan Vo*
09:10 - 09:30	PID-409	Machine Learning-Based Drivetrain Fault Classification in New Energy Vehicles *Long Giang Nguyen Van*, Trung Kien Nguyen, Hoang Quan Vo*
09:30 - 09:50	PID-411	A Lightweight Machine Learning Approach for Time-Domain Alcohol Concentration Estimation using an ESP32 and MEMS Gas Sensor *Minh-Hai Le*, Duc-Toan Nguyen, Huu-Phuc Dang, Song-Toan Tran, and Phuong-Thao Cao*
09:50 - 10:10	PID-349	A Collaborative Cloud-Edge Computing Architecture for Volt-Var Control of Distributed Energy Resources *Tran Ngoc Huy Thinh, Khai Phuc Nguyen, Viet-Cuong Pham*

SESSION 7
Other selected topics

Room G4-04 **08:30 - 09:50**

Chair: **Dr. Nguyen Phuc Khai**
HCMC University of Technology

Times	ID Papers	Paper titles
08:30 - 08:50	PID-317	Measurement of Angular Rate Thresholds in A Gyroscope Based on a Bistable Mechanism *Tran Hong Van**
08:50 - 09:10	PID-328	Electromagnetic Design of Drive-Excitation Coils for 1-Dimensional Magnetic Particle Imaging *Loc Phuoc Nguyen*, Muhammad Auwal Shehu , Yussuf Shakin and Ton Duc Do*
09:10 - 09:30	PID-354	Experimental Evaluation of Classical Backstepping and RBF Neural Network Based Backstepping on an Inverted Pendulum System *Khuong Huynh Van*, Anh Nguyen The, Xuan Bui Thanh, Thang Doan Cong*
09:30 - 09:50	PID-274	Oritrip: Enhancing Person Re-Identification with Orientation-Aware Triplet Loss *Trinh Quoc Nguyen*, Syahid Al Irfan, Oky Dicky Ardiansyah Prima, Tista Pal, Nguyen Gia Minh Thao*, Dung Thi My Nguyen*

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ONLINE SESSION

Room G4-05 **08:30 - 09:50**

Chair: **Dr. Trinh Hoai An**
HCMC University of Technology and Engineering

Times	ID Papers	Paper titles
08:30 - 08:50	PID-334	Physics-Informed Neural Networks for Permanent Magnet DC Motor Measurement Denoising Under Thermal Effects *Tuan-Minh Bui, Yon-Do Chun, Deok-Je Bang, Bao-Minh Nguyen Khac, Vu-Khanh Tran*
08:50 - 09:10	PID-342	Multi-Objective Electromagnetic Design Optimization of Surface-Mounted PM Motors for Electric Ships using Neural Network Surrogate Models *Vu-Khanh Tran, Jae-Hak Choi, Pil-Wan Han and Yon-Do Chun**
09:10 - 09:30	PID-364	An Adaptive Neural PI Control Framework using Deep Reinforcement Learning for High-Performance PMSM Speed Drives *Vo Ngoc Vinh, Do Trung Khanh Cong, Nguyen Minh Tam, Le Tien Loc*
09:30 - 09:50	PID-368	Enhancing Power Flow Estimation with Topology-Aware Gated Graph Neural Networks *Shrenik Jadhav, Birva Sevak, and Van-Hai Bui**
9:50 - 10:10	PID-372	Adaptation of Virtual Synchronous Generators to Dynamic Conditions in Power Grids *Quang-Manh Hoang*, Van-Nam Nguyen, Van-Hai Bui*

DETAILED POSTER SESSIONS

Note: The poster should be printed on A0-sized paper with a portrait layout

POSTER SESSION I

14:40 – 15:20, 2 Feb 2026 (Monday)

Chair: **Dr. Nguyen Dinh Hoa**
Hanoi University of Science & Technology

ID Papers	Paper titles
PID-291	A New Dual-Band Bandpass Filter for Wireless Communications *Van-Phuong Do*, Quang-Tuyen Le, Nguyen-Thi-Nhat-Le Tran*
PID-292	A Review of Underwater Acoustic Target Recognition in The Era of Artificial Intelligence *Van-Vuong Vu*, Chi-Hieu Ta, Truong-Giang Bui, Ngoc-Dong Nguyen*
PID-301	Design and Simulation of a Microstrip-To-Waveguide Transition for Ku-Band VSAT Terminals *Quang-Tuyen Le*, Van-Phuong Do, and Thi-Len Luong*
PID-310	Research on Methods to Improve The Torque Characteristics of Switched Reluctance Motors *Van-Nam Tran*, Van-Hien Tran, and Van-Long Bui*
PID-331	Modeling and Assessment of The Impact of a 25 Kv–50 Hz Railway Traction Power Supply System on The Power Quality of The Electrical Grid in Vietnam *Quang-Thai Lam*, Viet-Anh Truong, Van-Nghia Nguyen, and Vo-Hong-Nghi Pham*
PID-336	Robust Modbus-RTU Communication for Safety-Critical VFD Compressor Control in Sub-Zero Cold Storage *Cong-Thang Doan* and Thanh-Thao Nguyen*
PID-362	A Practical Approach to Electronic Component Detection on PCBS using YOLOv11 Deep Learning Model *Xuan-Huy Nguyen, Khai-Hoan Nhu, Xuan-Giang Nguyen, and Thanh-Tuan Nguyen**
PID-420	Design and Optimization of a 7.7 GHz RF Power Amplifier using GaN HEMT Transistor on Rogers 5880LZ Substrate *Trần Hoài Nam*

