

## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula: **ABHINAV/JETAN**  
Type: Fixed Two Pot Mud Stove  
Chimney: Yes  
Main fuel: Firewood, twigs, dung cake and agri-residues  
Used in States of: Haryana, Uttar Pradesh, Delhi, Rajasthan and Madhya Pradesh  
Dissemination: 1,000,000 units (up to 1993)  
Developed by: (1987) Energy Research Centre, Punjab University, Chandigarh,  
Estimated Cost: INR 55-72 (US\$ 2.2-2.9) - 1993

### Test Performance

Fuel	Power Ourput (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	0.98	1.0	22.0	0.053	1.45
Dung	0.35	1.0	11.4	0.07	-

**Source:** REGIONAL WOOD ENERGY DEVELOPMENT PROGRAMME IN ASIA  
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS  
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## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula: **AKASH**  
Type: Fixed Two Pot Mud Stove  
Chimney: Yes  
Main fuel: Firewood, twigs, dung cake and agri-residues  
Used in States of: Haryana, Himachal Pradesh and Rajasthan  
Dissemination: 30,000 units (up to 1993)  
Developed by: (1991) Energy Research Centre, Punjab University,  
Chandigarh - 160014  
Estimated Cost: INR 55-80 (US\$ 2.2-3.2) - 1993

### Test Performance

Fuel	Power Ourput (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	1.15	1.0	21.9	0.04	1.8
Dung	0.75	1.0	24.7	0.05	-

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## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula: **ALOK**  
Type: Two pot Mud Stove  
Chimney: Yes  
Main fuel: Firewood and twigs  
Used in States of: Uttar Pradesh, Haryana and Punjab  
Dissemination: 10,000 units (up to 1993)  
Developed by: (1989) Centre for Rural Development & Appropriate Technology (CRD & AT), Indian Institute of Technology, Hauz Khas, New Delhi - 110016.  
Estimated Cost: INR 75-100 (US\$ 3-4) - 1993

#### Test Performance

Fuel	Power Ourput (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	1.77	1.5	26.3	0.04	1.6
Dung	1.1	1.5	24.7	0.04	-

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Name of the Chula: **ARAVALI-U**  
Type: Two Pot Mud Stove  
Chimney: Yes  
Main fuel: Fuelwood, twigs, dung cake, straws, other similar agri-residues  
Used in States of: Rajasthan, Andhra Pradesh and Uttar Pradesh.  
Dissemination: 20,000 units (up to 1993)  
Developed by: (1989) Renewable Energy Centre, College of Technology and Agricultural Engineering, Rajasthan Agricultural University, Udaipur.  
Estimated Cost: INR 55-80 (US\$ 2.2- 3.2) - 1993

#### Test Performance

Fuel	Power Ourput (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	1.13	1.0	25.3	0.04	1.6
Dung	0.9	1.5	20.0	0.09	-

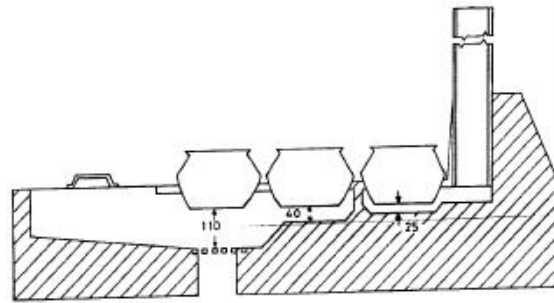
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## RE Practices in India – Biomass Energy

### Domestic Cook Stoves - INDIA



Two Pots Version



Three Pot Version \*

Name of the Chula:	<b>ASTRA</b>
Type:	Two or Three Pot Stove
Materials:	Bricks, mud mortar, cement blocks, metal sheet grate, metal sheet firebox lid, asbestos pipe chimney and cowl
Chimney:	Yes
Main fuel:	Fuelwood, twigs, dung cake, straws, other similar agri-residues
Used in States of:	Southern India, Karnataka
Dissemination:	~ 1,500,000 units (up to 2003) *
Developed by:	(1985) Karnataka State Council for Science and Technology (KSCST), Indian Institute of Science, Bangalore - 560012.
Estimated Cost:	INR 55-102 (US\$ 2.2- 4.1) - 1993 INR 160 * (2004)

#### Test Performance

Fuel	Power Output (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	1.34	1.0	30.0 (44) *	0.04	1.26
Dung	0.44	1.0	14.6	0.04	

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## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula: **BHAGYALAXMI**  
Type: Two Pot Stove  
Materials: Mud, clay, iron frame  
Chimney: No  
Main fuel: Fuelwood, twigs and agri-residues  
Used in States of: Maharashtra, Goa and Karnataka  
Dissemination: ~ 5000 units (up to 1993)  
Developed by: (1991) Center for Application of Science and Technology for Rural Development (CASTFORD), Indian Institute of Education, 128/2, Karve Road, Kothrud, Pune - 411029.  
Estimated Cost: INR 40 (US\$ 1.6) - 1993

#### Test Performance

Fuel	Power Ourput (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	1.25	1.0	26.0	0.04	-
Dung	0.82	1.0	27.0	0.04	-

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## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula:	<b>DENGLI</b>
Type:	Single Pot Stove
Materials:	Mud, clay, cast iron frame
Chimney:	No
Main fuel:	Fuelwood, twigs, dung cakes, straws and other agri-residues
Used in States of:	Rajasthan, Haryana, Delhi, Uttar Pradesh and Madhya Pradesh
Dissemination:	~ 5000 units (up to 1993)
Developed by:	(1991) Centre for Rural Development & Appropriate Technology, Indian Institute of Technology, Hauz Khas, New Delhi - 110016.
Estimated Cost:	INR 27 (US\$ 1.1) - 1993

