



PENGURUSAN TENAGA ELEKTRIK



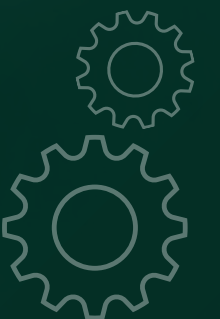
ROOM DATA SURVEY

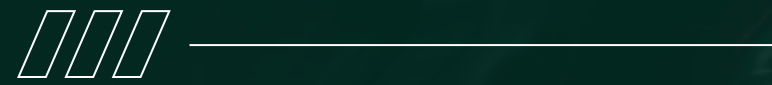


OUR TEAM MEMBERS



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INTRODUCTION

Electricity plays a vital role in supporting teaching, learning, research, and administrative activities within faculty buildings. However, inefficient use of electrical equipment can lead to excessive energy consumption, increased operating costs, and negative environmental impacts. As energy demand continues to rise, implementing energy-efficient practices has become increasingly important to ensure sustainable energy management.

This survey was conducted to assess the energy consumption patterns of selected rooms within the faculty. Data such as room occupancy, electrical equipment, power ratings, and operating hours were collected and analyzed to identify major energy consumers and potential areas for improvement. The findings of this survey will help promote energy awareness and provide recommendations for enhancing energy efficiency within the faculty.



OBJECTIVES



To collect room energy consumption data.



To identify major electrical loads.



To evaluate energy usage patterns



To increase awareness of energy efficiency practices.

SCOPE OF SURVEY



The survey covered 26 rooms located within the FTKIP building. Measurements were conducted to evaluate indoor environmental quality and energy consumption characteristics. Parameters measured included illuminance (lux), temperature, relative humidity (RH), and carbon dioxide (CO₂) concentration. The survey also assessed electrical loads and lighting systems to identify opportunities for energy savings.



