



INTEGRATED SOLAR KITCHEN

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Abstract: *The green building technique is an effective way to utilize energy .The availability of solar energy is maximum in these type of building hence the concept of solar cooking inside the kitchen is developed and thus conserve the non-renewable source of energy like as LPG, electricity etc. saves monthly charges. Green building is energy efficient safe and healthy for human being. Green building like as sustainable building is a structure that is designed renovated operated or reused in an ecological and resource efficient manner. Today's society needs to build sustainable building to take care of our environment and home owners. The integrated solar kitchen system is cost effective technique. The design of integrated solar kitchen conserves the solar energy in an efficient manner. The southern side orientation kitchen is considered to implement this design. The proposed design is fitted as an architectural element of building at certain height. The whole part of kitchen is not heated by this method. The problem of handing solar cooker is short come by this technique.*

Key words: *Green Building, Solar Kitchen, Solar ShadingDevice, Integrated Kitchen.*

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1. INTRODUCTION

The integrated solar kitchen concept was developed for south facing house. In this type of kitchen, utilization of solar energy is maximum so hygienic environment available for human being. The availability of solar energy is maximum, then solar cooking possible inside the kitchen with some special arrangement. The space of ventilation is utilize for solar cooking and saves non-renewable source of energy like as LPG, electricity etc. The problem of handling solar cooker on roof and space of sunlight is short come by integrated solar kitchen [1]. The effective use of solar energy for cooking purpose is possible in such a way. The cooking station made inside the kitchen in place of ventilation space provides glasses in whole part to conserve the maximum solar energy.

2. METHODOLOGY

Solar shading affects energy use in a building by reducing solar gains and by modifying thermal losses through windows [1]. Shading devices also influence day lighting levels in a room and the view to the exterior Bekooy [2]. Shading is thus closely connected with energy use in buildings for heating, cooling and lighting and with the occupants' visual and thermal comfort. Both energy use and comfort are crucial issues. Energy use is related to important economic and environmental factors while comfort affects the well being and productivity of occupants in a building Andresen [5]. Shading of buildings with respect to both energy use and comfort is a complicated task. Fortunately, a large number of studies have addressed this issue and knowledge on this subject is abundant. The main purpose of the present review is to describe and discuss critically a large part of this knowledge related to solar shading and building energy use in order to understand the organisation and extent of knowledge in this field and to identify areas of work which have been neglected or need further investigation Bilgen[4]. Through critical discussions of the literature, this review also permits the identification of weaknesses in existing research methods and general concepts and makes it possible to define future research purposes and objectives as well as methods which need to be developed to study.

2.1 Solar panel system for house lighting:

Solar panels are placing on shading structure. The shading device used for multipurpose. The shading structure provides minimum heat gain inside building and at the same time plate charging continues.



2.2 Solar cooking integrated kitchen:

The biggest advantage of solar cookers is their eco-friendliness. It can maintain better air quality indoors and reduce the amount of carbon monoxide emissions. The quality of food cooked in a solar cooker is also notable. There is no danger of burning food and flavours remain intact. Solar cookers can be used for grilling, roasting and baking food. Baked foods also retain moisture and softness if the solar cooker is used properly. Solar cookers are easily accessible to people around the globe.

3. PROPOSED WORK

The solar kitchen is designed in a such manner the available space is utilized for proper conservation of solar energy Pande Thanvi[3]. The sun light is available maximum for 8 to 12 month in north and south india so the concept of solar kitchen is beneficial for this area. The orientation of integrated solar kitchen is southern facing where maximum solar radiation comes inside the kitchen. Thus building orientation along with day lighting and thermal mass are crucial considerations of passive solar construction that can be incorporated into virtually any new home design.

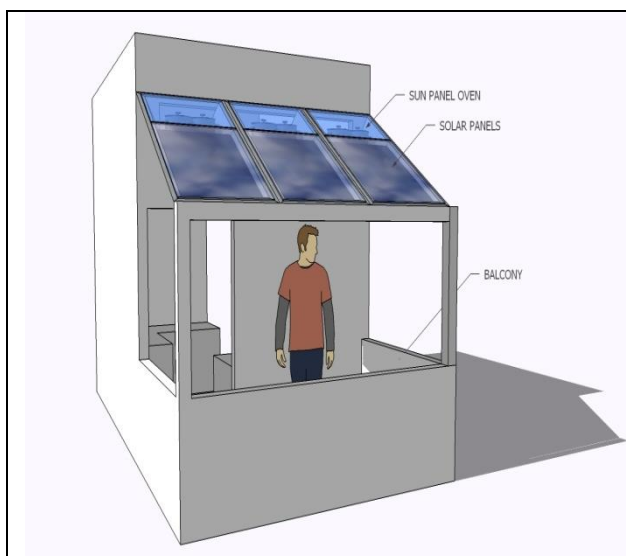


Fig 1 Solar panel arrangement

Solar panels are placed on the roof of the shading structure. It is used for home lighting purpose.