### Test Performance

Fuel	Power Ourput (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	0.98	1.0	25.0	0.02	1.7
Dung	0.55	0.8	22.9	0.04	-

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## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula:	<b>DOACHHI</b>
Type:	Two Pot Stove
Materials:	Pottery liner, cast iron grate, Mud, clay
Chimney:	Yes
Main fuel:	Fuelwood, twigs, straws, cowdung, other agri-residues
Used in States of:	Bihar, Uttar Pradesh, West Bengal and other north-eastern States
Dissemination:	~ 500,000 units (up to 1993)
Developed by:	(1989) Department of Mechanical Engineering, Bihar College of Engineering, Patna-300005.
Estimated Cost:	INR 70-87 (US\$ 2.8 – 3.5) - 1993

### Test Performance

Fuel	Power Ourput (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	0.90	1.0	20.2	0.04	1.80
Dung	0.53	1.0	17.4	0.06	-

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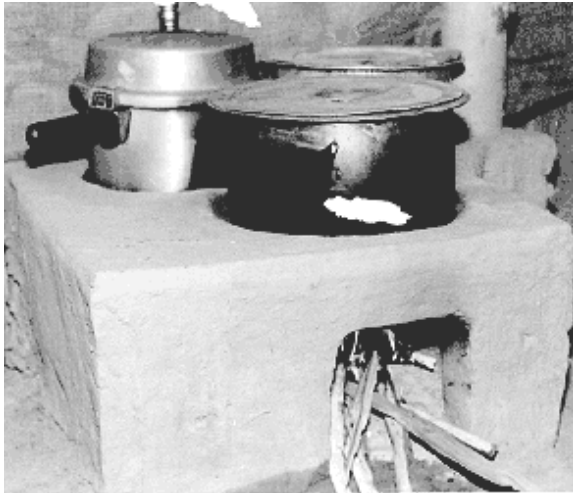
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## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula: **GAURAV**  
Type: Three Pot Pottery Lined Mud Stove with metal grate  
Materials: Pottery liner, cast iron grate, Mud, clay  
Chimney: Yes  
Main fuel: Fuelwood, agri-residues and dung cake  
Used in States of: Punjab, Chandigarh, Haryana and Himachal Pradesh  
Dissemination: ~ 10,000 units (up to 1993)  
Developed by: (1989) Energy Research Centre, Punjab University, Chandigarh - 160014.  
Estimated Cost: INR 75-110 (US\$ 3-4.4).- 1993

### Test Performance

Fuel	Power Ourput (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	1.89	1.5	28.1	0.03	1.2
Dung	0.72	1.5	15.8	0.08	-

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## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula: **GRIHLAXMI**  
Type: Single Pot Mud Stove with metal grate  
Materials: Cast iron/metal grate, Mud, clay  
Chimney: No  
Main fuel: Fuelwood, twigs and agri-residues in stick form (e.g. cotton stalk, Pigeon pea stalk, sugar cane butt)  
Used in States of: Maharashtra, Goa and Karnataka  
Dissemination: ~ 25,000 units (up to 1993)  
Developed by: (1990) Indian Institute of Education, 128/2, Karve Road, Kothrud, Pune -411029.  
Estimated Cost: INR 30-42 (US\$ 1.2-1.7).- 1993

### Test Performance

Fuel	Power Ourput (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	1.10	1.0	28.8	0.04	1.16
Dung	0.56	1.0	18.5	0.06	-

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## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula: **HARSHA**  
Type: Portable, metallic, single-pot stove  
Materials: Sheet metal, iron rods, metal grate,  
Chimney: No  
Main fuel: Fuelwood, twigs, dung cake and agri-residues  
Used in States of: Orissa, Himachal Pradesh, Punjab, Uttar Pradesh and Maharashtra  
Dissemination: ~ 50,000 units (up to 1993)  
Developed by: (1990) Regional Research Laboratory, Bhubaneswar, Orissa.  
Estimated Cost: INR 144 (US\$ 5.7).- 1993

### Test Performance

Fuel	Power Ourput (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	1.11	1.06	24.8	0.03	1.67
Dung	0.56	1.0	18.5	0.05	-
Charcoal	0.8	0.57	21.9	0.04	-

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## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula: **JANTA**  
Type: Single-pot portable, metal-clad, ceramic lined, stove  
Materials: Sheet metal, ceramic, metal/cast iron grate,  
Chimney: No  
Main fuel: Fuelwood  
Used in States of: Orissa, Himachal Pradesh, Punjab, Uttar Pradesh and Maharashtra  
Dissemination: ~ 1,000 units (up to 1993)  
Developed by: (1991) Central Glass & Ceramic Research Institute, Khurja, Uttar Pradesh.  
Estimated Cost: INR 100 (US\$ 4).- 1993

### Test Performance

Fuel	Power Ourput (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	2.68	1.5	50.2	0.01	1.20
Dung	1.1	1.5	24.6	-	-

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## RE Practices in India – Biomass Energy

### Community Cook Stoves



Name of the Chula: **KESARI-200**  
Type: Two-pot mud stove  
Materials: Standard Bricks, Mud mortar, Asbestos pipes, grate  
Chimney: Yes  
Main fuel: Fuelwood  
Used in States of: Throughout the country in community kitchens, hostels, police and para-military units, etc  
Dissemination: ~ 5,000 units (up to 1993)  
Developed by: (1988) Centre for Rural Development and Appropriate Technology, IIT New Delhi – 110016  
Estimated Cost: INR 100 (US\$ 4) - 1993

