E-PROCEEDINGS

INTERNATIONAL TINKER INNOVATION & ENTREPRENEURSHIP CHALLENGE (i-TIEC 2025)

"Fostering a Culture of Innovation and Entrepreneurial Excellence"

23 January 2025
PTDI, UiTM Cawangan Johor
Kampus Pasir Gudang

ORGANIZED BY:

Electrical Engineering Studies, College of Engineering
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PREFACE

It is with great pleasure that we present the e-proceedings of International Tinker Innovation & Entrepreneurship Challenge (i-TIEC 2025), which compiles the extended abstracts submitted to the International Tinker Innovation & Entrepreneurship Challenge (i-TIEC 2025), held on 23 January 2025 at **PTDI, Universiti Teknologi MARA (UiTM) Cawangan Johor, Kampus Pasir Gudang.** This publication serves as a valuable resource, showcasing the intellectual contributions on the invention and innovation among students, academics, researchers, and professionals.

The International Tinker Innovation & Entrepreneurship Challenge (i-TIEC 2025), organized under the theme "Fostering a Culture of Innovation and Entrepreneurial Excellence," is designed to inspire participants at various academic levels, from secondary students to higher education students and professionals. The competition emphasizes both innovation and entrepreneurship, encouraging the development of product prototypes that address real-world problems and have clear commercialization potential. By focusing on technological and social innovations, i-TIEC 2025 highlights the importance of turning creative ideas into viable, market-ready solutions that can benefit users and society. The extended abstracts in this e-proceedings book showcase the diverse perspectives and depth of research presented during the event, reflecting the strong entrepreneurial element at its core.

We extend our sincere gratitude to the contributors for their dedication in sharing their innovation and the organizing committee for their hard work in ensuring the success of the event and this publication. We also appreciate the support of our collaborators; Mass Rapid Transit Corporation Sdn. Bhd. (MRT Corp), Universitas Labuhanbatu, Indonesia (ULB), Universitas Riau Kepulauan, Indonesia (UNRIKA) and IEEE Young Professionals Malaysia, whose contributions have been instrumental in making this event and publication possible.

We hope that this e-proceedings book will serve as a valuable reference for researchers, educators, and practitioners, inspiring further studies and collaborations in both innovation and entrepreneurship. May the knowledge shared here continue to spark new ideas and market-ready solutions, advancing our collective expertise and fostering the growth of entrepreneurial ventures.

B-ST148: VE TESTER

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ABSTRACT

The VE Tester is designed for university students and hostel administrators to ensure the safety and functionality of electrical devices brought into hostels. The tester is a compact, user-friendly device that tests 3-pin electrical apparatus for faults such as short circuits, incorrect wiring, and grounding issues. It can be used whenever there is a need to verify the safety of electrical devices, particularly when students bring new devices into their hostel rooms. The VE Tester is intended for use in university hostels, but its portability makes it suitable for use in various settings where electrical safety is a concern. Ensuring the safety of electrical devices in hostels is crucial to prevent electrical hazards, promote energy efficiency, and align with sustainable development goals. The VE Tester operates by connecting the device to a socket and using probes to test for electrical faults. The results are displayed in real-time, allowing users to quickly identify and address any issues. This product solves big issues for hostel management to test a large volume of electrical devices using conventional methods. This product helps the management to verify the electrical devices in a faster and effective way to make the safety environment at university hostel.

Keywords: Equipment Tester, Testing Device, Electrical Gadget.

1. Product Description

The VE Tester is a portable, user-friendly device designed to test 3-pin electrical apparatus for safety and functionality. It features a compact design with a socket, dual switch gang, and probes for connection to a digital multimeter. Below list the main features of this product:

- Compact Design: 10 inches by 4 inches.
- Color-Coded Components: Red probes, white socket, and switches.
- Dual Switch Gang: Represents Live, Neutral, and Earth/Grounding.
- Probes for DMM: Connects to a digital multimeter for accurate readings.

The primary objective of the VE Tester is to create a portable, user-friendly, and cost-effective 3-pin electrical apparatus tester capable of detecting faults such as short circuits, incorrect wiring, and grounding issues in 3-pin devices. It provides real-time visual indicators to assess safety and functionality, enabling non-technical users, such as students and hostel administrators, to independently verify compliance and ensure the safety of their

electrical devices. By simplifying testing procedures, the VE Tester aims to minimize electrical hazards and promote safer energy usage in hostel's environments.

2. Gadget Outlook

Figure 1 shows the VE Tester image. It has 3-pin sockets attached with two switches. The two red and black wires are used to connect to the multimeter as in **Figure 2**. The multimeter is used to detect a short circuit parameter using beep sounds if short circuit condition exists.

Figure 1. VE Tester Image

Figure 2. VE Tester and multimeter

Students should register their electrical devices during hostel registration. **Figure 3** shows the condition of the registration hall. The process should be made fast and efficient since it deals with many students.

Figure 3. Tester Checkpoint

Figure 4 shows how the manual checking is performed. The staff manually check the plug by placing multimeter probe manually. It took a longer time to complete the process. To make the process faster, the VE Tester was designed to be used during hostel registration process.

Figure 4. Manual Checking

Figure 5. shows how the checking process was performed. The electrical devices were plugged into the 3-pin socket of The VE Tester. Then the staff will just push the switch button to check the criteria as in **Table 1.** The switch should be pushed one by one to test the devices. If no beep sounds, the device is in good condition and vice versa. The checklist criteria in **Table 1** outline the operational procedure for evaluating the safety and functionality of a 3-pin electrical device using a multimeter. The test involves checking the connections between Line (L), Neutral (N), and Ground (G) terminals. If the multimeter produces a sound (ON), it indicates an issue with the device, such as a short circuit or improper wiring, resulting in a "FAIL" status. Conversely, if no sound is detected (OFF), the device is deemed compliant and safe, earning a "PASS" status. This systematic approach ensures quick and reliable fault detection in electrical devices.

Figure 5. Checking using VE Tester

Table 1. Checklist criteria.

Button	***Multimeter sound***	***Electrical Device***	***Status***
L - N	ON	Not ok	FAIL
G - N	ON	Not ok	FAIL
L - N	OFF	ok	PASS
G - N	OFF	ok	PASS

3. Novelty and uniqueness

The VE Tester stands out due to its targeted use for university hostels, ease of operation, and real-time results. It bridges the gap between professional testers and the need for accessible, affordable solutions for everyday users.

4. Benefit to mankind

By ensuring the safety of electrical devices in hostels, the VE tester helps prevent electrical hazards, promotes energy efficiency, and supports sustainable living environments for students.

5. Innovation and Entrepreneurial Impact

The VE Tester fosters a culture of innovation and entrepreneurship by addressing a critical need for electrical safety in university hostels. By providing a practical, affordable, and user-friendly solution, it encourages students and faculty to think creatively about solving real-world problems. The development and potential commercialization of the VE Tester demonstrate the institution's commitment to fostering an entrepreneurial mindset, inspiring others to pursue innovative projects that have a positive impact on the community and industry.

The VE Tester represents a significant innovation in electrical safety testing, with potential for widespread adoption in educational institutions and beyond. Its affordability and ease of use make it an attractive option for commercialization.

6. Potential commercialization

The VE Tester has strong market potential, particularly in educational institutions. Its scalability and affordability make it a viable product for mass production and distribution.

7. Acknowledgement

The development of the VE Tester was made possible through the support and resources provided by Universiti Teknologi MARA. Special thanks to the faculty, staff, and students who contributed to this project.

8. Authors' Biography

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