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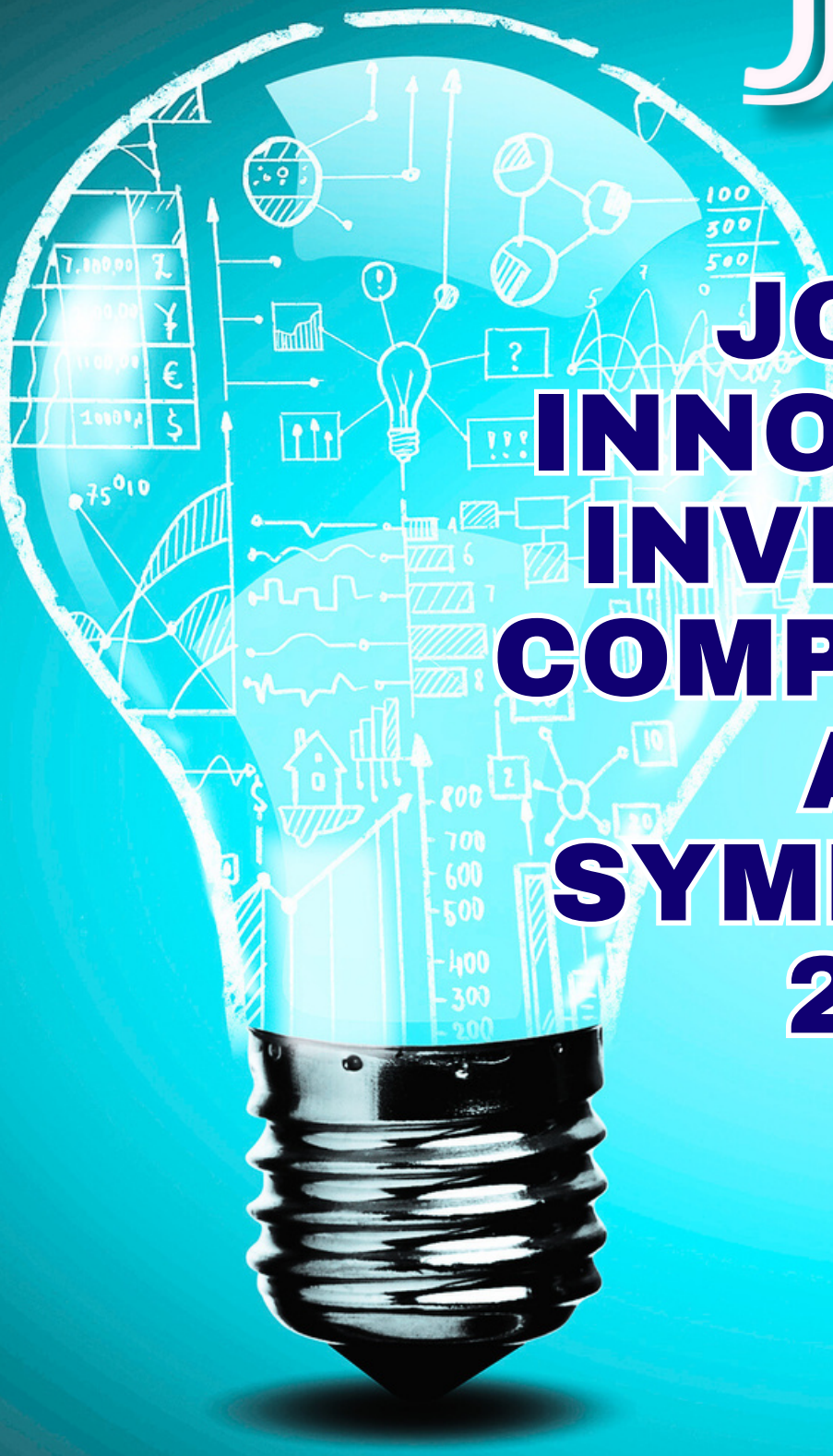

JOHOR INNOVATION INVENTION COMPETITION AND SYMPOSIUM 2023

" Innovation Inspires a Society to be Critical and Creative"