#### Test Performance

Fuel	Power Output (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	6.64	4.0	37.1	0.04	-

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## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula:	<b>LAXMI</b>
Type:	Two-pot mud stove
Materials:	Clay, Pottery Liner, Chimney pipes, metal grate
Chimney:	Yes
Main fuel:	Fuelwood, twigs, agri-residues and dung cakes
Used in States of:	Maharashtra, Goa and Gujarat
Dissemination:	~ 1,000,000 units (up to 1993)
Developed by:	(1986) Centre for Application of Science and Technology for Rural Development (CASTFORD), Indian Institute of Education, 128/2, J.P. Naik Path, Kothrud, Pune - 411029.
Estimated Cost:	INR 70-87 (US\$ 2.8-3.5).- 1993

### Test Performance

Fuel	Power Output (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	0.98	1.0	22.0	0.04	1.20
Dung	0.44	1.0	14.7	0.08	-

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## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula: **MAMTA**  
Type: Two-pot mud stove  
Materials: Clay, Pottery Liner, Chimney pipes, metal grate  
Chimney: Yes  
Main fuel: Fuelwood, twigs, dung cakes, agri-residues or combinations of fuels.  
Used in States of: Maharashtra, Goa and Gujarat  
Dissemination: ~ 100,000 units (up to 1993)  
Developed by: (1989) Department of Home Science, M.S. University, Baroda - 390002, Gujarat..  
Estimated Cost: INR 55-72 (US\$ 2.2-2.9).- 1993

### Test Performance

Fuel	Power Output (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	0.98	1.0	24.0	0.06	1.28
Dung	0.48	1.0	16.0	0.08	-

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## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula:	<b>MEGHALAYA</b>
Type:	Two-pot mud stove with smoking chamber
Materials:	Clay, Pottery Liner, sheet metal, metal grate
Chimney:	Yes
Main fuel:	Fuelwood, agri-residues in stick form.
Used in States of:	North-Eastern States
Dissemination:	~ 10,000 units (up to 1993)
Developed by:	(1987) Centre for Rural Development and Technology, Indian Institute of Technology, Hauz Khas, New Delhi -110016.
Estimated Cost:	INR 93-110 (US\$ 3.7-4.4) - 1993

### Test Performance

Fuel	Power Output (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	1.7	1.0	24.0	0.03	1.20
Dung	0.7	1.0	22.8	0.05	-

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## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula:	<b>MOHINI-U</b>
Type:	Single-pot, pottery lined mud stove
Materials:	Clay, Pottery Liner, metal grate
Chimney:	Yes
Main fuel:	Fuelwood, dung cakes and agri-residues.
Used in States of:	Haryana, Punjab and Rajasthan
Dissemination:	~ 20,000 units (up to 1993)
Developed by:	(1990) Energy Research Centre, Punjab University, Chandigarh - 160014.
Estimated Cost:	INR 70-82 (US\$ 2.8-3.3) - 1993

### Test Performance

Fuel	Power Output (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	1.14	1.0	25.4	0.04	-

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## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula:	<b>NAV JYOTI</b>
Type:	Single-pot, portable metal stove
Materials:	Mild Steel Sheet
Chimney:	No
Main fuel:	Primarily designed for low density biomass fuels such as sawdust, leaves, straws, paddy husk, twigs, cow dung etc..
Used in States of:	Maharashtra, Gujarat and Himachal Pradesh (especially by the poorer section of the society)
Dissemination:	~ 10,000 units (up to 1993)
Developed by:	(1991) Centre for Rural Development and Technology, Indian Institute of Technology, Hauz Khas, New Delhi -110016.
Estimated Cost:	INR Rs. 75 (US\$ 3) – small and Rs. 158 (US\$ 6.3) – large , 1993

### Test Performance

Fuel	Power Output (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Sawdust	0.83	0.9	23.3	0.03	1.11
Paddy husk	0.79	0.6	23.0	0.04	1.11

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## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula:	<b>PARISHAD-21</b>
Type:	Three-pot, mud-brick stove, built on a brick high platform suitable for cooking in a standing position
Materials:	Clay, Pottery lined combustion chambers, pottery tunnels, metal grates, asbestos chimney pipe and cowl
Chimney:	Yes
Main fuel:	Coconut fronds and fuelwood.
Used in States of:	South Indian States – Kerala
Dissemination:	~ 200,000 units (up to 1993)
Developed by:	(1986) Kerala Sasthra Sahitya Parishad, Trivandrum in cooperation with the Technical Back-up Unit, Department of Mechanical Engineering, College of Engineering, Trivandrum, Kerala.
Estimated Cost:	INR Rs. 95 (US\$3.8) - 1993

#### Test Performance

Fuel	Power Output (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	1.68	1.5	30.0	0.03	1.91
Dung	1.22	2.0	26.3	0.04	-

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## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula:	<b>Pawan-II</b>
Type:	Single-pot, pottery lined mud stove
Materials:	Clay, pottery lined combustion chamber, asbestos chimney pipe, cowl and metal grate
Chimney:	Yes
Main fuels:	Fuelwood, twigs, dung cakes, straws and other agri-residues.
Used in States of:	Uttar Pradesh, Delhi, Haryana and Rajasthan
Dissemination:	~ 30,000 units (up to 1993)
Developed by:	(1988) Centre for Rural Development and Appropriate Technology, Indian Institute of Technology, Hauz Khas, New Delhi - 110016.
Estimated Cost:	INR Rs. 70-82 (US\$ 2.8-3.3) - 1993

