

MELAKA
INTERNATIONAL
INTELLECTUAL EXPOSITION

MIIEX'24

12 JUNE '24

Dewan Taming Sari,
Universiti Teknologi MARA Caw. Melaka,
Kampus Alor Gajah, Melaka

*"Empowerment of Special
Needs through Invention
& Innovation"*

**EXTENDED
ABSTRACT**

MiiEX'2024

MELAKA INTERNATIONAL INTELLECTUAL EXPOSITION 2024

**“EMPOWERMENT OF SPECIAL NEEDS THROUGH INVENTION AND
INNOVATION”**

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UiTM Cawangan Melaka

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78000 Alor Gajah

Melaka Bandaraya Bersejarah

Website: <https://vmiex.uitm.edu.my/>

MiiEX'2024

MELAKA INTERNATIONAL INTELLECTUAL EXPOSITION 2024

“EMPOWERMENT OF SPECIAL NEEDS THROUGH INVENTION AND
INNOVATION”

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PUBLISHED BY:

UiTM Cawangan Melaka

KM26 Jalan Lendu,

78000 Alor Gajah

Melaka Bandaraya Bersejarah

Tel: +606-5582094 / 2190 / 2113

eISBN: 978-967-2846-81-9

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INNOVATION, INVENTION, AND DESIGN

FOREWORD BY THE RECTOR OF UiTM CAWANGAN MELAKA



Professor Ts. Dr. Mohd Rasdi bin Zaidi

Rector, Universiti Teknologi MARA (UiTM)

Cawangan Melaka

Welcome to the Melaka International Intellectual Exposition 2024 (MIIEX '24). It is an honour for me, on behalf of UiTM Cawangan Melaka, to thank all of you for joining MIIEX '24. We are proud to inform you that this is the 13th consecutive year that UiTM Cawangan Melaka is organizing this exposition. Since 2009, UiTM Cawangan Melaka has successfully hosted this innovation exposition. Not only have we succeeded in organizing the exposition, but we have also successfully embarked on commercialized products.

2024 is a special year where MIIEX 2024 emphasizes the development of special needs. As we know, special needs indicate a limitation in a person's ability to engage in and benefit from various aspects, such as daily activities and education. Hence, with the theme "Empowering Special Needs Through Invention and Innovation," it is a platform for industries, professionals, academicians, students, and communities to share their innovative ideas and products to increase accessibility for those with special needs.

The successful implementation of MIIEX '24 is our joint success. This event was supported by the Melaka state government through YB Datuk Fairul Nizam bin Roslan, the EXCO of Science, Technology, Innovation, and Digital Communication. I also want to express my

gratitude to Universitas Negeri Padang, Indonesia, Universitas Muhammadiyah, Makassar, Indonesia, the International Association of Economic and Businesses (IAEB), Universiti Sains Islam Malaysia, Ibnu Umami Maktum Research Center (UMMI), USIM, and The Southeast Asia Minister of Education Organization Regional Centre for Special Educational Needs (SEAMEO SEN) as our co-collaborators for MIIEX 2024.

The collaboration from various parties in MIIEX '24 is a platform that will improve cooperation and interweaving among industries, professionals, academicians, students, and communities in shaping their potential in developing innovation products. This exposition also serves as a platform to cultivate and uphold the nation's innovation culture by presenting new ideas and research by young people, especially from academia and universities. Indirectly, MIIEX '24 will encourage all inventors towards empowering Science, Technology, Engineering, and Mathematics (STEM), especially in primary and secondary schools.

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 "Research and Innovation," we aim to foster more innovative products that benefit scholars, industries, and communities, addressing issues to improve our present and future life.

This exposition would never happen without dedication, teamwork, and commitment. A round of applause should be given to the committee teams, who are 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.

FOREWORD BY THE DEPUTY RECTOR (RESEARCH & INDUSTRIAL LINKAGES)



Associate Professor. Dr. Nur Hayati binti Abd Rahman

Deputy Rector (Research & Industrial Linkages), Universiti Teknologi MARA (UiTM) Cawangan Melaka

With much passion and privilege, let me warmly welcome all of you to the Melaka International Innovation Exhibition (MIIEEX), UiTM Cawangan Melaka's flagship event. I firmly believe that events such as these demonstrate the gradual evolution of this platform in terms of its significance and its governing principles within the sphere of learning and the broader scholarly society.

The theme for this year, "Empowering Special Needs Through Invention and Innovation," strongly connects to our mission of using research and technology to make a positive impact on the world we live in. Besides enforcing the message of diversity, this theme also reaffirms our focus on creating products to improve the lives of people with disabilities (PWDs). Such innovations are vital as only through focused constructive changes can society become more sensitive to the needs of all members.

MIIEEX allows researchers, students, and industry professionals to come together, share their innovative research, and develop viable research partnerships. It has been great to see the enthusiasm of the participants and the efforts they put into their projects, which can offer various social and economic benefits. This is why one can state that MIIEEX is a great

opportunity for creating connections between the academic environment and industry, facilitating the implementation of innovative and promising projects.