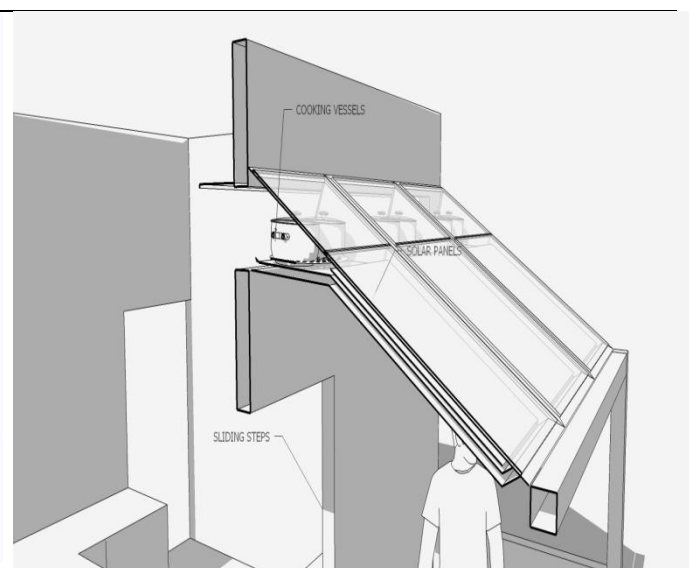


Fig 2 Orientation of solar panel

This type of arrangement of solar panel provides indirect heat gain inside the building. It minimizes intensity of sunrays.

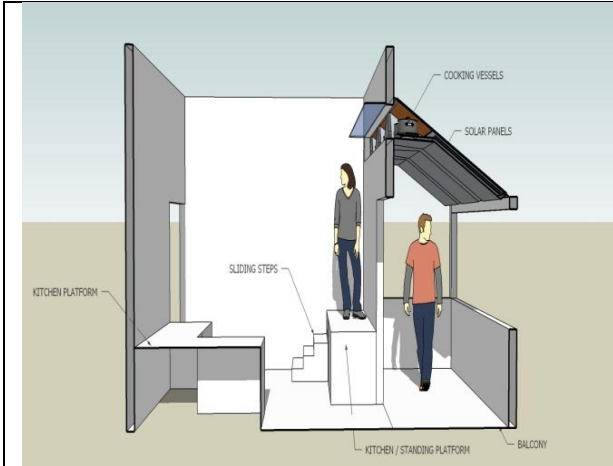


Fig 3 Southern facing cross section.
This fig shows cross section of integrated kitchen system which provides hygienic environment. The concept of solar cooking.

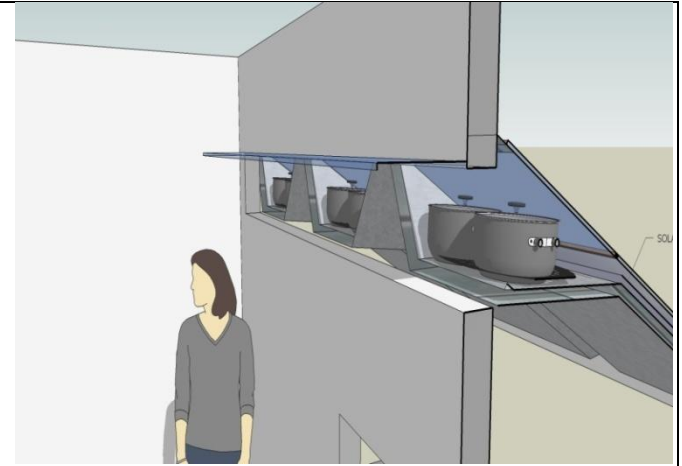


Fig 4 Solar cooking setup
This is a solar cooking set up at distance from the ground, so that maximum solar radiation come inside the cooking station. This arrangement works on the principal of solar cooker.

4. RESULT AND DISCUSSION

The solar kitchen concept is economically beneficial for sustainable development of Green building. This type of building design motivates the society to utilize solar energy.

Approximate Space	Typical System Size	Estimated Cost (£)	Estimated Annual Output	Co2 Saved Over 25 Years (Tonnes)	Estimated First Year Return	Profit Over 20years
2 sq m	0.25kw	625-750	212.5kwh	2.5	£46	£162
4 sq m	0.50kw	1250-1500	425kwh	5	£92	£325
6 sq m	0.75kw	1875-2250	637.5kwh	7.5	£138	£487
8 sq m	1kw	2500-3000	850kwh	10	£184	£650

Green building is new concept for future generation. It is the new era for building design. Solar cooker prepares food with great effectiveness. The food is bake by the solar cooker contains all nutrients & vitamins. It saves vital amount of non renewable energy such as LPG and coal generated electricity. All know that 1 kg coal generates 1 Kw power & cause green houses gases. These gases which helps to increase global warming. Green building makes comfortable environment & friendly atmosphere. Solar panel generates pure & clean energy for 20 – 25 years continuously.



5. CONCLUSION

Shading devices modify conduction-convection processes through the window there by affecting heat losses through the envelope. This phenomenon influences heating and cooling loads. The integrated solar kitchen is alternative source of cooking. The non renewable source deplete rapidly than use renewable sources. The green building concept is eco-friendly as well as sustainable for development.

6. REFERENCES

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