



UNIVERSITI
TEKNOLOGI
MARA

Universiti Teknologi MARA

V-MIEX

28 JUNE
06 JULY
2022

VIRTUAL-MELAKA INTERNATIONAL INTELLECTUAL EXPOSITION

ROAD TO COMMERCIALISATION

V-MIEX BOOK



V - MIIEX BOOK

'ROAD TO COMMERCIALISATION'

EDITORS AND COMPILERS:

Dr. Nur Hayati Abd Rahman
Dr Syukri Abdullah
Wan Hasmat Wan Hasan
Aini Qamariah Mohd Yusof
Norazlan Anual
Dr. Khairunnisa Abd Samad
Nordianah Jusoh @ Hussain
Rozana Othman
Norlela Abas
Azira Rahim

COVER DESIGN:

Adi Hakim Talib

PUBLISHED BY:

Division of Research and Industrial Linkages
UiTM Cawangan Melaka
KM26 Jalan Lendu,
78000 Alor Gajah, Melaka
Tel: +606-5582094 / +0606-5582190 / +606-5582113
Email: miixuitm@gmail.com
Website: <https://www.miiex.my/>
ISBN: 978-967-2846-04-8

All right reserved. No parts of this publication may be produces, stored in retrieval system or transmitted in any form by any means, electronic, mechanical, photocopying, recording, or otherwise without permission of the copyright holder.

FOREWORD

ASSOC. PROF TS. DR MOHD RASDI ZAINI
Rector
Universiti Teknologi MARA (UiTM) Cawangan Melaka



Welcome to Virtual-Melaka International Intellectual Exposition 2022 (V-MIIEX 2022). It is an honour for me on behalf of UiTM Melaka Branch to thank all of you for joining the programme and we are proud to inform you that this is the 12th year consecutively, UiTM Melaka Branch is organizing this exposition.

V-MIIEX 2022 is a platform to improve the commercialization collaboration among industries and communities and at the same time, we also give the opportunity to academicians and students to share ideas and increase their potential innovation products with the industries and communities through their projects. This exposition also serves as a platform to cultivate and upload the nation's innovation culture by presenting new ideas and research by young people, especially from academia, universities, college, high schools, and primary school students.

The economy and development of the country faced a challenging phase in 2021 due to the Covid-19 pandemic. We faced changes in business, education, society, and lifestyle. However, the pandemic proved to be a blessing in disguise as it somehow gave people ideas which would be beneficial to improve their lifestyle and solve problems that might occur in the future. Besides, the new digital landscape also inspires more innovation and new ideas that contribute to various activities such as business and industries. As a university that encourages the "Research, Innovation and Commercialization", this exhibition is organized to encourage more commercialization of products that are beneficial to scholars, industries, and communities to tackle such issues to improve our present and future life.

Since 2009, UiTM Melaka Branch has successfully become the organizer for this innovation exposition. We are not only successful in organizing the exposition, but I would proudly say that we have also successfully embarked on commercialized products. With the number of participants for this year's exhibition, we believe that more commercialized products will be produced in line with the theme for this year, "Road to Commercialisation".

This exposition would never happen without dedication, teamwork, and commitment. A round of applause should be given to the committee teams as the backbone of this exposition. Their hard work, effort, and time made this exposition possible.

Finally, I would like to conclude this brief remark by thanking all the participants and stakeholders for joining the exposition, we hope that this collaboration never ends here.

Thank you.



DR. NUR HAYATI BINTI ABD RAHMAN
Deputy Rector Research & Industrial Linkages
Universiti Teknologi MARA (UiTM) Cawangan Melaka

It is a great pleasure to welcome all the participants and presenters to the Virtual Melaka International Intellectual Exposition (VMIIEX 22). I am delighted that through this periodic event, we managed to bring together scholars and professionals from various fields to engage through this virtual platform where ideas and breakthrough are discovered and leveraged for commercialization potential.

