

## **Annapurna Unnat Chulha** **(TERI SPT 0610)**



### **Context**

Four out of every five rural and one out of every five urban households primarily depend on direct burning of solid biomass fuel like fuel wood, crop residue and cattle dung in traditional mud stove/ three stone fire for cooking.

Such traditional cooking practice is characterized by incomplete combustion of biomass fuels resulting in emission of toxic smoke. Women (and accompanying children) who get exposed to this smoke every day during cooking food in a mud stove, particularly in poorly ventilated kitchens, face increased risk of pneumonia, respiratory diseases, etc. Kitchen smoke is responsible for half a million premature deaths in India annually. The toxic smoke also contains climate change agents like carbon monoxide and black carbon. Such traditional mud stoves also have low thermal efficiency (~15%) that results in high fuel consumption (~1 kg/person/day of firewood) thereby contributing to deforestation in some areas.

### **TERI Technology Innovation:**

TERI felt the need to utilize the forced draft (using fan to inject air into the combustion chamber) micro-gasification technology to develop an improved biomass cook stove. After two years of intensive research, field-testing and customization we have developed a single port metal stove that can cater to cooking requirements of a family of up to 7 members. Fuel wood, agriculture residue and cattle dung cake can be used as fuel for this stove. The power charger has dual charging mode (both AC/ grid power supply and solar power supply) to cater to households in un-electrified areas. Quality components have been used to make the stove performance long lasting. Stainless Steel has been used to fabricate the stove body and 12 V, 2.2 Ah Lithium ion Batteries has been used to power the fan.

### Technical Details of the Cook Stove:

Particulars	Traditional Mud Stove	Government of India Standard	TERI SPT 0610
Efficiency (%):	17%	35%	37%
Carbon Monoxide Emissions (g/ MJ delivered)	11	<=5	2.25
Particulate Matter Emissions (mg/ MJ delivered)	518	<=150	147

### Performance of the stove:

Indian Institute of Technology, Delhi (IIT-D) has tested the stove and certified that it has passed all applicable government performance benchmarks. Ministry of New and Renewable Energy (MNRE), Government of India has approved the TERI stove technology and made it technically eligible for all government funded projects. Performance details of the is given below. Stove performance details is given below

Thermal Efficiency - 36.83 %

Particulate matter (PM)-147.39 mg/MJ<sub>d</sub>

CO emission : 2.24 g/MJ<sub>d</sub>

Power output :1.08 kW

### Advantages of SPT 610 as compared to traditional mud stove/ three stone fires:

- ✚ **Less Fuel:** 50% less consumption of fuel
  - Reduces drudgery of women collecting fuelwood
  - Reduced deforestation due to less consumption of fuelwood
- ✚ **Less Smoke:** 70% reduction in smoke
  - Beneficial in terms of reduced Indoor Air Pollution (IAP) and healthier environment for women and children
  - Controls environmental pollution
  - Less blackening of cooking pots and kitchen walls
- ✚ **Less Cooking Time:** Reduces the cooking time by approximately half
- ✚ **Local Fuel:** Chopped locally available solid biomass.
  - The fuel required does not demand the establishment of separate fuel supply chains and facilitates local and timely availability of cooking fuel.

**Details of the Manufacturer: -**

The cookstove is manufactured by RBSgroup of companies at its manufacturing plant in Himachal Pradesh

The contact details of the manufacturer are as under: -

**RBSGroup of Companies****Corporate Office: -**

9, Vishal Market,

First floor,

West Mukherjee Nagar,

New Delhi – 110009

Website: - [www.rbsgroup.in](http://www.rbsgroup.in)

Email: - [stove@rbsgroup.in](mailto:stove@rbsgroup.in)

Contact Person: -

- 1) Mr. Rajesh Saboo – Mobile: +91-9350193004, Email – [Rajesh@rbsgroup.in](mailto:Rajesh@rbsgroup.in)
- 2) Mr. Aayush Saboo – Mobile: +91-9350193010, Email – [Aayush@rbsgroup.in](mailto:Aayush@rbsgroup.in)

