



UNIVERSITI
TEKNOLOGI
MARA



2023

JII CaS

**JOHOR
INNOVATION
INVENTION
COMPETITION
AND
SYMPOSIUM
2023**



"Innovation Inspires a Society
to be Critical and Creative"

JOHOR INNOVATION INVENTION COMPETITION AND SYMPOSIUM 2023



JOHOR INNOVATION INVENTION COMPETITION AND SYMPOSIUM 2023

" Innovation Inspires a Society to be
Critical and Creative"

Editors-in-Chief

**AHMAD KHUDZAIRI KHALID
NUR INTAN SYAFINAZ AHMAD**



الجامعة
UNIVERSITI
TEKNOLOGI
MARA

**Cawangan Johor
Kampus Pasir Gudang**

2023



First Edition 2023

Copyright © 2023 Universiti Teknologi MARA Cawangan Johor, Kampus Pasir Gudang.

All extended abstracts published in this e-book have not been subject to JIICaS2023 peer review or check. The authors are responsible for the contents of their extended abstracts and warrant that their extended abstract is original, has not been previously published, and has not been simultaneously submitted elsewhere. The views expressed in the abstracts in this publication are those of the individual authors and are not necessarily shared by the editor.

All rights reserved. No part of this publication may be reproduced in any form or by electronic or mechanical means, including information storage and retrieval systems, or transmitted in any form or by any means, without the prior permission in writing from the Course Coordinator of College of Computing, Informatics and Mathematics, Universiti Teknologi MARA Cawangan Johor, Kampus Pasir Gudang.

e ISBN: 978-967-0033-17-4

**Editors-in-Chief: AHMAD KHUDZAIRI KHALID &
NUR INTAN SYAFINAZ AHMAD**

**Art & Cover Designer: DR. WAN MUNIRAH WAN MOHAMAD
& DR. NUR IDAYU ALIMON**

**Published in Malaysia by
Universiti Teknologi MARA Cawangan Johor
Kampus Pasir Gudang
81750 Masai**





Preface

In the name of Allah, the Almighty who gives us the enlightenment, the truth, the knowledge and with regards to Prophet Muhammad (peace be upon him) for guiding us to the straight path. We thank to Allah for giving us guidance and strength to write this e-book.

This e-book compiles the extended abstracts that submitted to Johor Innovation Invention Competition and Symposium 2023 (JIICaS2023), where JIICaS2023 is a virtual platform for all creative minds to share and present their invention and innovation. The extended abstracts are divided into two categories, which are Category A (Higher Educational Student/ Any Recognized Institutional Students in Malaysia) and Category B (Primary/ Secondary School Students / Special Education School Students in Johor). Each abstract gives a brief background on the innovation or project.

We hope that this e-book will help the readers to get to know the innovation done by the students from both categories and get some ideas to develop future innovation products.



SMART WATERING PLANTS SYSTEM

Muhammad Zulhelmi Bin Mohd Azri¹, Syidatul Akma Binti Sulaiman¹

¹Universiti Teknologi MARA (UiTM) Cawangan Johor Kampus Pasir Gudang, Jalan Purnama, Bandar Seri Alam, 81750 Masai, Johor.

Corresponding author: 2021467064@student.uitm.edu.my (Muhammad Zulhelmi Bin Mohd Azri)

ABSTRACT

Houseplants bring many benefits and will create good ecosystem inside our house. The plants need to be watered every day and different types of plants need different amounts of water. Sometimes, people are too busy or not at home, therefore they will leave the plants unattended. Traditional ways of watering plants can waste a lot of water. The main objective of this innovation is to create a smart watering plants system that focusing on sustainability and self-working system. This system uses a water tank that receives two sources of water, rainwater and tap water. A float valve will be connected to the inlet of tap water. It will stop the supply just after the water level is sufficient and the rest will be filled by rainwater. A control unit will be connected to the outlet of water tank. Users need to set watering intervals and how long it takes in one watering session. A water pump was added to the system to make sure the water can reach all parts of the system. Users can set different amount of water that will be watered to every plant by using the adjustable dripper. By installing this system, the plants will get enough water consistently. It can also boost productivity in our daily life. This system can save water consumption and helpful in maintaining the sustainability of nature. Hopefully this innovation can encourage more people to take care of plants and lead the community towards green.

Keywords: Smart watering plants system, Automatic watering plants, Irrigation system, Houseplants.

1.0 INTRODUCTION

Lately, many Malaysians started a new hobby and interest in taking care of houseplants. Many people enjoy living and working in cultivated greenspaces, and most likely having beautiful plants around. It helps reduce stress levels, help people recover from illness faster, may improve the quality of indoor air and many more. A good ecosystem will exist inside the house.

There are a few things to keep in mind before buying a new plant. The plants need to be watered every day and different types of plants need different amounts of water for their basic needs. People are not always at home, sometimes they will go on vacation or to the outstation and will leave the plants unattended. For the outdoor plants, it will be exposed to rainwater if there is rainy in that period. But for indoor plants, they will die if not watered on time.

