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VNC - 2020 TASU

VIDYAVARDHINI'S NATIONAL CONFERENCE ON TECHNICAL ADVANCEMENTS FOR SOCIAL UPLIFTMENT

VNC - 2020 TASU

4TH APRIL, 2020

Organized by:
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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.

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15. Antenna and Microwave Devices

Any other relevant topics

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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
15TH Feb 2020
Paper Acceptance Notification
22ND Feb 2020
Submission of Final Version of Paper
29TH Feb 2020
Registration Deadline
5TH March 2020
PPT Submission
20TH March 2020
Conference
4TH April 2020

Registration Fee Details:

Category of Delegates / Authors	Indian Authors & Delegates (in INR)
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Experimental Investigations of a Solar Oven for Domestic Cooking

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***Abstract*—today world is facing the problem of different types of pollution and it is becoming difficult to cope up with the pollution issues. Cooking by traditional or conventional is increasing the problems man is facing and something needs to be done to stop it. In Rural areas people are facing the problem of breathing and chronic diseases. Appropriate steps need to be taken to avoid further problems. A solution is given in this paper that is to use solar energy to cook food in daylight to save the electricity and also decrease the health related problems people face.**

***Keywords*—solar energy, rural areas**

INTRODUCTION

Usage of energy is increasing day by day. This causes surge in usage of fossil fuel increasing carbon emission and increasing the danger of global warming. Due to advancement in aviation , automobile , cooking methods we have seen the percentage of carbon dioxide has increased drastically . Around the globe, hundreds of millions of people have limited access to cooking fuels [source: SCI]. In most cases, electricity and gas are out of the question; only charcoal and firewood are within reach, and even charcoal can be too expensive. So we're left with wood. Health problems starts rising due to pollution caused by cooking with 'chulas' .Major disease like bronchitis, cancer ,lung cancer are found to occur. One estimate puts the number of people who die from this type of air pollution at 1.5 million per year [source: Madrigal]. A solar cooker eliminates the need for an open flame, meaning air. Solar cooking doesn't use smoke that can contain carcinogens or microwaves that expose your food to potentially dangerous radio waves. When people use open fires to cook indoors, they end up inhaling micro-particles that can cause all sorts of health problems, including both lung and heart disease. Use of solar cookers decreases carbon percentage and provides independence from the main grid sources. Solar cooking doesn't use smoke that can contain carcinogens or microwaves that expose your food to potentially dangerous radio waves. When you cook over a campfire, the smoke can irritate your eyes and respiratory system, and open fires present dangers to children. Plus, when you cook in a solar appliance, the nutrients stay in the food and don't leach out. That's because you don't use water in solar cooking. And, the temperatures in a solar oven are moderate – around 325 F – so nutrients aren't destroyed during cooking at a high temperature like on a grill or over an open flame. No fuel burn so no Smoke and no Co2 produce at cooking Co2 emission saving = 0.82kg/KWh (Average for KWh Electricity Generation)

PCMs	Heat of fusion (kJ/kg)	Specific heat solid/liquid (kJ/kg°C)	Melting point (°C)	Density solid/liquid (kg/m³)
Acetanilide	222	2.0/2.0	118.9	1210/1020
Capric acid	150–158	1.9/1.6–1.7	30.1	-
Lauric acid	212	1.8/2.3	41.0–43.0	1007/862
Acetamide	263	1.9/1.9	82.0	1159/998
Pentadecane acid	159	-	52.5	-
Palmitic acid	198	1.9/2.8	59.9	-
Myristic acid	192	1.7/2.4	53.8	-
Stearic acid	160	1.6/2.2	55.1	965/848
Erythritol	340	1.4/2.8	118.0	1480/1300
Magnesium nitrate hexa-hydrate	163	1.8/2.5	89.0	1636/1550

considering above calculation total Co2 emission saving is 672*0.82 = 551kg/ year

Phase change materials (PCM)

Literature reported different PCMs appropriate for energy storage in the range of temperature of 50–100 °C. Table 1 displays the thermo-physical features of most common PCMs used in literature. Tested several PCMs namely acetamide, stearic acid, magnesium nitrate hexahydrate, acetanilide, and erythritol by conducting numerical simulation of heat transfer in these PCMs. They reported that it is best for latent heat storage solar cooker to use acetamide. Based on their study and due to its low cost and because of its high availability in the market, acetamide of commercial grade (CH3CONH2) was chosen as the PCM in this study. Acetamide of commercial grade was utilized as a material that stores latent heat with a melting point of 82 °C which is appropriate for the application in this study. The use of a box type solar cooker is limited because cooking of food is not possible due to frequent clouds in the day or in the evening. If storage of solar energy can be provided in a solar cooker, then there is a possibility of cooking food during clouds or in the evening, and the storage will increase the utility and reliability of the solar cookers. If the cooking vessel is surrounded by a PCM unit, then the rate of heat transfer between the PCM and the food will be higher, and cooking can be faster. Experiments with solar cookers indicate that foods are cooked at temperatures between 95 and 978C. No appropriate and promising PCM, having a melting temperature between 95 and 105 degrees Celsius is available in the literature. Therefore, in the present case, commercial grade acetamide (melting point 828C) is used as a latent heat storage material, which has the nearest melting temperature out of the quoted materials in the literature.

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This certificate is presented to

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

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