

## **Business Model – Carbon free (Solar) Peanut Chikki.**

### **Abstract:**

For developing solar cooking business models using different solar cooking devices, different trials were taken at Vigyan ashram, Pabal. One of the trials we conducted was use of Solar Scheffler and PRINCE – 40 cookers for manufacturing Peanut (Groundnut) Chikki. This trial was conducted in the month of November & December 2011, by one the DBRT students Mr.Rajesh Padave under guidance of Mr.Ranajeet Shanbhag and Mr.Suresh Jadhav (Chikki manufacturing entrepreneur of Pabal village). In this trial, this has been found that using solar energy for chikki making is not only saving valuable amount of money on cost of fuel and time of manufacturing but also quality of final product is much better than wood fired or LPG stove made Chikki. IF this Solar Scheffler unit, is been used by Chikki manufacturers that will be best possible commercial scaled utilization of solar energy, with completely new set of entrepreneurship model of ***Carbon Free Chikki Manufacturing.***

### **Introduction:**

Chikki which was earlier suppose to be dominancy of LonaVal area is now a day's becoming part of regular refreshment candy with variety of ingredients and blends .Chikki manufacturing is becoming very popular cottage/small scaled business for rural as well urban areas. Many Individuals / Entrepreneurs/SHG groups are doing this business and making good profit. But manufacturing Chikki involves considerable amount energy (fuel) as an input cost of business. In case of Peanut chikki fuel cost is even higher as it requires even roasting of peanuts. Many times for roasting of peanuts peoples use fine sand for even heat transfer, which consumes even more fuel. So experiments were carried out to use solar cooking devices as solar scheffler and PRINCE-40 cooker for testing their use on commercial scaled Chikki manufacturing.