POSTER SESSION II
17:00 – 17:30, 2 Feb 2026 (Monday)

Chair: **Dr. Le Minh Thanh**
Vinh Long University of Technology Education

ID Papers	Paper titles
PID-337	Comparative Analysis of Loss Functions for Image-Text Matching Under Noisy Correspondence *Tam T. Ngo*, Anh V. Nguyen, and Hoa N. Nguyen*
PID-350	Trajectory Optimization of Robots via Model Predictive Control and Reinforcement Learning *Anh-Hao Le and Vi-Do Tran**
PID-365	Application of DC-DC Converter in Controlling The Electric Drive System of The СБЩ-250mh Rotary Blast Hole Drill Machine *Thi-Thuy Nguyen**
PID-373	Cost Assessment for Grid-Export PV Systems using Short-Term Forecasting a Pre-Investment Study for Bess Deployment *Gia-Tue Tang, Thi-Mi-Sa Nguyen, and Dinh-Nhon Truong**
PID-383	Observer-Based Fault Diagnosis for Voltage Source Inverters using H2 Optimization *Khanh-Thoai Vo*, Thanh-Phong Pham, Tien Dung Le*
PID-446	The Influence of Parameters and Fabrication Materials on The Performance of The Biomimetic Robot with Two-Elongated Fins *Quoc-Tuan Vu*, Manh-Dan Do, Van-Thu Bui*
PID-293	Optimizing UAV PID Flight Controllers with Reiforcement Learning: a TD3 Algorithm Approach *Minh Tu Nguyen*, Van Truong Hoang*
PID-363	Energy-aware Path Planning for a Quadcopter using Generalized Particle Swarm Optimization *Van Truong Hoang*

POSTER SESSION III

10:10 – 10:40, 3 Feb 2026 (Tuesday)

Chair: **Dr. Ngo Duc Kien**
University of Technology and Education - The University of Danang

ID Papers	Paper titles
PID-348	Maximizing Wind Farm Performance and Stability via HHO-Driven Bess Flexible Optimization *Xuan-Luc Bui*, Ngoc-Sang Dinh, and Viet-Anh Truong*
PID-424	An Improved Variable Step-Size Increamental Conductance MPPT Algorithm for Standalone Photovoltaic Systems *Huong Le Thi*
PID-395	High Performance Control of a Four-Level NNPC Inverter Fed Medium-Voltage Drive *Le-Nam Pham, Quoc-Dung Phan, and Nho-Van Nguyen**
PID-413	Observer-Based Type 2 Fuzzy Cerebellar Model Articulation Controller With Self-Organized Algorithm *Trong Hien Chiem, Van-Phong Vu, Duc-Tri Do, and Tien-Loc Le**
PID-415	Real-Time Driver Drowsiness Detection System Using YOLO11 *Tran Dang Khoi, Bui Thuc Minh, Vu Thang Long, Nguyen Van Thuan**
PID-451	Robust Modbus-RTU Communication Design for Safety-Critical Compressor VFD Control in Sub-Zero Cold Storage *Cong-Thang Doan*, Thanh-Thao Nguyen*
PID-465	Metacognitive Regime-Switched Spiking Neural Network with Contrastive Memory Consolidation *Van-Nhan Tran*, Thi-Hong-Minh Bui*
PID-325	AI-Based Filtering of Vessel-Induced Noise in Siphon-Type River Water Level Measurements at Phu an Hydrological Station *Bui Le Van Phan, Le Van Sang*, Le Do Van Bang*
PID-361	Hybrid Neural Network-Assisted Nonlinear Predictive Control Strategy for High-Performance PMSM Speed Regulation *Huynh Hoang Bao Nghia and Le Van Dai**

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CONFERENCE SITE LAYOUT

A **Main Gate (02 Nguyen Dinh Chieu Street, Nha Trang City, Vietnam)**

B **Convention Hall No.1 (H1)**

C **Bus stop**

G4 **Breakout Session Building**

BANQUET

The conference banquet will be held at 18:00 on February 2nd at Shiva Hall, Champa Island Nha Trang – Resort Hotel & Spa, located at 304 2/4 Street, North Nha Trang Ward, Khanh Hoa Province. A shuttle bus will be provided between Nha Trang University and the Champa Island Nha Trang. The bus will depart from the main bus stop area of NTU to Champa Island Nha Trang – Resort Hotel & Spa at 17:30. We hope that the participants will enjoy traditional Vietnamese dishes and a friendly atmosphere.