Finally, I would like to express my sincere appreciation to all the members and supporters of the organizing committee, all the participants, sponsors, and everyone involved in preparing this event. I want to express my gratitude for your commitment and involvement, as the success of MIIEX and the development of an active culture of innovation in our university and beyond is partly owed to your support.

Thank you

FOREWORD BY THE PROJECT DIRECTOR



Dr Zulkefli bin Muhamad Hanapiyah

Senior Lecturer

Assalamualaikum and Warmest Greetings,

It gives me a great pleasure, on behalf of the organizing committee, to welcome all participants and speakers to the Melaka International Intellectual Exposition 2024 (MIIEX '24) with the theme "Empowering Special Needs Through Invention and Innovation." We are honoured and pleased to welcome all participants to this biennial event.

MIIEX '24 is a platform that gathers experts from local and international industries, academia, scientists, researchers, and the community to contribute to the advancement of scientific and technological knowledge. This knowledge helps develop disruptive innovation products that improve daily activities for businesses and the community, especially those with special needs.

MIIEX '24 provides an atmosphere for inventors of all levels to gain new exposure and collaborate. Indirectly, this promotes a collaborative and innovative culture that focuses on cutting-edge technologies and new standards in technology and creativity.

MIIEX '24 is anticipated to serve as an arena for participants to acquire and disseminate revolutionary information on ideas and innovation. It is intended that the competition will expose the contestants' minds to the latest technologies and designs, aligning with the government's goal of encouraging innovation in Malaysia.

Finally, I want to compliment my fellow committee members on their amazing efforts, which were vital to the event's success. In addition, I want to thank our co-organizers, event sponsors, and participants. Optimistically, we hope that all new knowledge discovered, invented, or innovated will lead us toward future sustainability.

Thank you.

**FOREWORD BY MELAKA STATE EXCO OF SCIENCE, TECHNOLOGY,
INNOVATION AND DIGITAL COMMUNICATIONS**



YB Datuk Fairul Nizam bin Roslan

Melaka State Exco of Science, Technology, Innovation and Digital Communications

Welcome to the Melaka International Intellectual Exposition 2024 (MIIEX '24). It is an honor for me, on behalf of UiTM Cawangan Melaka, to thank all of you for joining MIIEX '24. We are proud to inform you that this is the 13th consecutive year that UiTM Cawangan Melaka is organizing this exposition. Since 2009, UiTM Cawangan Melaka has successfully hosted this innovation exposition. Not only have we succeeded in organizing the exposition, but we have also successfully embarked on commercialized products.

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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.

MIIEX'24 ORGANISING COMMITTEE

COMMITTEE	NAME
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	BUSHRA ABDUL HALIM
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	FAIQAH HAFIDZAH BINTI HALIM
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	AFZAN SAHILLA BINTI MOHD AMIR HAMZAH
	MUHAMMAD FURQAN BIN AZHAR
	KHAIRUL AZHAR BIN LOCHMAN

ABOUT MIIEX'24

MIIEX'24 is an innovation competition annually organised by UiTM Melaka with the intention to bring together ideas and inspiration that could fit in for commercialization needs.

This event creates a platform for researchers to establish networking, partnership and opportunities to collaborate with industries.

OBJECTIVES

1. Encourage and instil 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 skilful 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.

THEME

'EMPOWERMENT OF SPECIAL NEEDS THROUGH INVENTION AND INNOVATION'

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Apex Solar Fan

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Abstract

Increasing energy costs and environmental concerns have prompted a growing demand for energy-efficient cooling solutions. Electric fans provide immediate relief from heat, their reliance on grid electricity contributes to escalating energy bills and carbon emissions. Nowadays, technologies that use natural resources are currently becoming increasingly important, with an emphasis on sustainability and renewable energy. One excellent example of innovation in this industry is the solar fan. The product is named the Apex Solar-Powered Fan (APF-560) is as solar fan uses solar energy as its power source to create airflow, not require conventional electricity or any other energy source. The APF-560 Solar-Powered Fan is designed with versatility and convenience in mind, catering to anyone needing reliable and portable cooling. This device not only offers a practical introduction to green technology but also operates with impressive efficiency. The benefits of this product are promoting renewable energy use, flexible access, lightweight and portable. Fully charged in just 14 hours using the sun's energy, its solar panels are optimized for maximum energy absorption, making the most of natural light. Apex Fan delivers a powerful cooling experience with up to 10 hours of continuous operation in turbo mode. Its extended battery life is even more notable on the lower settings, providing a reliable source of air circulation throughout the day. In conclusion, the product focuses more on renewable energy and being eco-friendly, inventions like solar fans become very important. Apex Solar-Powered Fan, a prime example of how small changes can lead to significant environmental impact.