SURVEY INSTRUMENTS

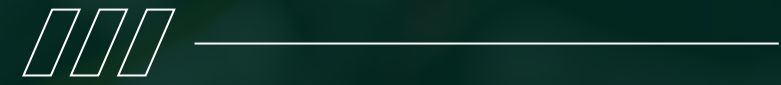


**KKmoon Multifunctional Air
Quality Tester**



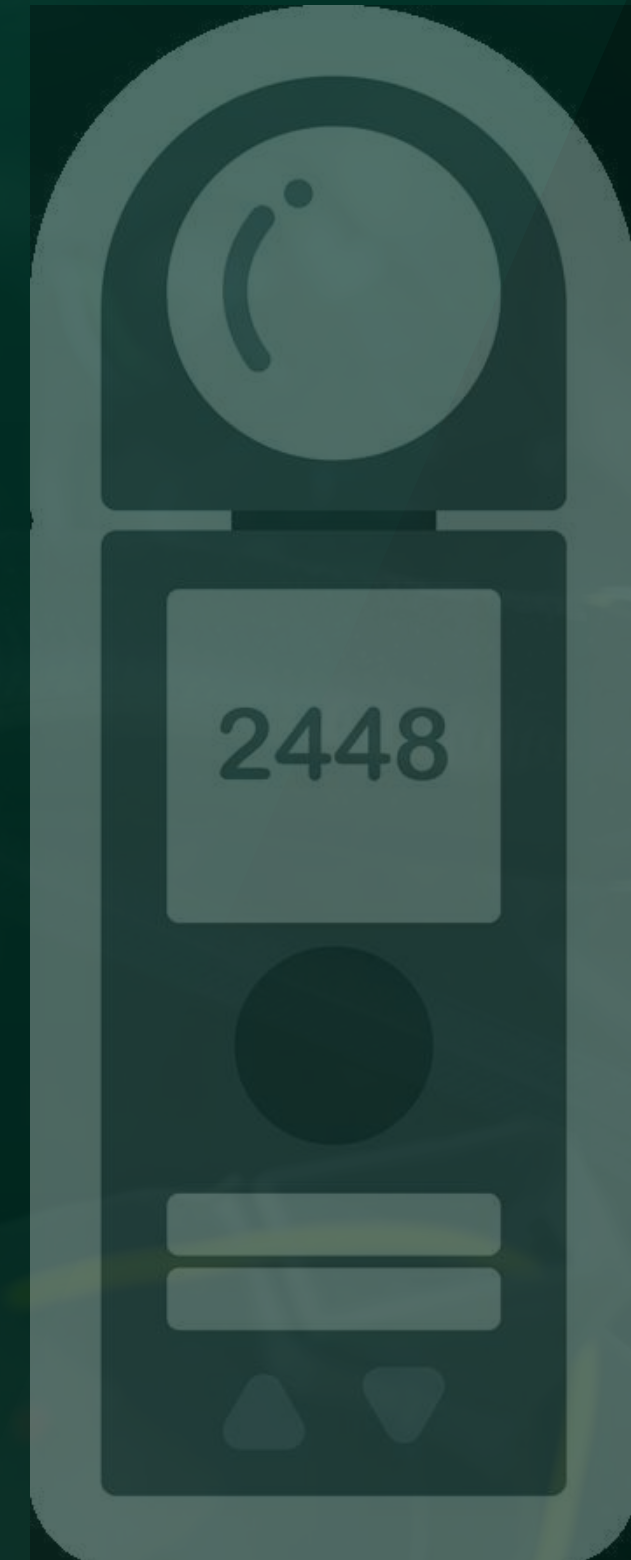
Mini Light Meter



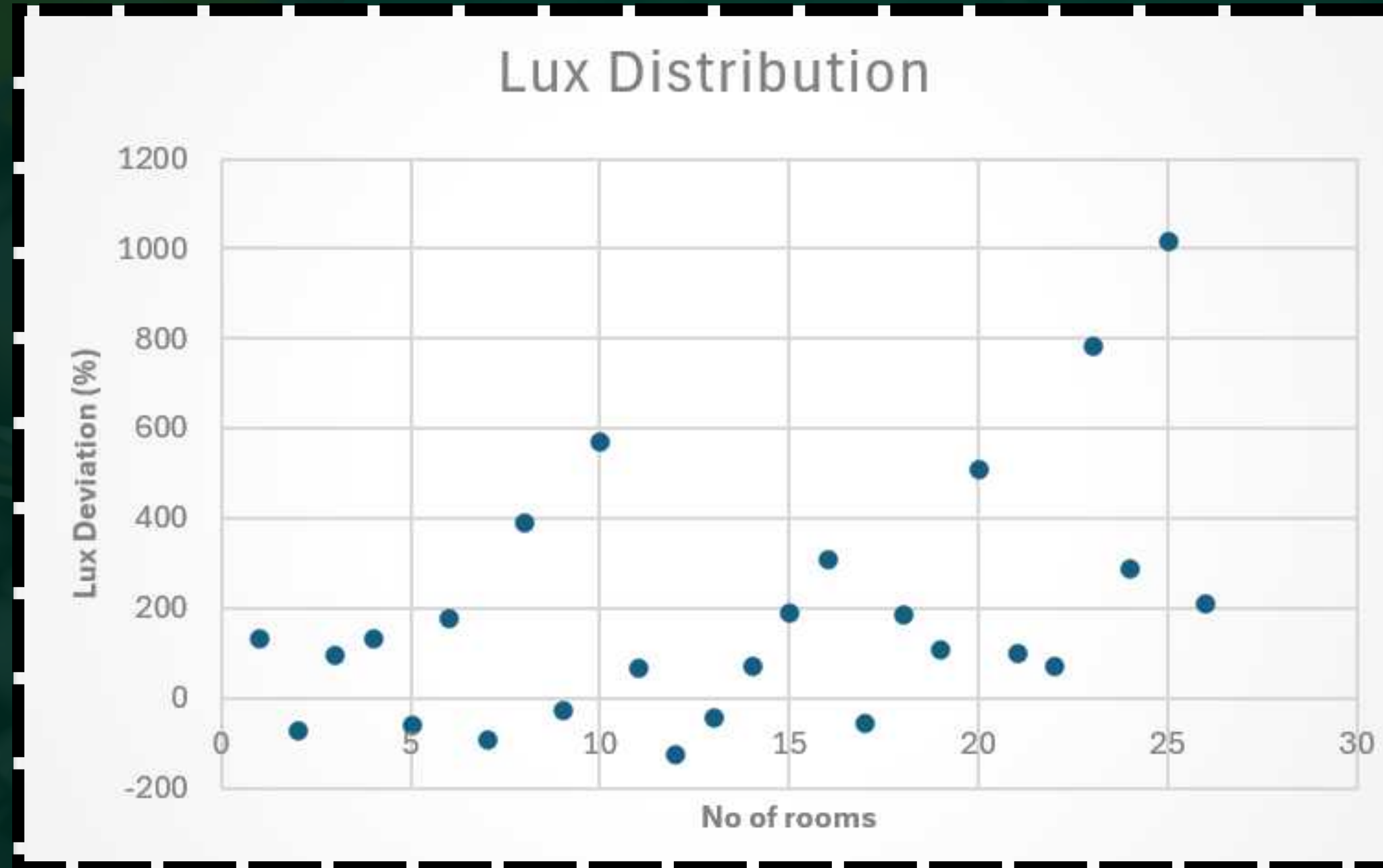


ROOM ILLUMINATION LEVEL

Illuminance readings were collected from 26 rooms using a Mini Light Meter. Three lux readings were taken for each room and the average value was compared with the MS 1525 recommended illuminance level. A tolerance of $\pm 20\%$ was used to classify each room as within range, overlit, or underlit.