Champa Island Nha Trang – Resort Hotel & Spa

Main Bus stop area (C) of Nha Trang University

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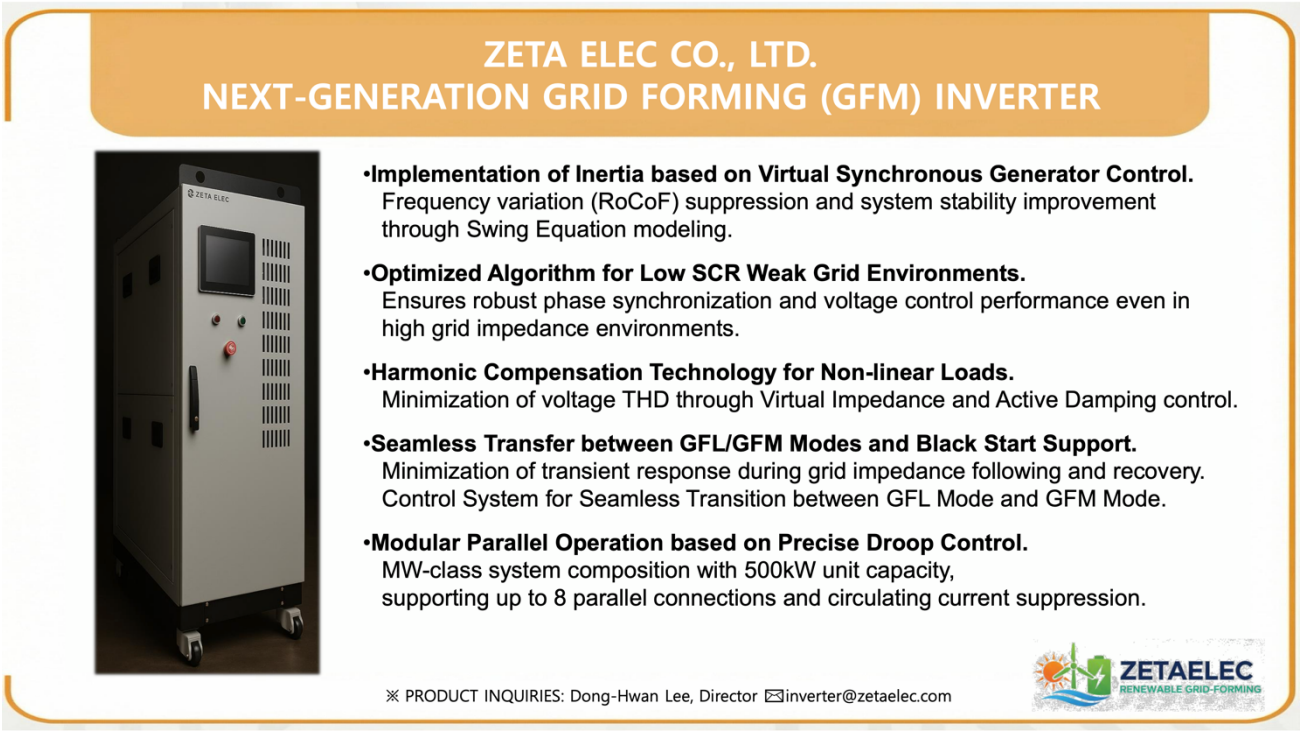

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TUMIKI

TUMIKI Joint Stock Company (hereinafter referred to as TUMIKI) is headquartered on the 9th floor of the CIT Building, Lane 15, Duy Tan Street, Cau Giay Ward, Hanoi City. TUMIKI provides training solutions and technological equipment for training education and vocational education. Currently, TUMIKI is the authorized representative of leading global manufacturers such as Amatrol (USA), KandH (Taiwan), ETS Didactic (Germany), etc. Since its establishment in 2011, with more than 15 years of development, TUMIKI has affirmed its position in the Vietnamese market and has been recognized and trusted by major domestic customers as well as reputable international partners. TUMIKI has successfully implemented key projects at universities and colleges under the Ministry of Education and Training, the Ministry of Industry and Trade, and many provinces and cities, covering fields such as Mechanical Engineering and Manufacturing Technology, Mechatronics, Automotive Technology, and Electrical–Electronics.

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