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**NATIONAL CONFERENCE ON  
TECHNICAL ADVANCEMENTS FOR  
SOCIAL UPLIFTMENT**

**VNC - 2020 TASU  
4<sup>TH</sup> APRIL, 2020**



**Organized by:**

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K.T. Marg, Vasai (W) - 401202

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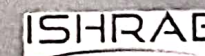
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### About us:

Vidyavardhini means a Body committed to enhancement of Knowledge. Vidyavardhini was established as a registered society in 1970 by late Padmashri H. G. alias Bhausaheb Vartak for the noble cause of education in rural areas.

Vidyavardhini's College of Engineering and Technology, Vasai is located on the sprawling campus of Vidyavardhini, spread over an area of 12.27 acres. It is a short, two minutes walk from Vasai Road (W) Railway Station. The college is also accessible by road from Mumbai.

Vidyavardhini Society received approval from AICTE to start the new college of Engineering & Technology with effect from July, 1994. The college is affiliated to the University of Mumbai for the four year degree program leading to the degree of Bachelor of Engineering in six branches.

### Objective of VNC 2020 TASU

Technology has always been potential tool for simplifying the way we do things. Present time demands directing the technological advancements towards addressing societal challenges such as improving health care, education environment, sanitation, agriculture, smart city, etc., VNC 2020 TASU aims to provide an opportunity to researchers, academicians, industrialist and students to interact and share their ideologies and contributions made for social upliftment with the aid of technological advancements.

### Call for paper

We welcome submission in following area

1. Sustainable Computing
  2. High Performance Computing
  3. High Speed Networking and Information Security
  4. Software Engineering and Emerging Technologies
  5. Mathematical, Experimental, Computational and AI, IoT Techniques in Mechanical Engg.
  6. Industrial Engg., ERP, MRP, SCM
  7. Renewable Energy Technologies
  8. Pollution control and Waste Management
  9. Advances in Structural engineering
  10. Present geotechnical practices
  11. Present practices in construction management
  12. Recent developments in Instrumentation, control and automation
  13. Embedded Systems, IoT and VLSI Design
  14. Optical and Wireless Communication for NGN
  15. Antenna and Microwave Devices
- Any other relevant topics

### Publication Information

Proceedings of VNC - 2020 TASU will be published with ISBN number

1. Selected Papers will be published in International Journal of Information Technology, Published by Springer Nature, ISSN: 2511-2104 (Print Version), ISSN: 2511-2112 (Electronic Version)
2. All papers will be published in IJERT, ISSN: 2278-0181

### Important Dates:

- Submission of full length paper 15<sup>th</sup> Feb 2020
- Paper Acceptance Notification 22<sup>nd</sup> Feb 2020
- Submission of Final Version of Paper 29<sup>th</sup> Feb 2020
- Registration Deadline 5<sup>th</sup> March 2020
- PPT Submission 20<sup>th</sup> March 2020
- Conference 4<sup>th</sup> April 2020

### Registration Fee Details:

Category of Delegates / Authors	Indian Authors & Delegates (in INR)
Full Time Students (UG)	1,500.00
Teachers/ Research Scholars/ PG students	2,500.00
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### Paper Submission:

Paper submission should be made strictly via Easy Chair the submission link for VNC 2020 "TASU":

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**\*Best paper award  
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# Design of an innovative refrigerated display cabinet

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**Abstract**—An innovative refrigerated display cabinet is an open refrigerator designed with a PVC curtain and air curtain. This acts as an artificial door between the cabinet and outside area. In this paper we have discussed the comparison between air curtain and PVC curtain. Due to transparency of PVC material customer can see the product and access the product. The purpose of using PVC strip curtain is to keep cabinet temperature between -2°C to +6°C and food product temperature between 0°C to +6°C where as air curtain, cabinet temperature can be obtained +6°C to +9°C and food product temperature +12°C to +22°C. Thus it has been observed that electrical energy consumption including compressor power and fan power is to be 1.63KWh/day for air curtain and 1.12KWh/day for PVC curtain.

**Keywords**—PVC Curtain, Air Curtain

## I. INTRODUCTION

In market, there are two types of refrigerators available according to their applications that is open refrigerated display cabinet and closed refrigerated display cabinet. An open refrigerated is most commonly used in big markets, malls and grocery shops. And the closed type refrigerated is having limited use for domestic purpose.

### A. Closed refrigerated display cabinet-

A closed refrigerated is most widely used for domestic purpose. It is not used in supermarkets, malls because of more number of door opening frequency. An experimental study was performed to investigate the effect of operating conditions such as door opening frequency, product ambient temperature, volume occupied by the product, ambient conditions inside the closed

refrigerated display cabinet. Due to higher door opening frequency the food product temperature inside the cabinet is affected [1].

### B. Open refrigerated display cabinet-

Open type refrigerated is used in supermarkets because it has an extra use over the closed type refrigerated display cabinet. Feature of an open type refrigerated display cabinet is that it provides an ample space which is more than convenient to use. A night curtain is introduced when operating at night to enable power saving. CFD comparisons of open-type refrigerated display cabinets with/without air guiding strips result show that the air guiding strips decrease both the temperature of the chilled food products and the cooling capacity consumption [2].

In the present paper, comparison between refrigerator enclosed with PVC strip curtain and air curtain has studied. In open type refrigerated display cabinet there is absence of door between the inside cabinet and warm ambient air. This type of arrangement gives easy access of food to the consumer to choose their product. Here, a refrigerator is designed with air curtain and PVC curtain which behaves similar to the door provided in the close type refrigerated display cabinet. It consists of two shelves including grill shelf and bottom panel where food products are kept. Either air curtain or PVC curtain is introduced for obtaining lower food product temperature. Usually open refrigerated display cabinet uses air curtain. The solution provided here use of PVC curtain in place of air curtain. Design presented below is of machine which can compare open display cabinet using air curtain and PVC curtain.

a) Innovative refrigerator with air curtain-

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VNC - 2020 TASU  
27<sup>th</sup> June, 2020

IEEE BOMBAY SECTION



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This certificate is presented to  
Rishabh Manoj Melwanki  
of  
Vidyardhini's College of Engineering and Technology

for presenting paper titled  
Design of an innovative refrigerated display cabinet (NTASU1028)

in the Vidyardhini's National conference 2020 "Technical Advancements for Social upliftments" organised by Vidyardhini's College of Engineering and Technology, Vasai held on 27<sup>th</sup> June, 2020

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