

**Dear Friends,  
Patent is pending for  
"Balcony Solar Cooker"  
being discussed here.  
Please ask for permission  
before using the idea.**

**Prof. Ajay Chandak.**

**INDIA**

August 5, 2006

# INNOVATIVE 'BALCONY MODEL' OF CONCENTRATING SOLAR COOKER'



**Prof. Ajay Chandak.**

**INDIA**

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# PRINCE

Promoters & Researchers In  
Non Conventional Energy.



**Energy Independence  
through Renewable Sources.**

August 5, 2006

नूनः जनाः सूर्येण प्रसूताः ।

Means: All that exists was  
borne from Sun. .... *Rigveda*

*WE SALUTE THIS SUN  
GOD.*

# Solar Cooking Alternatives

- **Box cookers: Also popularly called ovens.**
- **Panel Cookers.**
- **Concentrating Cookers.**

# Solar Cooking Alternatives

- **Concentrating Cookers.**



- **Most popular one is SK-14**

# Solar Cooking Alternatives

**Concentrating Cookers are closer to current cooking habits because of:**

- **High Speed of cooking.**
- **Better cooking capabilities. Can boil, roast, fry and grill.**
- **Better taste.**
- **Auto-Shut off feature.**

# Problems in Popularising concentrating cookers in India:

- **Space required is large. This is a major problem with city dwellers.**
- **Affordability: Cost of concentrating cooker is not affordable by many, especially in rural areas where space is not a problem.**
- **Many city dwellers have affordability and willingness to adopt solar cooking, but do not have space.**

# PRINCE review.

**PRINCE received many requests from city dwellers for suitable solar cookers. After review from these 'Environmentally conscious' people following expectations about the solar cooker were observed.**

# Expectations of city dwellers about solar gadgets

- a. **Compactness of the solar cooker:** Most of these urban people are living in apartments and multistoryed buildings demand a solar gadget that can be accommodated in the balconies. Most of the balconies are 900 mm or 1200 mm wide, and covered with roof.
- b. **Speed of cooking:** Many people wish to have lunch by 10.30 a.m. before proceeding to work. High speed cookers like concentrators can match their expectation of speed.

# Expectations of city dwellers about solar gadgets

- c. Convenience :** Continuous attention is not feasible for many people because of constraints of time. Solar cooker with minimum setting and attention is required.
- d. Cooking from within a kitchen:** If a solar cooker that can cook inside the kitchen is developed then it seems to be a dream product for the urban people.

## NEW DESIGN

**Based on these expectations it was decided to design a solar gadget that can come close to expectations of these city dwellers.**

**That is how this new design of “Balcony Cooker” was evolved.**

# Solar parabolic Balcony Model (PRINCE Design)



# Solar parabolic Balcony Model (PRINCE Design)



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# Solar parabolic Balcony Model (PRINCE Design)



*Wait, Video  
Clip will  
Operate  
Automatically.*

**Video  
duration  
30 sec.**

# Salient features of Balcony Cooker

1. The new design of cooker fits on the railing or parapet wall of the balcony and overhangs outside the balcony. It does not eat up the working space in the balcony.



# Salient features of Balcony Cooker



2. As the concentrator overhangs outside the balcony. Chance of balcony roof casting shadow on the solar cooker is automatically taken care of.

# Salient features of Balcony Cooker



As the cooker is fitted in the balcony, which is attached to the kitchen, the solar cooker can be reached in few steps from the kitchen.

**Reduced trip distance** can make the product more acceptable.

**Video duration 30 sec.**

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# Salient features of Balcony Cooker



**4. Instead of using a full parabolic dish only three quarter of the dish is used. This facilitates loading and unloading of pots, and permits for tracking. Total aperture area is kept at 1.5 sqm.**

# Salient features of Balcony Cooker



**A retractable telescopic handle** is provided, which pulls the cooking place inside the balcony, and loading and unloading of the pots can be done easily. This is one of the most innovative features of this design.

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## **Safety Feature**

## Test Report:

*Tests were conducted in house  
and from Certified Test center,  
School of Energy Studies,  
University of Poona.*

*The results are close to those of SK-14.*

*(Test reports are in original paper.)*

# Test Report: PUNE UNIVERSITY Regional Testing Center.

- a. Cooking time: 25 to 35 minutes.  
( Food for family of 5)**
  
- b. Stagnation Temperature test:  
244<sup>0</sup>C in 30 minutes.**

# Capabilities of Balcony Cooker:

**Can do  
almost all  
operations  
like boiling,  
frying,  
roasting,  
baking and  
even grilling.**



## Current status:

- *Along with existing design of cooker, another design with rectangular shape and with **width of less than one meter** is under test. This will reduce overhang from the balcony.*
- *Commercial designs will be available in the market before end of 2006. Technology transfer & IPR will be given to interested entrepreneurs and trainees of PRINCE for serving needs of city dwellers.*

## Current status:

- **Additional model with adjustable Shed** is taken up for development. This will permit operator to stand in shed and carryout operations like frying. This will be big value addition.



**THANK YOU.**

**Energy Independence  
through Renewable Sources.**

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