Since 2009 UiTM Cawangan Melaka has held twelve Invention and Innovation Design competitions and this year we are very honoured to have the second year of VMIIEX organized in digital platform. This has proven that despite the global challenges due to the recent pandemic, it is never an issue for UiTM Melaka to continuously organize this yearly prestigious event and to support the ministry's aspiration in leveraging creativity and innovation in the new norm.

VMIIEX 22 is organized with no sole objectives of accomplishing the University's KPI but instead we are determined to make this programme as the place to help heighten commercialization collaboration in research and innovation with the industry and community through joint exhibitions from various external organizations.

Our aspiration is to also provide exposure and opportunities to academic staff as well as students from public and private universities to engage in direct excellent scholarly activities with the industry and community through activities that can be measured and assessed. As for the Research and Industrial Linkages Office of UiTM Melaka, this exhibition is seen as the platform that can encourage active collaboration and knowledge transfer with industries; objectively to support various activities that will benefit all stakeholders from the various government agencies, local and international universities, industries and communities.

Through the theme of "Road to Commercialization" this year, V-MIIEX 22 is committed to have this event as a boulevard to inspire and cultivate creativity and innovation to the numerous levels of inventors through exposure on latest technologies, astonishing ideas and creative designs with great potential to be commercialized. For this year, we proudly introduce a special category which is the "Endemic Challenge" as the provision to the government of Malaysia's goal of moving towards the endemic.

To ensure that the competing products in this exhibition is not exclusively for the purpose of competition, V-MIIEX 22 is dedicated for the commercialization of highly potential innovation products, which is attained through its active collaboration with tailored needs industries. The commercialization effort was not for income generation purpose only but it aimed to spearhead the development of quality products in line with industrial needs and community benefit.

Therefore, it is a great honour for me on behalf of the Research and Industrial Linkages Office as well as the organizing committee to have all participants in this competition and I would like to express my highest gratitude especially to the Rector of UiTM Melaka and all strategic partners and sponsors for supporting the event.

To finish, I sincerely wish VMIIEX 22 a remarkable success. I believe that this will not be the only collaboration between UiTM Melaka and the respective partners and linkages, but a beginning of a long and fruitful cooperation in future.

Thank you very much.

road to commercialisation...

WAN HASMAT WAN HASAN
Project Director V-MIIEEX 2022
Universiti Teknologi MARA (UiTM) Cawangan Melaka



Assalamualaikum and Warmest Greetings.

It gives me an enormous pleasure, on behalf of the organizing committee to welcome all participants and presenters to the Virtual -Melaka International Intellectual Exposition 2022 (VMIIEX '22) with the theme "Road to Commercialisation". We are honoured and glad to welcome all participants to this biennial event.

This is the second time that we have organized this biennial event virtually. V-MIIEEX 22 is an innovation competition, in which, innovation products, ideas and systems related to various science and technological fields are exhibited as a solution for the presented problems.

V-MIIEEX22 expectantly will be a platform that gathers experts from academies, scientists, and researchers, locally and internationally, to contribute towards the growth of scientific and technological knowledge in each participant's specialisation and expertise.

The competition also serves as a platform to give fresh exposure to the various level of inventors, as well as to encourage the culture of innovation design focused on latest technologies and related to new norms technologies and inventions due to COVID-19.

V-MIIEEX 22 is also hoped to be an avenue for gathering and disseminating the latest knowledge on ideas and acquisition of innovation among the participants. It is hoped that the competition will be able to open the mind of the participants towards latest technologies and design. It is also in line with the government's aspiration to encourage innovation activities in Malaysia.

As a final note, I would like to congratulate my fellow committee members for their tremendous effort, which have been critical to the event's success. In addition, I would like to thank our co-organizer, event sponsors and supporters. Optimistically, we wish that all new knowledge that is discovered, invented, or innovated will drive towards our future sustainability.

Thank you.