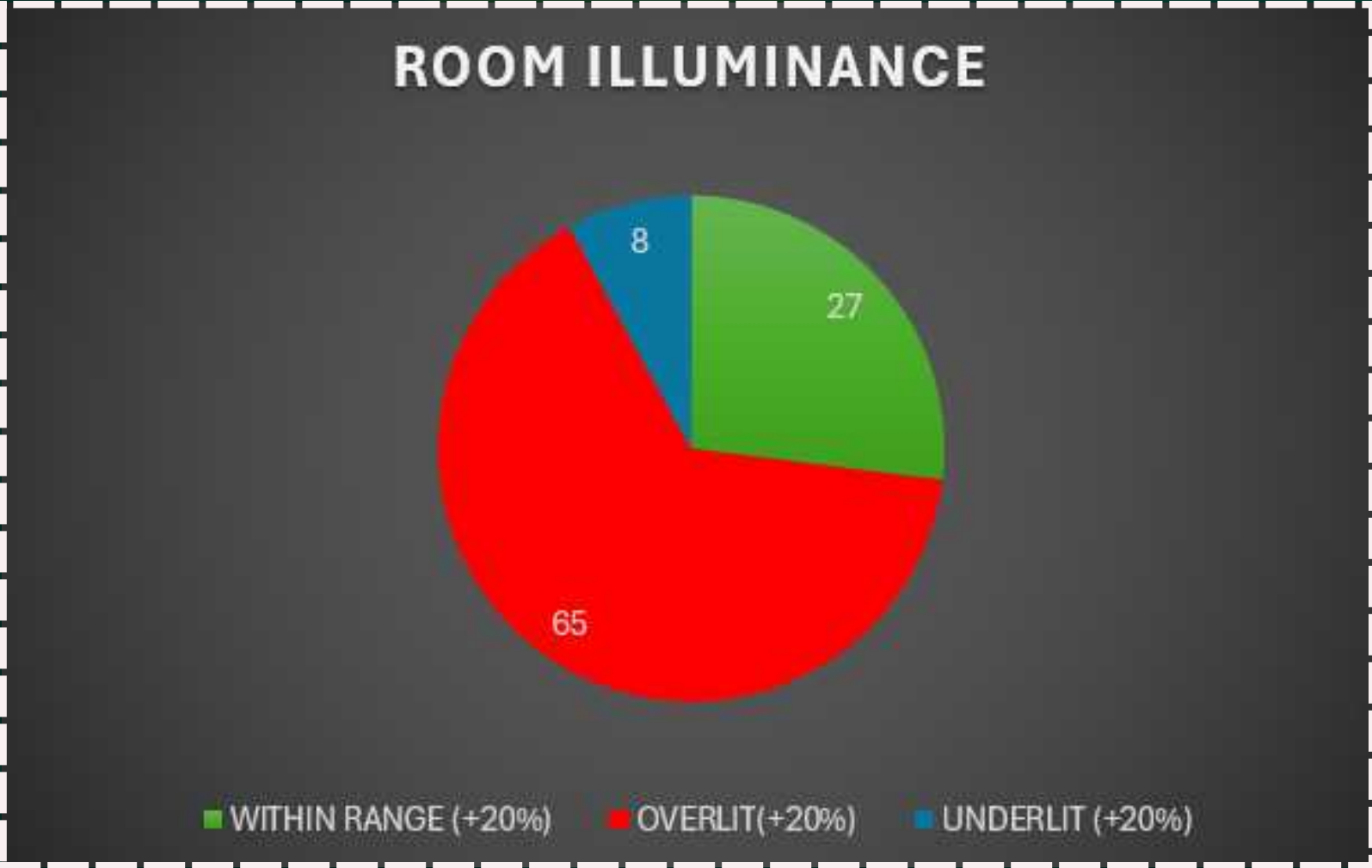


ROOM LUMINANCE



Based on the results, only 7 rooms, which is 27%, were within the acceptable illumination range. Meanwhile, 17 rooms, or 65%, were found to be overlit. This shows that most rooms had lighting levels higher than the recommended standard. Only 2 rooms, or 8%, were underlit, indicating insufficient lighting.

ROOM LUMINANCE



Category	No of Room	Percentage
Within range ($\pm 20\%$)	7	27%
Overlit (More than +20%)	17	65%
Underlit (Lower than -20%)	2	8%
Total	26	100%

The findings from the room luminance survey are summarized as follows:

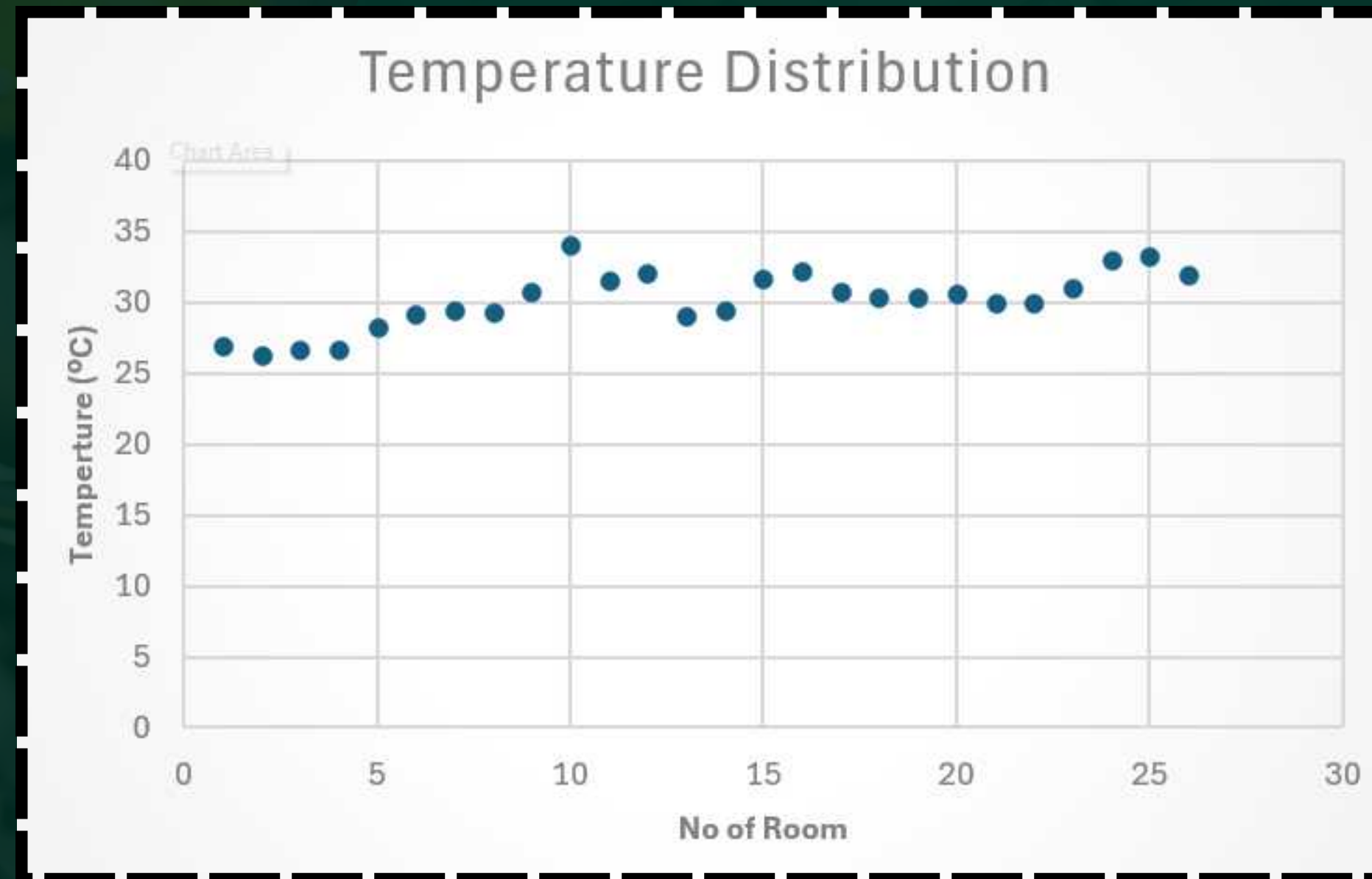
- 7 rooms within range
- 17 rooms overlit
- 2 rooms underlit
- Most rooms exceeded the recommended MS 1525 lux level.