Keywords: Solar-Powered Fan, Environmentally Friendly, Green Technology, Cooling Fan

1. INTRODUCTION

In an era where the focus on sustainability and renewable energy is only going to rise, technologies that properly use the natural resources currently at our disposal are becoming more

and more crucial. One excellent example of innovation in this industry is the solar fan. A solar fan uses solar energy as its power source to create airflow, it does not require conventional electricity or any other energy source. Thus, solar fans are not only an environmentally friendly choice, but they also significantly reduce carbon footprints and dependency on fossil fuels. Energy efficiency, stability, and conditional adaptability are the primary areas of focus for current research and development in this field. The workings of solar fans, their benefits, challenges, and recent advancements in the industry will all be covered in this introduction. By finding out more, we can see the huge potential that solar fans have to create a more sustainable and green future.

2. PRODUCT DESCRIPTION

The APF-560 Solar-Powered Fan is designed with versatility and convenience in mind, catering to anyone needing reliable, portable cooling. The key benefits of Apex Solar Fan are as below.

i. Promotes Renewable Energy Use.

This fan underscores the importance of adopting renewable energy, providing an accessible option for anyone looking to reduce their carbon footprint.

ii. Comfort in Any Setting.

Whether you're at home, in the office, or outdoors, the APF-560 offers adjustable cooling with three airflow levels, including a high-power turbo mode for maximum comfort.

iii. Equal Access to Power.

With its built-in 10,000 mAh battery, the APF-560 serves as a mobile power bank, ensuring that all your devices can stay charged, no matter where you are.

3. NOVELTY & INVENTIVENESS

This innovative approach addresses two significant challenges which are the need for cooling solutions and the lack of reliable electricity access, particularly in remote or off-grid areas. Apex solar fans lies in the utilization of renewable energy to provide cooling solutions, especially in areas with limited access to electricity or during power outages. Solar fans harness the power of renewable energy from the sun. This is a significant departure from traditional electric fans, which rely on electricity generated primarily from non-renewable sources such as coal, natural gas, and oil. By utilizing solar energy, these fans operate sustainably without contributing to greenhouse gas emissions or environmental degradation associated with fossil fuel combustion.

Hence, the target market is everyone especially someone that would like to play their part in saving the earth and eco-friendly products lover. Since the selling strategy is to sell the products in retail, the products will be sold to retail stores, electronic stores, online sellers, and the customer can buy the product directly from our online website. The best feature of our solar-powered fan is it will be fully powered by solar panels so it would not be causing any type of energy waste making the customer's money worth every single cent they paid. The materials used are solar panels, a fan motor, a built-in battery, Fan Blades, Control Panel, Auto-off Timer, Adjustment Mechanism, Carrying Handle, and a Housing and Frame which create comfortable feelings for the buyers. This product will be upgraded time after time by customers' feedback for their satisfaction.

Cost and market price

The product cost is RM160.

- i. solar pannel = RM40
- ii. fan motor = RM50
- iii. built-in battery = RM20
- iv. Fan Blades = RM5
- v. Control Panel = RM5
- vi. Auto-off Timer = RM20
- vii. Adjustment Mechanism = RM10
- viii. Carrying Handle and Housing and Frame = RM10

Total = RM160

Market price is RM200.

The selling strategy for this solar fan is to make aggressive promotions and well-targeted campaigns or sponsorships which have greatly helped to attract customers. Solar-powered is a single product on the market. We use this opportunity to share it on online platforms such as our website, Facebook, Instagram, television, and magazines to spread the benefit of our solar-powered fan.

4. PRACTICALITY & USEFULNESS

The APF-560 comes packed with features that enhance its usability and performance as stated below.

- i. Variable Airflow. The fan has three airflow levels, including a turbo mode for intense cooling.

- ii. Lightweight and Portable. Weighing only 1.7 kg and equipped with a carrying handle, the APF-560 is easy to transport and set up anywhere.
- iii. Adjustable Angles. Position the fan at 0, 30, 60, or 90 degrees to direct the airflow exactly where you need it.
- iv. Powerful Battery. A built-in lithium-ion polymer battery provides up to 10 hours of continuous use in turbo mode and can charge other devices via its USB-A output port.
- v. Dual Charging Options. Charge the fan using the included USB cable and AC adapter, or let it harness the power of the sun with a 14-hour solar charging capability.

5. CONCLUSION

In conclusion, as we focus more on renewable energy and being eco-friendly, inventions like solar fans become very important. Solar fans use sunlight to create air, so they don't need normal electricity. Solar fans are not just good for the environment; they also help us use less fossil fuels and cause less pollution. Scientists are working on making solar fans better and more adaptable to different situations. In this paper, we talked about how solar fans work, their benefits, challenges, and new improvements. By understanding them better, we see how they can help us have a cleaner and greener future.

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Solar Fan Guide (Intro, Advantages, Choose) (n.d) <https://www.linkedin.com/pulse/solar-fan-guide-intro-advantages-choose-unitedstarcrown>