### Test Performance

Fuel	Power Output (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	1.07	1.0	22.0	0.04	0.83
Dung	0.51	1.0	17.0	-	-

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## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula:	<b>PRIAGNI (The most popular wood stove in India)</b>
Type:	Single-pot, portable, metallic, woodstove The stove was brought under the Indian Standard (IS 13152, 1991). Available in four sizes, namely, small, medium, large and extra large
Materials:	Cast iron, Mild Steel, Aluminum Liner
Chimney:	No
Main fuels:	Fuelwood and twigs.
Used in States of:	All parts of India
Dissemination:	~ 3,000,000 units (up to 1993)
Developed by:	(1983) Central Power Research Institute, Bangalore, Karnataka.
Estimated Cost:	INR Rs.105-188 (US\$ 4.2-7.5) - 1993

### Test Performance

Fuel	Power Output (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	1.16	1.01	26.0	0.04	1.25

**Source:** REGIONAL WOOD ENERGY DEVELOPMENT PROGRAMME IN ASIA  
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS  
E-mail: [rwedp@fao.org](mailto:rwedp@fao.org)  
Internet: <http://www.rwedp.org>

## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula:	<b>PRIYA</b>
Type:	Two-pot, pottery-lined mud-stove
Materials:	Pottery lined combustion chambers and tunnels while, asbestos chimney pipe and cowl made of asbestos cement and cast iron/metal grate
Chimney:	Yes
Main fuels:	Fuelwood, twigs and agri-residues.
Used in States of:	Gujarat State
Dissemination:	~ 20,000 units (up to 1993)
Developed by:	(1989) Department of Home Science, M.S. University, Baroda - 390002, Gujrat..
Estimated Cost:	INR Rs. 55-80 (US\$ 2.2-3.2) - 1993

### Test Performance

Fuel	Power Output (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	0.98	1.0	20.0	0.04	1.22
Dung	0.42	1.0	13.7	0.08	-

**Source:** REGIONAL WOOD ENERGY DEVELOPMENT PROGRAMME IN ASIA  
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS  
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Internet: <http://www.rwedp.org>

## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula: **SOHINI**  
Type: Single-pot mud stove without grate  
Materials: Clay, ready-made asbestos cement chimney pipe and cowl  
Chimney: Yes  
Main fuels: Twigs, dung cakes and agri-residues.  
Used in States of: Haryana, Uttar Pradesh, Delhi, Punjab, Rajasthan and Himachal Pradesh.  
Dissemination: ~ 80,000 units (up to 1993)  
Developed by: (1987) Energy Research Centre, Punjab University, Chandigarh - 160014..  
Estimated Cost: INR Rs. 55-70 (US\$ 2.2-2.8) - 1993

### Test Performance

Fuel	Power Output (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Dung	0.80	1.5	24.3	0.04	1.72

**Source:** REGIONAL WOOD ENERGY DEVELOPMENT PROGRAMME IN ASIA  
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS  
E-mail: [rwedp@fao.org](mailto:rwedp@fao.org)  
Internet: <http://www.rwedp.org>

## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula: **SOHINI**  
Type: Single-pot pottery stove, double wall design with fireclay grate  
Materials: Clay, ready-made asbestos cement chimney pipe and cowl  
Chimney: No  
Main fuels: Fuelwood, twigs, cow dung, agri-residues and briquettes  
Used in States of: Suitable for most parts of India.  
Dissemination: Not available (up to 1993)  
Developed by: (1992) Energy Research Centre, Punjab University,  
Chandigarh - 160014..  
Estimated Cost: INR Rs. Rs. 30-40 (US\$ 1.2-1.6) - 1993

### Test Performance

Fuel	Power Output (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	1.92	0.97	42.8	0.01	0.05

**Source:** REGIONAL WOOD ENERGY DEVELOPMENT PROGRAMME IN ASIA  
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS  
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Internet: <http://www.rwedp.org>



## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula:	<b>SUGAM-II</b>
Type:	Fixed, two-pot mud stove
Materials:	Clay, cast-iron grate, asbestos chimney pipe and cowl
Chimney:	Yes
Main fuels:	Fuelwood, twigs, dung cakes and agri-residues
Used in States of:	Delhi, Uttar Pradesh and Haryana.
Dissemination:	~ 50,000 units (up to 1993)
Developed by:	(1988) Centre for Rural Development & Appropriate Technology, Indian Institute of Technology, Hauz Khas, New Delhi - 110016.
Estimated Cost:	INR Rs. Rs. 30-40 (US\$ 1.2-1.6) - 1993

### Test Performance

Fuel	Power Output (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	1.18	1.0	28.2	0.04	0.91
Dung	0.91	1.25	24.2	0.05	-

**Source:** REGIONAL WOOD ENERGY DEVELOPMENT PROGRAMME IN ASIA  
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS  
E-mail: [rwedp@fao.org](mailto:rwedp@fao.org)  
Internet: <http://www.rwedp.org>

## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula:	<b>SUGAM SEVA</b>
Type:	Fixed, two-pot mud stove without grate
Special features:	Combustion chamber below ground level
Materials:	Clay, standard items such as pottery tunnels, asbestos cement chimney pipe and cowl
Chimney:	Yes
Main fuels:	Fuelwood, twigs, dung cakes and agri-residues
Used in States of:	West Bengal, Bihar and Orissa.
Dissemination:	~ 200,000 units (up to 1993)
Developed by:	(1988) Centre for Rural Development & Appropriate Technology, Indian Institute of Technology, Hauz Khas, New Delhi - 110016.
Estimated Cost:	INR Rs. 55-72 (US\$ 2.2-2.9) - 1993

### Test Performance

Fuel	Power Output (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	1.12	1.0	25.1	0.04	1.2
Dung	0.7	1.0	23.0	0.06	-

**Source:** REGIONAL WOOD ENERGY DEVELOPMENT PROGRAMME IN ASIA  
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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Internet: <http://www.rwedp.org>

## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula:	<b>SUKHAD</b>
Type:	Fixed, two-pot mud stove
Special features:	Combustion chamber below ground level
Materials:	Clay. chimney pipe and cowl made of asbestos cement, pottery liners, cast-iron grate, etc.
Chimney:	Yes
Main fuels:	Fuelwood and agri-residues
Used in States of:	Rajasthan, Andhra Pradesh, Tamil Nadu, Uttar Pradesh, Madhya Pradesh and Bihar States.
Dissemination:	~ 1,000,000 units (up to 1993)
Developed by:	(1988) College of Technology & Agricultural Engineering, Rajasthan Agricultural University, Udaipur-313001.
Estimated Cost:	INR Rs. 55 (US\$ 2.2) for mud construction and Rs. 72 (US\$ 2.9) for construction with the pottery liners - 1993

### Test Performance

Fuel	Power Output (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	1.0	1.0	25.0	0.04	1.10
Dung	0.74	1.0	20.6	0.05	-

**Source:** REGIONAL WOOD ENERGY DEVELOPMENT PROGRAMME IN ASIA  
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS  
E-mail: [rwedp@fao.org](mailto:rwedp@fao.org)  
Internet: <http://www.rwedp.org>

## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula:	<b>SURBHI-T</b>
Type:	Fixed, three-pot mud stove
Special features:	Combustion chamber below ground level
Materials:	Clay, metal grate, asbestos cement chimney pipe and cowl
Chimney:	Yes
Main fuels:	Fuelwood, dung cakes and agri-residues
Used in States of:	Himachal Pradesh.
Dissemination:	~ 5,000 units (up to 1993)
Developed by:	(1987) Energy Research Centre, Punjab University, Chandigarh - 160014.
Estimated Cost:	INR Rs. 55-80 (US\$ 2.2-3.2) - 1993

### Test Performance

Fuel	Power Output (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	1.16	1.0	30.4	0.04	1.2
Dung	0.6	1.0	20.0	-	-

**Source:** REGIONAL WOOD ENERGY DEVELOPMENT PROGRAMME IN ASIA  
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS  
E-mail: [rwedp@fao.org](mailto:rwedp@fao.org)  
Internet: <http://www.rwedp.org>

## RE Practices in India – Biomass Energy

### Domestic Cook Stoves



Name of the Chula:	<b>UDAI</b>
Type:	Fixed, single-pot mud stove without grate
Special features:	Combustion chamber below ground level
Materials:	Clay, asbestos cement chimney pipes
Chimney:	Yes
Main fuels:	Fuelwood and agri-residues
Used in States of:	Rajasthan, Andhra Pradesh, Uttar Pradesh and Madhya Pradesh.
Dissemination:	~ 65,000 units (up to 1993)
Developed by:	(1989) College of Technology & Agricultural Engineering, Rajasthan Agricultural University, Udaipur-313001.
Estimated Cost:	INR Rs. 55-67 (US\$ 2.2-2.7) - 1993

### Test Performance

Fuel	Power Output (Calculated)	Burning Rate	Thermal Efficiency	Emission Characteristics	
	kW	kg/h	%	CO/CO <sub>2</sub> ratio	mg/m <sup>3</sup>
Wood	0.9	1.0	20.0	0.06	2.0
Dung	0.5	1.0	16.4	0.07	-

**Source:** REGIONAL WOOD ENERGY DEVELOPMENT PROGRAMME IN ASIA  
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Internet: <http://www.rwedp.org>

## **RE Practices in India – Biomass Energy**

### **COMMUNITY BRIQUETTE STOVE**

Ramesh K Nibhoria, Chandigarh, October 2003



Fuel	:Biomass fuel briquettes
Fuel substitution	:125 Kgs of biomass briquettes ( 4000 kCal/kg) to replace 42.6 kg of LPG.

Ramesh K Nibhoria,  
NISHANT BIOENERGY CONSULTANCY,  
# 3521, Sector -38 D,  
CHANDIGARH-160 036, UT,  
INDIA,  
Phone : +91-172-687460  
Fax : + 91172-687460  
Cell : 09815609301  
email : nibhoria@eth.net  
web site : [www.nishantbioenergy.com](http://www.nishantbioenergy.com)