ROOM TEMPERATURE

Room temperature readings were collected from 26 rooms within the FTKIP building using the KKmoon Multifunctional Air Quality Tester. The readings were compared with the MS 1525 recommended indoor temperature range of 23°C to 26°C. The temperature condition was classified into three categories: within range, cold, and warm.

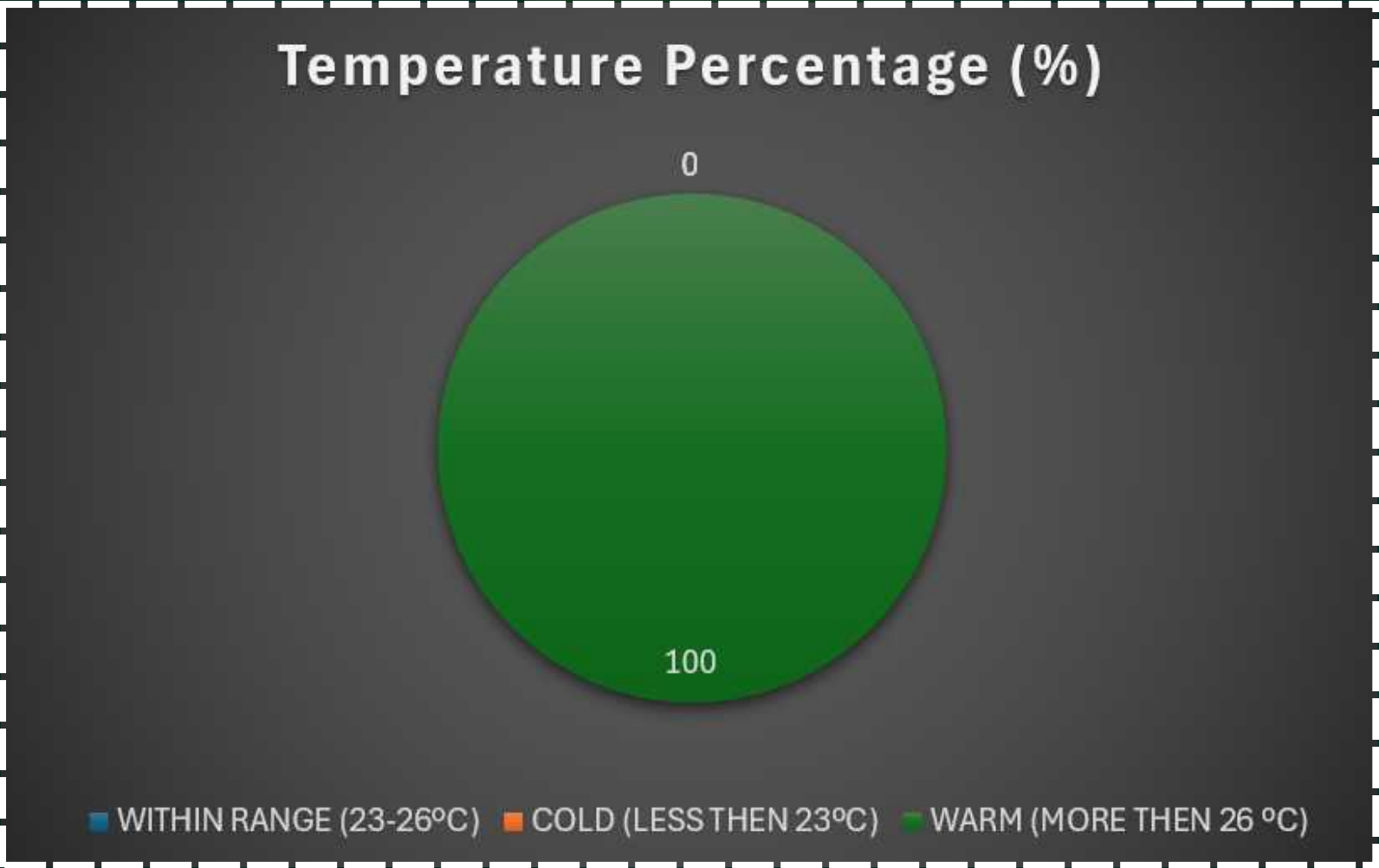


ROOM TEMPERATURE



Based on the results, all 26 rooms, which is 100%, were classified as warm because the temperature readings were above 26°C. No room was recorded within the recommended range, and no room was classified as cold. The temperature readings ranged from 26.3°C to 34.1°C, with an average temperature of about 30.2°C.

ROOM TEMPERATURE



Category	No of Room	Percentage