ABOUT V-MIIEEX

The world after COVID-19 is unlikely to return to the world that was. Despite the challenging pace during the pandemic, the strong rebound is expecting in this exciting year 2022. Malaysia is welcoming the great prospects ahead with positive impact on the country's economy and development. Hence, the hope for greater opportunities motivates for more creative thinkers to come up with innovative ideas that can be put forward to be harnessed to overcome similar problems in the future. V-MIIEEx 2022 is one of these platforms which contribute relevant ideas that could help communities of all walks of life cope with this pandemic.

UiTM has identified research, innovation, and commercialization to be among the core components and strategic effort towards becoming a well-known and prominent university. Aside from realizing this goal, with these components and efforts, fostering the development of knowledge, generating financial stability of the university, and producing knowledgeable academicians are also potentially achievable.

By having invention and innovation competition yearly, UiTM Cawangan Melaka is confident that it could further enhance creative and innovative abilities among staff and students. In support of the government notion which upholds the importance of innovation, UiTM Cawangan Melaka has taken the initiative of organising the Virtual Melaka International Intellectual Exposition (V-MIIEEx).

In instigating and nurturing the continuous culture of inventing and innovating, this event is an ideal platform for lecturers, administrative staff, students, and the public to showcase and commercialize their products or prototypes as well as novel ideas. The first IID which was held nationally in UiTM Cawangan Melaka in 2009, has successfully gathered and displayed more than 37 inventions and innovations. Accordingly, to continue this strong passion towards inventing and innovating, the IID competition should be continued and celebrated.

With that, the Division of Research and Industrial Linkages will be organising its 12th IID competition, the Virtual - Melaka International Intellectual Exposition (V-MIIEEx 2022) with the theme, 'Road To Commercialisation'. V-MIIEEx 2022 hopes to welcome 200 competing products to be showcased and commercialized, at the same time, attract attention of related and matching industry.

Objectives

1. Encourage and instill passion towards inventing and innovating among UiTM Cawangan Melaka staff, students and academicians of local and international higher education institutions;
2. Highlight distinguished talents of skillful inventors and exhibit intellectual products, inventions and innovations among local and private tertiary institutions, government and private agencies, including international participants;
3. Become an effective Business Matching platform for participating research products, matching industries and partnering government agencies;
4. Recognise, inspire and promote invention and innovation products to be patented and commercialized;
5. Increase passion towards inventing and innovating through research and boost interests of government and non-government agencies to obtain consultancy services from a line up experts of higher education institutions and UiTM Cawangan Melaka.

3 in 1 Soil Sensor

Baity Nuredreen binti Ismail¹, Masliza binti Alias², Nur Syahira binti Zakaria³ and Nur Syuhadah binti Md Ali⁴, Zulkefli Muhamad Hanapiyah⁵

¹Universiti Teknologi MARA, Cawangan Melaka, Kampus Jasin, 77300 Merlimau, Melaka, Malaysia.

nuredreenbaity@gmail.com

Abstract

3 in 1 Soil Sensor will monitor soil pH, nutrient levels and moisture. The main objective of this product is to make it easier for gardeners, farmers, and agricultural workers to manage the condition of their soil in order to produce better crops. Farmers will no longer need to use multiple products to monitor soil pH, nutrient levels, or soil moisture levels. A solar panel with its own function allows the device to run completely without the usage of batteries or other energy sources. The 3 in 1 Soil Sensor was designed to monitor soil conditions for gardeners, farmers and agricultural employees. It has a digital display which makes it easier for users to read soil measurements. 3 in 1 Soil Sensor can monitor three main functions at once. This means farmers will only need to spend 15 minutes a day on their crops, which will save them time and energy. Agriculture requires an innovative tool because the crop is an important thing that must be treated for in order to create a high-quality crop. Gardening tools, such as 3 in 1 Sensors, provide a proper soil measuring system to simplify soil management of crops.