## RE Practices in India – Biomass Energy Technologies

### Biomass Gasifiers by Rishipooja Energy Technologies



#### Following Kinds /Type of Gasifier are being manufactured

- |     |  |                       |  |
|-----|--|-----------------------|--|
| (a) | <b>Rice husk Gasifier</b><br><b>[Down draft Gasifier]</b>  | Capacity 40 KW-500 kW | For power generation.<br>For thermal application. (both in the hot gas & Cold gas mode.)   |
| (b) | <b>Wood Gasifier</b><br><b>[Down draft Gasifier]</b>   | Capacity 10 KW-500 kW | For power generation.<br>For thermal application (both in the hot gas & Cold gas mode.)  |
| (c) | <b>Wood Gasifier</b><br><b>[Up draft Gasifier]</b>   | Capacity 10 KW-500 kW | For thermal application [ Where fine gas is not required such as Rolling Mills, Annealing Furnace, Boiler, Thermo pack, Namkeen Bhatti, Halwai bhatti etc] |
| (d) | Biomass Gasifier for <b>100 % Gas Engine</b> from <b>5KW</b> to <b>250 KW</b> single system & there after for higher rating more than one system can be installed. |                       |  |

Manufactured by:

RISHIPOOJA ENERGY & ENGINEERING COMPANY

M.G. College Road, Gorakhpur – 273001 (UP)

Tele Fax. 0551-220797

Mobile: 9415212901, 9236817707

Phone: (Off) 0551-3293147, 2202797

Email: [urjagen@hotmail.com](mailto:urjagen@hotmail.com), [urjagen@gmail.com](mailto:urjagen@gmail.com)

Web: [www.urjagen.co.in](http://www.urjagen.co.in)



## RE Practices in India – Biomass Energy Technologies

### Biomass Gasifiers by ‘Aruna Electrical Works’



#### Project Address Capacity Installation Date Application

1. Nagoan Paper Mill, HPCL, Assam 4 MW Under Implementation Thermal
2. Cachar Paper Mill, HPCL, Assam 4 MW Under Implementation Thermal
3. Aruna Electrical Works, Villupuram, T.N. 100 kWe 2004 Captive Power Generation
4. MP Forest Department, Kasai Village, India's First  
Bhainsdehi Tehsil, Bethul Dist, M P 2x10 kWe 2005 Remote Village Electrification
5. MP Forest Department, Debrabandi Village,  
Timarani Tehsil, Harda Dist, MP 2x10 kWe 2005 Remote Village Electrification
6. DFO, Jawalagiri Village, Hosur, T.N. 12 kWe 2005 Power Generation for Irrigation
7. DRDA, Periyampatti, Dharmapuri, T.N. 12 kWe 2005 Power for Village Electrification
8. MP Forest Department, Barasel Village,  
Banapura Tehsil, Hoshangabad Dist, MP 2x10 kWe 2006 Remote Village Electrification
9. MP Forest Dept., Bhagidunsara Village,  
Jhabua Tehsil, Jhabua Dist, MP 2x10 kWe 2006 Remote Village Electrification
10. Madhya Pradesh Forest Dept., Bhopal 14x10 kWe Under Implementation Remote Village  
Electrification
11. Biomass Energy for Rural India, Bangalore 12 kWe Under Implementation Remote Village  
Electrification
12. APE (P) Ltd, Villupuram, T.N. 1 MWe Under Implementation Power Generation for Grid Supply
13. Irungattukottai Panchayat, T.N. 12 kWe Under Implementation Power for Village Electrification
14. Aurore Systems, Auroshilpam, Auroville, T.N. 12 kWe 03.03.2006 For Captive Consumption
15. Forest Research Institute Kolapakkam, Chennai. 12 kWe Under Implementation Power for the use  
of Research Institute
16. DRDA, Devarappampatti, Dindugal, T.N. 12 kWe Under Implementation Power for Village  
Electrification
17. Few more projects through Tamilnadu DRDA's 15 x 12 kWe Under Implementation Power for  
Village Electrification

Producer & Marketer:

**ARUNA ELECTRICAL WORKS (P) LTD.,**

Kongampattu, Rampakkam Po., Villupuram Dt, Pin : 605 105.

Tel: 0413-2699484-85 / 2699546 Fax: 0413 - 2699547

E-mail: [arunabiomass@rediffmail.com](mailto:arunabiomass@rediffmail.com), Website: [www.arunabiomass.com](http://www.arunabiomass.com)

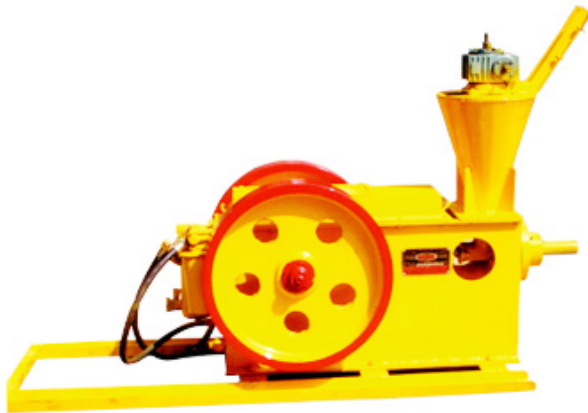


## RE Practices in India – Biomass Energy Technologies

### Biomass Briquetting Machines by Lehra Fuel-Tech

#### BRIQUETTING PRESS

Briquette Press is used for binder less production of high density fuel briquettes i.e. "biocoal" from all types of degradable biomass, residues & wastes such as groundnut shell, wood waste, baggasse (sugar cane stalk), cotton shell/stalk, mustard husk/straw, coffee husk pine needle, saw dust etc



MODEL NO.	PRODUCTION	POWER REQUIRED
LBP 30	150 kg/h	13 HP
LBP 40	300 kg/h	18 HP
LBP 50	600 kg/h	36 HP

MODEL NO.	PRODUCTION	POWER REQUIRED
LBP 60	900 kg/h	47 HP
LBP 70	1200 kg/h	49 HP

#### Producer & Maeketer:

Lehra Fuel-Tech Pvt. Ltd.