Within range (23-26°C)	0	0%
Cold (Less than 23°C)	0	0%
Warm (More than 26°C)	26	100%
Total	26	100%

The findings from the room temperature survey are summarized as follows:

- 26 rooms were warm
- 0 rooms were within the recommended range
- 0 rooms were cold
- 100% of rooms exceeded the MS 1525 recommended temperature range
- Average temperature: approximately 30.2°C

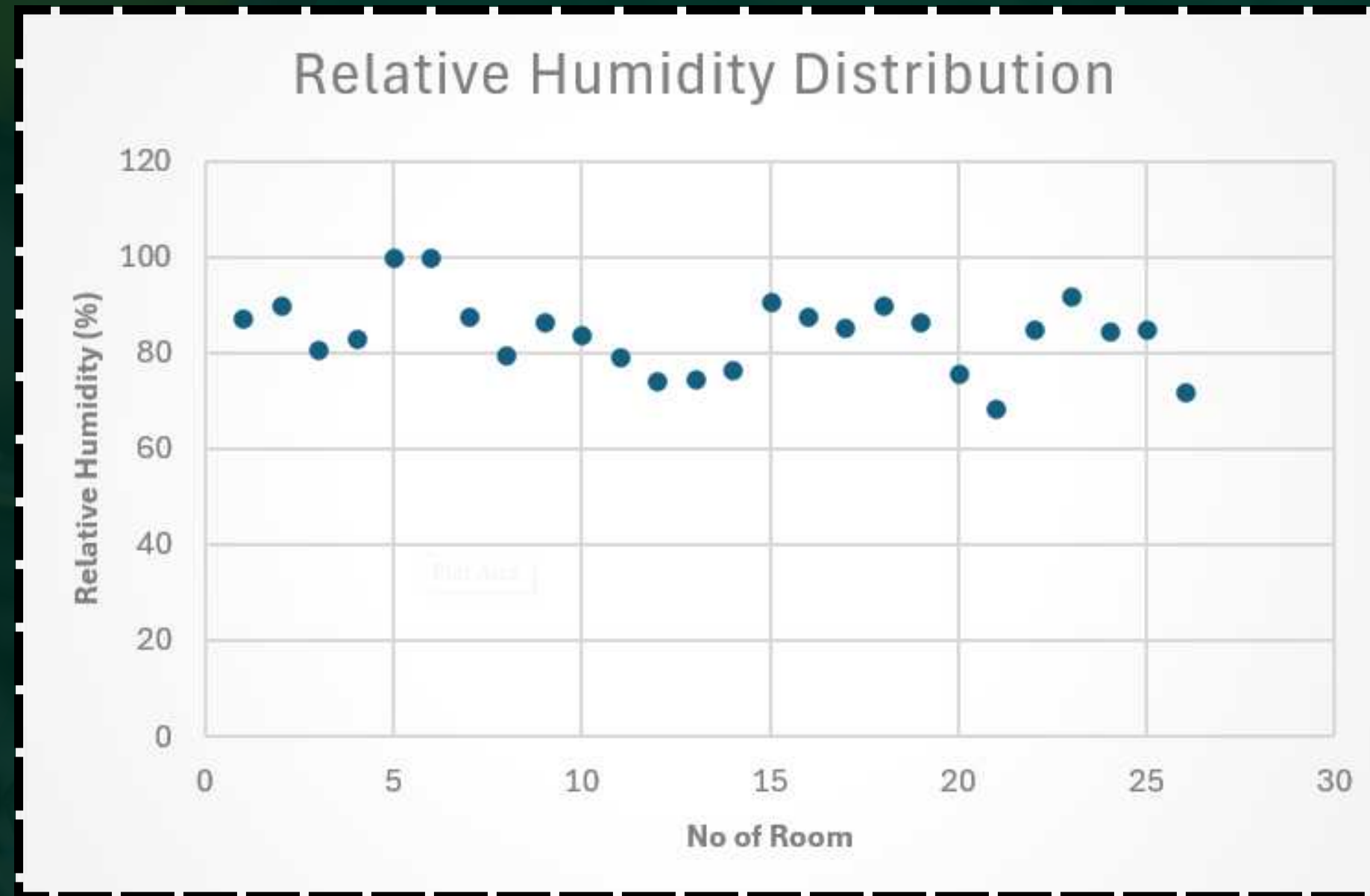
ROOM RELATIVE HUMIDITY

Relative humidity readings were collected from 26 rooms within the FTKIP building using the KKmoon Multifunctional Air Quality Tester. The readings were compared with the MS 1525 recommended indoor relative humidity range of 50% to 70%. The humidity condition was classified into three categories: within range, wet, and dry.