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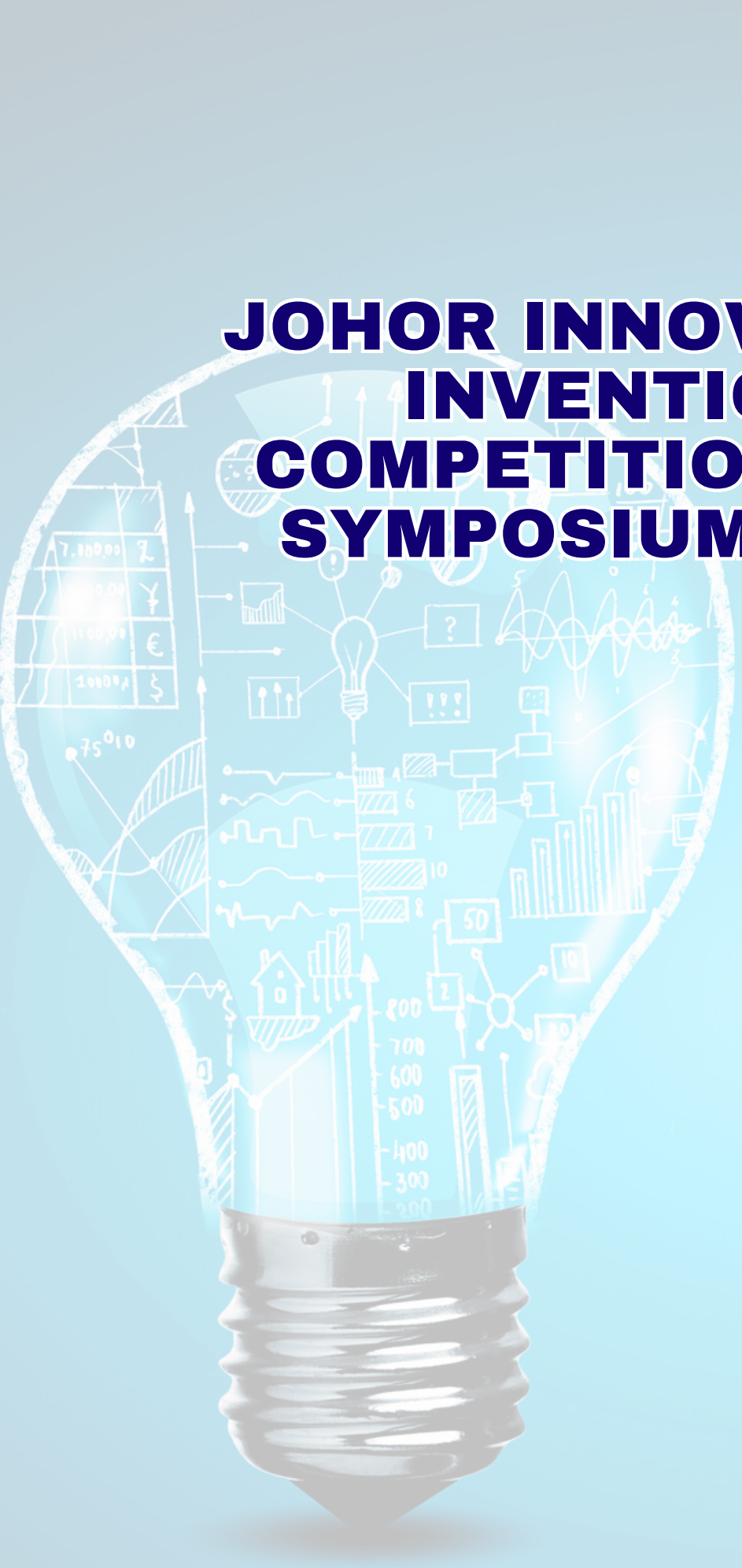

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Editors-in-Chief

AHMAD KHUDZAIRI KHALID

NUR INTAN SYAFINAZ AHMAD

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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.

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MICROCONTROLLER-BASED SYSTEM FOR MONITORING HUMIDITY AND TEMPERATURE IN ELECTRONIC COMPONENT STORAGE

Muhammad Haziq Mohammad
Zurusdif[1], Siti Aishah Che Kar[1], Rina Abdullah[1], Suziana Omar[1],

[1]School of Electrical Engineering
College of Engineering,
Universiti Teknologi MARA, Cawangan Terengganu, Terenganu, Malaysia

Corresponding author: sitia2500@uitm.edu.my (Siti Aishah Che Kar)

ABSTRACT

Electronic components and modules are sensitive to changes in temperature and humidity. The project's objective is to establish an optimal and suitable storage environment for electronic components. The project comprises four key components: the Arduino, DHT11, buzzer, and LCD screen. The DHT11 sensor detects ambient humidity and temperature, while the Arduino functions as the central processing unit of the circuit. The LCD screen displays the current temperature and humidity values within the storage container, and the buzzer serves as an alert system for the user. All these components are enclosed within a container to maintain the desired atmosphere. Utilizing this project is essential for maintaining the components in prime condition and preventing the release of defective products into the market.

Keywords: DHT11, Arduino, Storage System.

1.0 INTRODUCTION

Electronic components are susceptible to damage, breakage, and defects, often imperceptible to the naked eye. Consequently, we may assume that the components we use are in good condition. Drastic temperature fluctuations can lead to the warping of plastic casings, while metal components expand and contract as temperatures shift. However, one of the most harmful factors for electronics is typically humidity, which signifies the moisture level in the atmosphere. Humidity can produce water molecules that infiltrate component insulation, obstruct the flow of voltage, and induce corrosion in microchips.

2.0 OBJECTIVE

The project strives to reduce the incidence of defective electronic components, considering their susceptibility, with the following objectives in mind:

a) Construct an electronic circuit using Arduino to sense temperature and humidity using the DHT11 sensor and exhibit the measured temperature on an LCD screen.

b) Formulate an electronic circuit with Arduino capable of triggering a buzzer to issue an alarm when the recorded temperature and humidity values deviate from the desired range.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

The primary goal of our project is to minimize the occurrence of defective electronic components. The Arduino functions as a microcontroller to oversee temperature and humidity

levels, taking input from the DHT11 sensor and presenting temperature readings on an LCD screen as output. The DHT11 sensor is employed to detect the ambient temperature and humidity and then transmit this data to the Arduino. The Arduino will subsequently assess whether the temperature and humidity fall within the ideal range. If not, the buzzer will sound an alarm to prompt the user to manually adjust the humidity and temperature.

Figure 1: Prototype of the system

4.0 IMPACT OF PRODUCT

With this project, users can anticipate a reduction in defects, leading to increased profits due to fewer defective products. The use of this project is crucial to preserving the components in optimal condition and preventing the distribution of faulty products in the market. Additionally, this project is adaptable to suit users' needs and can be applied in diverse fields, including the chemical industry, libraries, and agriculture.

5.0 CONCLUSION

In summary, the goal of this project is to establish proper storage conditions for electronic components. The Arduino will assess whether the temperature and humidity are within the optimal range. If not, the buzzer will alert the user to manually adjust the humidity and temperature.