Nowadays, people are so busy that sometimes they have no time to water the plants. They go to work early in the morning and come back late at night. People that stay at home can also be very busy, especially those who work from home or have online classes. Some plants require frequent watering that not everyone has the time for.

Other than that, the traditional ways of watering plants like watering pots or water hose can waste a lot of water. This is a bad sign for the Earth. There is also a DIY product, drip irrigation system using plastic bottles that will drop the water little by little, but it does not last long.

Hence, the smart watering plants system will be designed to outcome the current issues. This product has a control system that will water the plants consistently based on the settings set by the user. The water tank can collect rainwater, or from water tap thus it can reduce clean water consumption and a positive sign for our nature.

2.0 OBJECTIVE

To create a smart watering plants system that focusing on sustainability and self-working system that can overcome the current issues regarding taking care of houseplants.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

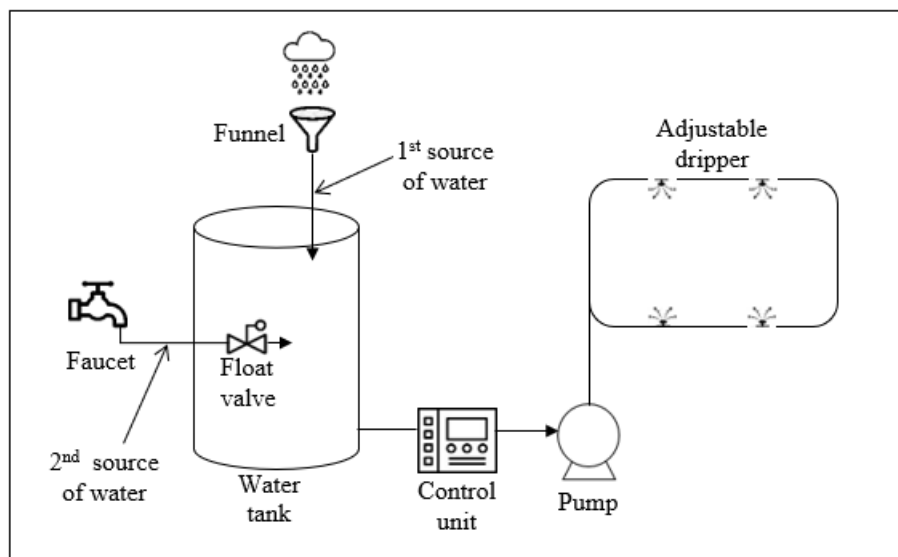


Figure 1: Smart watering plants system schematic

Refer to Figure 1 above, a schematic diagram for smart watering plants system had been constructed. It basically illustrates how this system works. This system uses a water tank which is a 45 L water pail. This water tank receives two sources of water, first, rainwater that is collected and channeled by funnel and pipes and second, tap water directly from faucet.

This system wants to reduce clean water consumption but cannot fully rely on rainwater because not every day will rain and refill the water tank. Therefore, there must be a second source of water, which is tap water, which will keep the water level sufficient. However, an automatic water level control float valve will be connected to the second source of water. The float valve will stop the supply just after the water level is sufficient and the rest will be filled by rainwater.

A control unit will be connected to the outlet of the water tank. This component has a timer function. Users need to set watering intervals and how long it takes in one watering session. This device is an important thing to this system that makes it self-working. After water is released by the control unit, it will go through a water pump. This water pump was added to the system to make sure the water can reach all parts of the system.

Watering tubing hose will deliver the water to the plants. The nozzles that were used are

adjustable eight holes dripper. Users can set different amounts of water that will be watered to every plant using this type of nozzle.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

After installing a complete set of smart watering plants system, user can set timer on the control system. Therefore, the plants will be watered on time as long as there is water and electric supplies to the system. There is also a water pump in this system to ensure that water can reach every place, especially higher or branched places. The plants will get enough water consistently in any situation thus can stay alive. People will not worry anymore about their plants when away from home.

This system can save water consumption. There will be a water tank that connects two sources of water. First, a funnel that will collect rainwater into the tank and second, water from the tap. A control system will monitor the amount of water delivered to every plant so that there is no excessive watering. This is very helpful in maintaining the sustainability of nature.

It can also boost productivity in our daily life. People now can concentrate on doing their work in the house while the plants will be watered automatically. A lot of time now can be spent on other important things. This smart watering plants system can suit any house because it is based on free configuration. The placement of pipes based on the placement of plants pot. There is no fixed shape for this system. It basically different house, different configuration. If the main components are there, the smart watering plants system can work.

5.0 CONCLUSION

As a conclusion, this smart watering plants system can provide good service for users while consistently helping to give basic need to the plants. Users now can fully rely on this new 'assistance'. This system can save clean water consumption and helpful in maintaining the sustainability of nature. Hopefully, this innovation can encourage more people to take care of plants and lead the community towards green.