Ludhiana - Malerkotla Road, Oppsite BP Petrol Pump, V.P.O. Jagera 141117 (Punjab), INDIA

+91-98140-22437, 98152-00337

+91-1675-242981

[info@lehrafuel.com](mailto:info@lehrafuel.com), [gobind06@sify.com](mailto:gobind06@sify.com)

[www.lehrafuel.com](http://www.lehrafuel.com)

## RE Practices in India – Biomass Energy Technologies

### Biogas/Producer Gas Engine with Generators by 'Prakash'

#### Biogas Engine

PRAKASH water cooled, Spark Ignition, 4-Stroke, 1500 rpm continuous rating, heavy duty, multi-cylinder, Engine, Specially designed and engineered to operate with gases obtained from bio methane plants or gasifiers. A specially designed automatic air and fuel controller and mixing system is provided to take care of efficient, smooth working of engine from no load to full load. These engines operate smoothly at vast combinations of bio gases at negative suction upto 80 mm of water column hence root blower is not required and gases can be fed at normal available pressure.



**Biogas Engine**



**Producer Gas Engine**

#### Technical Specification – Biogas Engine

Engine Model	PN – 2-BG	PN – 3-BG	PN – 4-BG	PN – 4T-BG	PN – 6T-BG
Power at 1500 RPM (BHP)	22	30	42	63	94
No. of cylinders	2	3	4	4	6
Bore x Stroke (mm)	110 x 123	110 x 116	110 x 120	110 x 120	110 x 116
Swept Volume (Lts.)	2376	3307	4561	4561	6614
Aspiration	Natural	Natural	Natural	Turbo Charged	Turbo Charged
Lub Oil Sump Capacity	5	7.5	11	12	15
Governor	MICO RSV Class A-2 (Mechanical)				

#### Technical Specification – Producer Gas Engine

Engine Model	PN – 2-BM	PN – 3-BM	PN – 4-BM	PN – 4T-BM	PN – 6T-BM
Power at 1500 RPM (BHP)	20	25	38	56	76
No. of cylinders	2	3	4	4	6
Bore x Stroke (mm)	110 x 125	110 x 120	110 x 120	110 x 120	110 x 120
Swept Volume (Lts.)	2280	3421	4561	4561	6842
Aspiration	Natural	Natural	Natural	Turbo Charged	Turbo Charged
Lub Oil Sump Capacity	5	7.5	11	12	15
Governor	MICO RSV Class A-2 (Mechanical)				

#### Produced & Marketed by:

FOUNDRY NAGAR, AGRA, UP INDIA 282006

Tel+91 562 2345073

FAX: +91 562 2346028

[mail@prakash-india.com](mailto:mail@prakash-india.com)

[www.prakash-india.com](http://www.prakash-india.com)

## Biomass Energy System Manufacturers in India



### [Dharmi Engineers](#)

*We are leading Industrial Valves Manufacturer & Exporter of Two Way Ball Valve, Three Way Ball Valve, Four Way Ball Valve, Jacketed Ball Valve, Flush Bottom Ball Valve, Pneumatic Ball Valve, Multiport Ball Valve, Mixing & Diverting Type Ball Valve, Gear Operated Ball Valve, Fire Safe Design Ball Valve, Zero Leakage Ball Valve, Forged Steel Ball Valve, Globe Valve, Forged Steel Globe Valve, Three Way Globe Valve, Pneumatic Globe Valve, Motorised Globe Valve, Gate Valve, Forged Steel Gate Valve, Check Valve, Non Return Valve, Swing Check Valve, Wafer Type Check Valve, Disc Check Valve, Forged Steel Lift Check Valve, Non Return Valve, NRV, Butterfly Valve, Zero Leakage Butterfly Valve, High Performance Butterfly Valve, Diaphragm Valve, Rubber ...*

- **Business type:** manufacturer, retail sales, wholesale supplier
- **Product types:** water cooling systems, water filtering and purification systems, waste treatment systems, air cooling systems, biomass energy systems, hybrid power systems, Ball Valve, Globe Valve, Gate Valve, Check Valve, Butterfly Valve, Strainer, Sight Flow Indicator, Sight Glass etc. .
- **Service types:** design, engineering
- **Address:** B/89 Ishvarlila Park, Jamfalwadi, B/H. Shakriba Party Plot, Nr. CTM Cross Road, . , Ahmedabad 3882449. , Gujarat, India 382449
- **Telephone:** 94270 68323
- **Web Site:** <http://www.dharmiengineers.com>
- **E-mail:** [Send Email to Dharmi Engineers](#)



### [Monotech Engineers Private Limited](#)

*Design manufacture all sorts of material handling equipments including EOT/HOT/ GANTRY/GOLIATH/JIB cranes upto 100 Tonnes capacity. Design manufacture all sorts of sorts of Metal working machines including Shearing machines( Hydraulic/CNC upto 30mm 3500 mm )/press brakes/plate rolling/bending(100 mm with 5000 mm width with prepunching arrangements)/ hydraulic jacks & Power Packs upto 3000 Tonnes capacity. Pre-engineered buildings/heavy structural fabrication & equipment fabrication activities. All sorts of fire fighting equipments. Designing & assembly of containerised Disel Generator sets upto 2000 KVA & in Multiples duly synchronised. Plate Bending Machine. jpg*