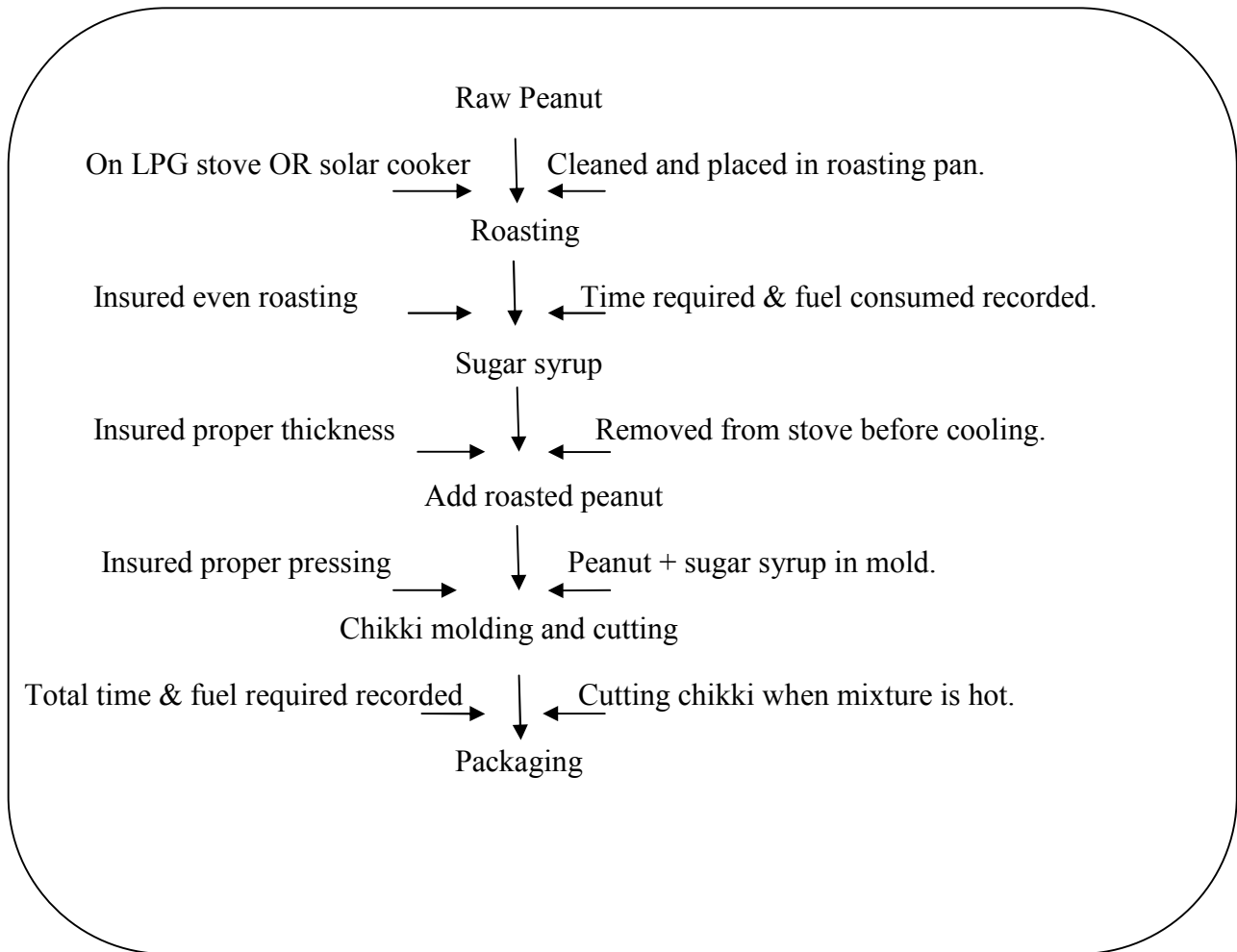
### **Material & Methodology:**

*Material used* – Peanut ( 2 kg / each trial) , sugar , LPG stove , solar cookers (Solar scheffler and PRINCE – 40 ) , Chikki molding trays, chief, utensils etc.

*Methodology –*

Chikki is manufactured, as per regular conventional method in which peanut are first roasted and skin is peeled out by hand rubbing then concentrated sugar syrup is added in grounded peanuts. Then this mixture of sugar syrup and peanuts are placed in molding tray when it still hot small pieces are made with regular knife (detailed flow chart is given below).

Flow chart of Chikki manufacturing -



Even though these trials are taken on small batch size of 2 kg each (2 kg each for LPG/ Solar Scheffler / PRINCE-40), after successful trials around 500 kg peanut Chikki is manufactured by local Chikki manufacturer using this solar scheffler cooker and found that operation vies it doesn't required any special modification or special skill to operate this device.

## Observations & result –

Following are the important observations recorded in this experiment-

- Both solar cookers are very effective in Chikki making business but, PRINCE- 40 cooker can't be used for batch size of more than 5 Kg / batch. So using PRINCE -40 cookers on commercial level is not feasible.
- Quality (taste) of final product is much better in solar manufactured Chiiki, it is mainly because of even roasting of peanuts. (As in solar cooking device heat transfer is from all sides of roasting pan, peanut roasting is even and proper while in case of LPG stove we need to put fine sand in heating pan for even heat transfer.)
- Solar scheffler does not need any modifications for Chikki making business, but for PRINCE – 40 cooker long agitating spoons required for peanut roasting / syrup preparation.
- Solar scheffler requires less time than PRINCE -40 and LPG stove for roasting and syrup preparation in Chikki manufacturing.
- Cost vise Chikki manufacturing with solar scheffler **saves Rs.10.67 / Kg** of chikki which is quite impressive (Table No-1 & 2). In addition to this Chikki manufacture by solar energy can be marketed as CARBOON FREE CHIKKI with extra cost.

Table – 1 Cost of Peanut Chikki manufactured on Solar Scheffler.

Sr.No	Input cost	Quantity	Rate / kg	Net rate	Remark
1	Peanut	2 kg	68	136	Will be much less on large scale production.
2	Sugar	2 kg	30	60	Will be much less on large scale production.
3	Fuel	0	0	0	Solar scheffler used
4	Labour	15%		29.4	
5	Time	10 min	0.52 / min	5.2	
6	Depreciation	10%		19.6	
			<b>TOTAL</b>	<b>250.2</b>	
			<b>Cost / Kg</b>	<b>125.1</b>	

Table – 2 Cost of Peanut Chikki manufactured on LPG stove.

Sr.No	Input cost	Quantity	Rate / kg	Net rate	Remark
1	Peanut	2 kg	68	136	Will be much less on large scale production.
2	Sugar	2 kg	30	60	Will be much less on large scale production.
3	Fuel	145 gm	72 / kg	10.44	LPG stove used
4	Labour	15%		30.96	As minimum 10 minutes are saved by using solar scheffler cooker.
5	Time	20 min	0.52 / min	10.4	As minimum 10 minutes are saved by using solar scheffler cooker.
6	Depreciation	10%		23.74	
			<b>TOTAL</b>	<b>271.54</b>	
			<b>Cost / Kg</b>	<b>135.77</b>	

*Note – Fuel cost calculations are done with prices of commercial LPG cylinder, however mostly in cottage scaled industry peoples use domestic LPG cylinder illegally, so compare their cost : benefit ration with domestic LPG prices. For domestic LPG use fuel cost will be 50% less than, cost shown in above table.*

### Conclusion:

As per above experiment we can say that, Solar scheffler can be effectively used in Chikki making business, as economics of Chikki making business is largely depend on fuel prices. By using solar scheffler, entrepreneurs can save at least Rs.10.00/ Kg in Chikki manufacturing. Even though initial investment will be high, but we can assume that 20 tons of chikki manufacturing in 2 year span can repay cost of Solar scheffler and then fuel cost will be *ZERO* with quality *CARBON FREE* produce.



**PRINCE -40 Solar Cooker.**



**Solar Scheffler Cooker.**