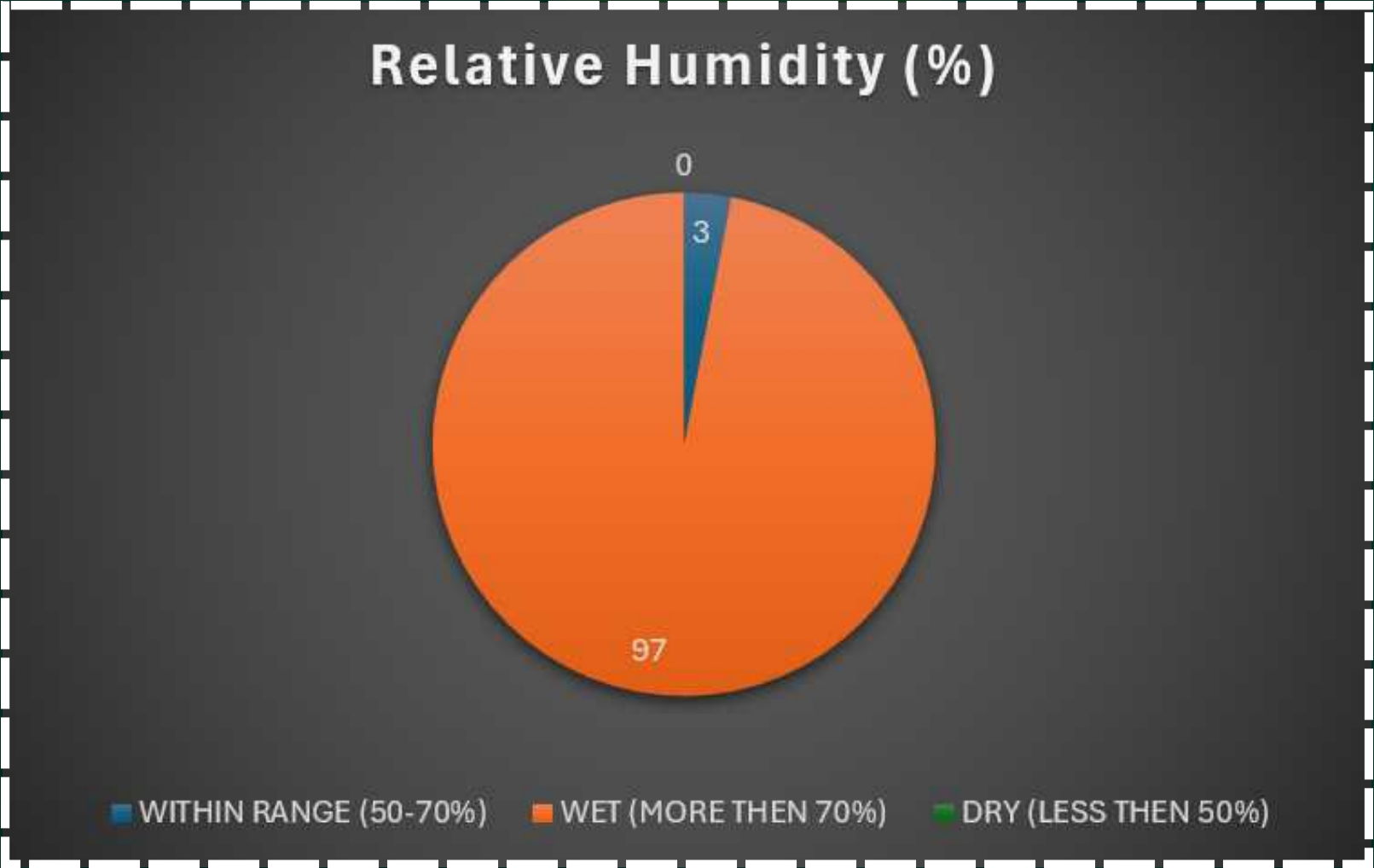
ROOM RELATIVE HUMIDITY



Based on the results, only 1 room, which is 3%, was within the recommended humidity range. Meanwhile, 25 rooms, or 97%, were classified as wet because the relative humidity readings were above 70%. No room was classified as dry. The relative humidity readings ranged from 68.5% to 99.9%, with an average relative humidity of about 84.0%.

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ROOM RELATIVE HUMIDITY



Category	No of Room	Percentage
Within range (50-70%)	1	3%
Wet (More than 70%)	25	97%
Dry (Less than 50%)	0	0%
Total	26	100%

The findings from the room humidity survey are summarized as follows:

- 25 rooms were wet
- 1 room was within the recommended range
- 0 rooms were dry
- 97% of rooms exceeded the MS 1525 recommended relative humidity range
- Average relative humidity: approximately 84.0%