**Manufacturing Plant: -**

Nahan Road, Village Moginand,

Kala-amb – 173030

Distt: Sirmour,

Himachal Pradesh

Email: - [phoenix.hp@rbsgroup.in](mailto:phoenix.hp@rbsgroup.in)

भारत सरकार

नवीन और नवीकरणीय ऊर्जा मंत्रालय

Government of India

MINISTRY OF NEW AND RENEWABLE ENERGY

ब्लॉक नं. 14, केन्द्रीय कार्यालय परिसर, लोदी रोड, नई दिल्ली-110003  
BLOCK NO. 14, C.G.O. COMPLEX, LODI ROAD, NEW DELHI - 110 003

Fax : 011-24361298

Telegram : RENEWABLE

सं. 3/3/2009-R&D & SPCS

दिनांक 7.1.2013

No.

Dated 7/1/2013

To

Dr. I H Rehman  
Director, Social Transformation  
The Energy and Resource Institute  
Darbari Seth Block, IHC Complex  
Lodhi Road, New Delhi-110003.

Subject: Testing of TERI SPT-0610 Stove-(Forced draft, domestic stove, top fed, single pot) of The Energy and Resource Institute, Lodhi Road, New Delhi.

Dear Sir,

This refers to biomass cookstove model TERI SPT-0610 Stove-(Forced draft, domestic stove, top fed, single pot) developed by The Energy and Resource Institute, New Delhi, and which was submitted by you to MNRE supported Biomass Cookstove Test Centre at IIT Delhi for performance testing. The performance parameters of the above cookstove model as tested at Test Center IIT Delhi following the revised draft standard are given below:

Thermal efficiency	:	36.84%
CO	:	2.25 (g/MJd)
PM	:	147.40 mg/MJd
Power output	:	1.08 kW

2. On the basis of performance testing report received from Test Centre, IIT Delhi as above, this Ministry has approved the said cookstove model. The photocopy of the performance testing report is enclosed.

Thanking you

Yours faithfully,

  
(Dr. B. S. Negi)  
Director(Cookstove)  
E-mail: [negi@nic.in](mailto:negi@nic.in)  
Telefax:24368581

Encl: a/a

CENTRE FOR RURAL DEVELOPMENT & TECHNOLOGY  
**INDIAN INSTITUTE OF TECHNOLOGY, DELHI**  
HAUZ KHAS, NEW DELHI - 110 016, INDIA



**Dr. Rajendra Prasad**  
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No. IITD / CRDT/ RP/CS/1005

12<sup>th</sup> December, 2012

I H Rehman, Director,  
Social Transformation Division,  
Lighting a Billion Lives (LaBL) Campaign  
The Energy and Resources Institute (TERI)  
6C, Darbari Seth Block, India Habitat Place  
Lodhi Road, New Delhi - 110 003

**Subject:** Test Reports for the stove TERI – SPT 0610 Submitted by The Energy & Resources Institute, I H C, New Delhi

Dear Sir,

As you are aware, the BIS Standards and Protocols for Biomass Cookstoves testing are under revision. MNRE has prepared a draft of the revised Standards and Protocols which have been asked to be followed by the MNRE Testing Centres in the country. Accordingly, the above mentioned stove submitted by you have been retested at IIT Delhi during the interactive workshop and joint meeting of the different testing centres held from 9<sup>th</sup> to 11<sup>th</sup> November 2012. The test results have been communicated to MNRE for further approval etc. The average values for the different parameters studied are as follows

**Power Output: 1.08 kW**

**Efficiency: 36.83 %**

**PM: 147.39 mg/ MJ<sub>d</sub>**

**CO: 2.24 g/MJ<sub>d</sub>**

This supersedes the earlier report communicated to you for the stove.

Any other information required will be gladly supplied.

With regards

Your sincerely

Rajendra Prasad