



SDI Review Form 1.6

Journal Name:	Journal of Engineering Research and Reports
Manuscript Number:	Ms_JERR_45239
Title of the Manuscript:	Experimental Investigation of the Performance and Energy Consumption of an Automated Ice-cube Making Machine
Type of the Article	Original Research Article

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound. To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	For developed ice cube plant, energy usage, ice cube production and refrigeration system performance is studied 1. For performance analysis 24°C and 32°C temperatures were maintained why these two temperatures are selected, as this is ambient temperature condenser is to operate at these temperatures. 2. If any standard for controlled climate testing is available, it needs to be mentioned 3. How these temperature conditions were maintained for span of 5 hours, there is no mention of the facility used to maintain these temperatures, kindly include the arrangement in setup diagram 4. Is data logger used for temperature recordings with time? 5. What is the climate temperature for all the figures plotted? i.e Fig.3 to Fig. 10 are plotted for 24°C or 32°C 6. COP comparisons for 24°C and 32°C is required along with energy consumption 7. Does the setup harvest cycle runs on hot gas defrosting method? It seems that hot gas defrosting is used, please compare the advantage over the commercial systems	1. The 24°C and 32°C ambient temperatures were chosen for the performance analysis based on extreme indoor ambient condition in a wide range of regions the machine is designed to operate under. If the machine operates under a temperature (very high) close to the condensing temperature, the condenser effectiveness will be affected greatly and thus the condensation process. 2. There is no known standard scientific method of controlling ambient temperature. Researchers have always tried to control ambient condition by adding or removing heat from the controlled environment. 3. The experiment was carried out in a carefully controlled environment such that the ambient temperature variation is within $\pm 2^\circ\text{C}$ and the average ambient temperature reading is used. Vents were open to remove heat that is been added to the room. The experiment under 24°C was carried out at a time during the night when the ambient temperature has fallen to around 24°C and that of 32°C was carried out during the day when the ambient temperature has risen to about 32°C. the experiment took less than 2.5 hours for the first part where ambient condition is maintained 4. T-type Thermocouple Data logger was used for recording the temperature over the specified period of time coupled with a stop watch kept for recording time 5. The experimentation in this study is in two parts. The first part is to investigate the ambient condition impact on productivity and energy consumption, while the second part is to analyse the refrigeration system performance of the developed machine. The experimentation for the refrigeration system performance of the designed automated ice cube making machine which brought about the analysis discussed with Fig. 3 to 10 was carried out at room temperature (average of 23°C). 6. Author thinks COP comparison for the 24°C and 32°C is not necessary. The experimentation is in two parts; and the part that investigates the effect of ambient condition on quantity of ice produced and energy consumption does not consider the COP of the system. Since the machine runs different cycles (cooling and heating) during and ice making and harvesting modes, the COP is aggregated for cooling and heating process separately in the refrigeration system performance analysis in the second part of the study 7. Author has complied with the reviewer's suggestion. The harvesting of ice is achieved through hot gas defrost method.
Minor REVISION comments		



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<u>Optional/General</u> comments	Overall results obtained are good as compared to commercial icemakers that claim ice making time as 3600 seconds and harvesting time as 210 sec. The overall time for freezing and harvesting for the developed ice maker is on very much lower side. The energy consumption reduction is also remarkable, overall a good manuscript for publication with suggested changes.	