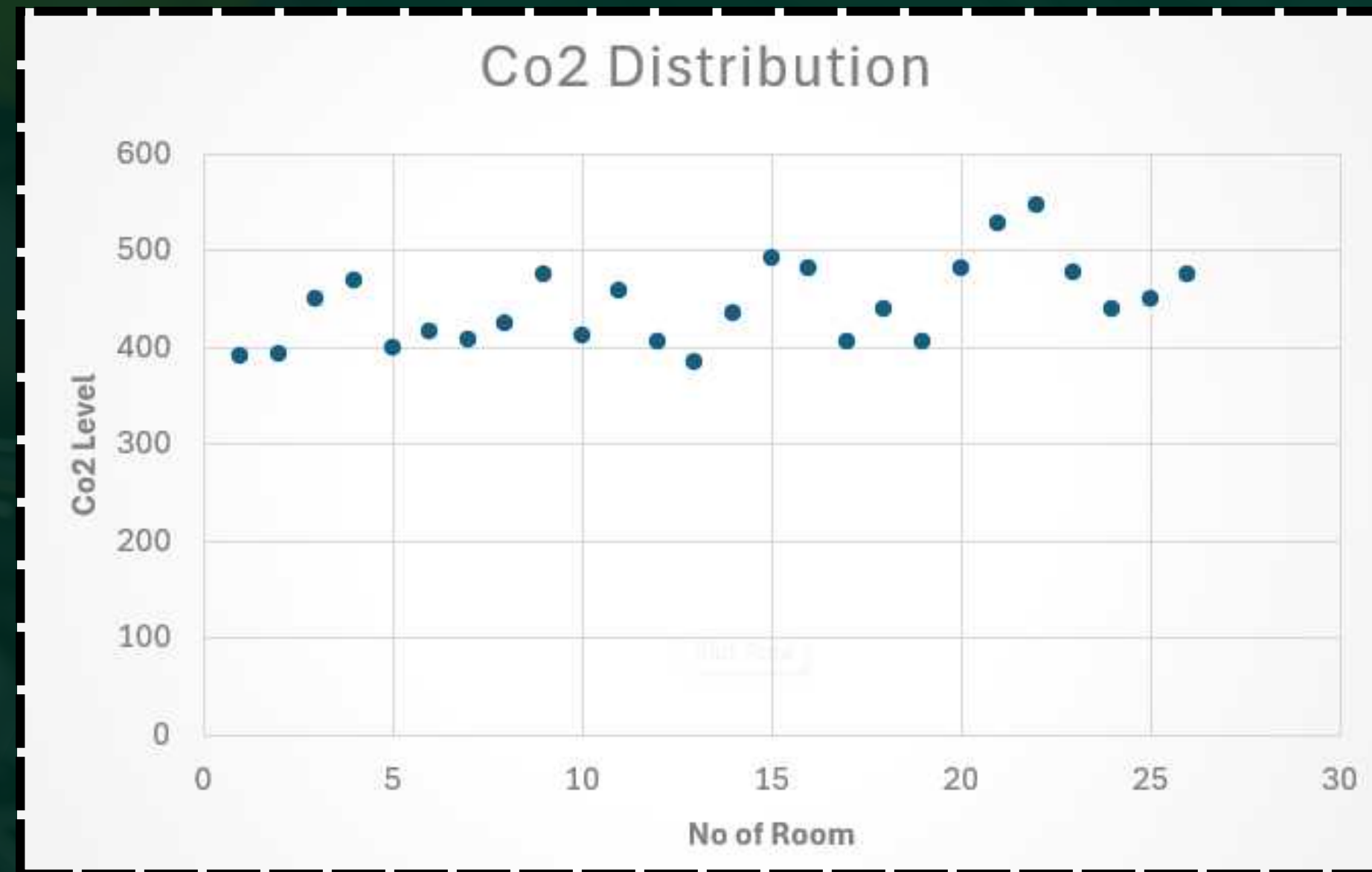


ROOM CARBON DIOXIDE

Carbon dioxide readings were collected from 26 rooms within the FTKIP building using the KKmoon Multifunctional Air Quality Tester. The readings were compared with the MS 1525 recommended indoor CO₂ range of 800 ppm to 1000 ppm. The CO₂ condition was classified into three categories: recommended range, below range, and over range.