Keywords: 3 in 1 Soil Sensor, monitor, crops, agriculture

1. INTRODUCTION

Soil acts as a support to agricultural plants as well as a source of nutrients and water. A good soil is a living and able to perform numerous vital functions such as processing dead and decaying matter as well as minerals to plant nutrition, limiting diseases in plants by insect and weed pests, enhance soil structure with beneficial influence on soil water and nutrient holding capacity, and improving overall agricultural output. With an estimated growing of worldwide population, combined with competition for land resources and even the threat of climate change, present and future agricultural production is reliant on ability to improve yields that use soils which are already in agriculture. 3 in 1 Soil Sensor will provide a better understanding about current soil conditions for farmers. Linkages between soil life as well as environment function, and also the role of human initiatives, will allow for a lowering in negative consequences and a far more beneficial capture of the benefits of soil biological activity for a much more sustainable and efficient agriculture.

2. OBJECTIVE

The main objective of this product is to make it easier for gardeners, farmers, and agricultural workers to manage the condition of their soil in order to produce better crops. The invention of this 3 in 1 Soil Sensor is one of the many upgrades to any currently existing product. In order to help the gardeners, farmers and agriculture workers, different tools are required to monitor soil pH, nutrient levels, and soil moisture. As a solution, a new idea which is a tool that can

integrate all three functions into one to assist farmers save energy while managing to their crops. In addition, this product come together with an application in which all of the data is shown and which can be monitor anywhere. This 3 in 1 Soil Sensor contains a solar panel with its own function, allowing the Soil Sensor to run completely without the usage of batteries or other energy sources. Through this product it will raise an awareness among others about how simple soil management. Based on this idea, hope that farmers will no longer need to use multiple products to monitor soil pH, nutrient levels, or soil moisture levels. Not only that, but it may help you save money and time.

3. NOVELTY & INVENTIVENESS

This 3 in 1 Soil Sensor was designed to check the soil condition automatically. With integration with technology, a digital display is one of the coolest new features of the 3 in 1 Soil Sensor, which makes it easier for users to read soil measurements. Users can also read from the digital display or from the application.. The new values that have been incorporated into the 3 in 1 Soil Sensor are also portable. This is because, based on the market survey, majority of soil sensors on the market are not portable. Further, the 3 in 1 Soil Sensor stands apart from the rest because it can be unplugged and relocatable. Because of its small size and light weight, users may take this sensor with them wherever they go. Finally, this sensor is designed to be environmentally beneficial because it operates without the use of any electricity. Most automated systems should, by necessity, require batteries or electricity, however these soil sensors do not because they run on solar energy.

4. PRACTICALITY & USEFULLNESS

This 3 in 1 Soil Sensor is one of the measurement tools designed to make it easier for people to manage their crops. This is because, these soil sensors are unlikely to provide any justification for neglecting crop management. Since this product is portable, it simple for users to use these sensors on plants anywhere and to use apps that make data reading easier. Furthermore, because it can measure three main functions at once, this soil sensor can save time for consumers. Gardeners and farmers who have a lot of crops to inspect would like it. Gardeners and employees can also benefit from this function, as most of them are likely to be short on time due to their occupations. As a result, it demonstrates that a 3 in 1 Soil Sensor can save a lot of time for farmers.

5. CONCLUSION

Agriculture requires an innovative tool in today's fast-paced world. This is because the crop is an important thing that must be properly treated for in order to create a high-quality crop. Furthermore, it can assist people in the current agricultural growth. Gardeners, agronomists, and workers. 3 in 1 Soil Sensors, provide a proper soil measuring system to simplify soil management on their crops. This 3 in 1 Soil Sensor is a very valuable tool since it allows people to care for their plants without having to constantly monitor them. It is an innovative automatic ground surveying tool that does not require batteries or any other form of electricity to operate, saving time, energy, and the environment. The Soil Sensor is also a user-friendly, practical, and simple-to-use tool that just requires two simple actions that anyone of any age may complete. As a result, farmers will only need to spend at least 15 minutes with the use of 3 in 1 Soil Sensors, which will save them time and energy.