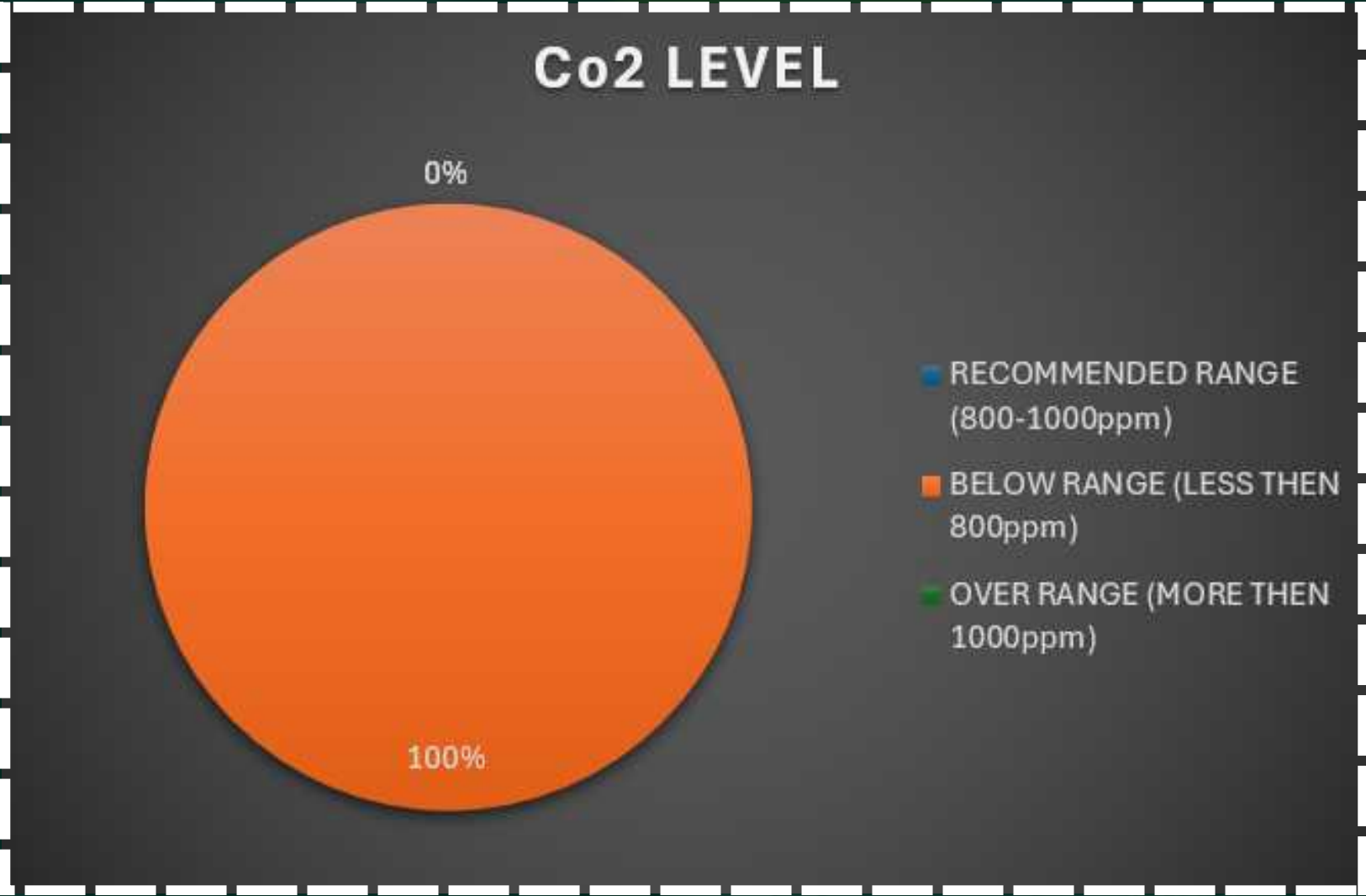


ROOM CARBON DIOXIDE



Based on the results, all 26 rooms, which is 100%, were classified as below range because the CO₂ readings were less than 800 ppm. No room was recorded within the recommended range, and no room exceeded 1000 ppm. The CO₂ readings ranged from 385 ppm to 548 ppm, with an average value of about 444 ppm.

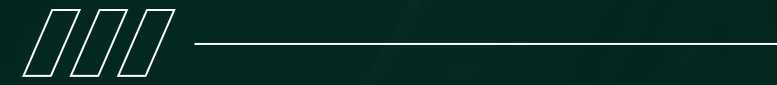
ROOM CARBON DIOXIDE



Category	No of Room	Percentage
Recommended range (800-1000ppm)	0	0%
Below range (Less than 800ppm)	26	100%
Over range (More than 1000ppm)	0	0%
Total	26	100%

The findings from the room carbon dioxide survey are summarized as follows:

- 26 rooms were below the recommended range
- 0 rooms were within the recommended range
- 0 rooms were over the recommended range
- 100% of rooms recorded CO₂ levels below 800 ppm
- Average CO₂ level: approximately 444 ppm



FINDINGS & DISCUSSION



The survey results show that most rooms did not fully meet the recommended indoor comfort range based on MS 1525. For illumination, 65% of rooms were overlit, which indicates possible excessive lighting and unnecessary electricity use. Only 27% of rooms were within the acceptable lux range, while 8% were underlit.

For temperature, all 26 rooms were classified as warm, with 100% of rooms exceeding 26°C. Relative humidity was also high, where 97% of rooms were classified as wet. However, CO₂ levels were low in all rooms, showing that the rooms had acceptable air freshness during the measurement period.

Overall, the main issues identified were excessive lighting, high temperature, and high humidity. These conditions may affect occupant comfort and increase energy consumption if not properly managed.



ENERGY SAVING RECOMMENDATIONS



- Lighting energy can be reduced by switching off unused lights, using suitable lamp wattage, and maximizing natural daylight. Overlit rooms should be reviewed to reduce unnecessary lighting without affecting visibility.
- Air-conditioning systems should be maintained regularly to improve cooling performance. Thermostat settings should be adjusted to a suitable comfort range, and doors or windows should be kept closed when air-conditioning is operating.
- Rooms with high humidity should improve ventilation and air circulation. Regular maintenance of air-conditioning filters and drainage systems can also help reduce humidity levels.
- Energy awareness should also be promoted among staff and students. Simple practices such as turning off lights, fans, air-conditioners, and unused electrical equipment can help reduce overall energy consumption.

CONCLUSION



In conclusion, the room data survey showed that the FTKIP building has several indoor environmental and energy efficiency issues. Most rooms were overlit, warm, and had high relative humidity, while CO₂ levels were generally low.

The findings indicate that energy-saving actions are needed, especially for lighting and air-conditioning systems. By applying proper maintenance, better equipment control, and energy-saving practices, the faculty can improve indoor comfort while reducing electricity consumption.

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THANK YOU