- **Business type:** manufacturer, exporter
- **Product types:** heat exchangers, hydro energy system components (small), micro combined heat and power systems (micro-CHP), waste to energy systems, waste to energy systems, air filtering and purification system components, Plate Rolling Machines, Hydraulic Shearing Machines, Hydraulic Press Brake.
- **Service types:** consulting, engineering
- **Address:** S-16, South Side G. T Road Industrial Area, Ghaziabad, Uttar Pradesh India 201009
- **Telephone:** +91-120-2840691
- **FAX:** +91-1202840799
- **Web Site:** <http://www.monotechengineer.com>
- **E-mail:** [Send Email to Monotech Engineers Private Limited](#)

### [Industrial Boilers Ltd](#)

*Steam Boilers, Steam Turbines, Cogeneration Power Plants, Power Generation Plants, Waste to Energy Plants, Biomass Power plants*

- **Business type:** manufacturer
- **Product types:** biomass energy boilers, biomass energy systems, combined heat and power systems industrial, steam turbine electric generators, waste to energy systems, waste heat recovery systems.
- **Service types:** engineering, project development services
- **Address:** 227, 228 Vapi Industrial Township, Vapi, Gujarat India 396 195
- **Telephone:** +91 260 2432899
- **FAX:** +91 260 2421102
- **Web Site:** <http://indboilers.com>
- **E-mail:** [Send Email to Industrial Boilers Ltd](#)

### **Rishipooja Energy and Engg. Co**

***Biomass Gasifiers for low cost Power and heat Generation, bakery ovens biomass gasifier based cematatorium,incinerators***

- **Business type:** manufacturer
- **Product types:** biomass energy systems, biomass energy systems, building integrated photovoltaic systems, cogeneration systems, biomass energy furnaces, waste to energy systems.
- **Service types:** design, installation, construction, engineering, project development services, research services
- **Address:** M G College Road, Gorakhpur, Uttar Pradesh India 273001
- **Telephone:** 91-5513293147, 91-5513291187
- **FAX:** 91-5512202797
- **Web Site:** <http://www.urjagen.co.in>
- **E-mail:** [Send Email to Rishipooja Energy and Engg. Co](#)

### **SKG SANGHA**

- **Business type:** manufacturer
- **Product types:** biomass energy systems, solar collectors flat plate, wood burning stoves and furnaces, biomass energy systems.
- **Service types:** consulting, installation, project development services
- **Address:** NO.532, 2ND MAIN ROAD, GANDHINAGAR, KOLAR, KARNATAKA INDIA 563101
- **Telephone:** +91-9844160038
- **FAX:** +91-8152-224146
- **Web Site:** <http://www.skgsangha.org>
- **E-mail:** [Send Email to SKG SANGHA](#)

### **Aishwarya Solar**

- **Business type:** manufacturer, wholesale supplier, exporter, importer
- **Product types:** LED lighting, solar water heating systems, energy efficient lighting, wood burning stoves and furnaces, biomass energy systems, Bio-mass gasifier.
- **Address:** B-11, Metro House, Vani Vihar Square, Bhubaneswar, Orissa India 751007
- **Telephone:** 0674-2546404
- **FAX:** 0674-2546954

### **Ankur Scientific Energy Technologies Pvt. Ltd.,**

- **Business type:** manufacturer, exporter
- **Product types:** Ankur Solar Water Heating Systems, Solar Air Heater/Dryers, Solar Desalination

Systems. Ankur Biomass Gasifier Systems. Ankur Biomass Gasifier Systems can be used for thermal and power generation applications like furnace, boilers, thermic fluid heaters, dryers, cooking chulhas, dual-fuel mode DG sets and 100% producer gas based DG sets. .

- **Service types:** research and development, engineering, project development services, consulting, development, design, installation and turnkey projects
- **Address:** Ankur, Near Old Sama Jakat Naka, Baroda, Gujarat India 390 008
- **Telephone:** 0091 265 2793098/2794021
- **FAX:** 0091 265 2794042

### APJ Electronics & Power Pvt Ltd

- **Business type:** manufacturer
- **Product types:** electric vehicle batteries, biomass energy systems, hybrid power systems, wind energy systems (small), solar electric power systems, solar water heating systems.
- **Address:** Nsc Bose Road, Calcutta, Wb India 700047
- **Telephone:** 91 33 24631813-1816
- **FAX:** 91 33 2466 7178

### Aruna Electrical Works (P) Ltd.,

- **Business type:** manufacturer, exporter
- **Product types:** biomass energy systems.
- **Address:** Kongampattu,, Villupuram District,, Tamil Nadu India 605 105
- **Telephone:** 91-413-2699484, 2699485

### Asian Power Cyclopes

- **Business type:** manufacturer
- **Product types:** solar cooking systems, solar water heating systems, solar water pumping systems, biomass energy systems, wood burning stoves and furnaces, biomass energy system components.
- **Address:** Rochipura, Majra, Dehradun, Uttranchal India 248171
- **Telephone:** 91-135-2620488
- **FAX:** 91-135-2620961

### Biogreen Energy Systems

- **Business type:** manufacturer, service, engineering
- **Product types:** biomass energy systems, Kitchen Waste Plants, Vegetable Waste Plants, Biomass Gasifiers, Back Pressure Steam Turbines, Steam ♦ Piping Engineering and Stress Analysis.
- **Address:** B-1/7, Vrundavan Hng Complex, Kothrud,, Pune, Maharashtra India 411029
- **Telephone:** +91-20-5281134 / +91-9823021986
- **FAX:** +91-20-5281134

### Cethar Vessels Limited

- **Business type:** manufacturer, exporter
- **Product types:** biomass energy boilers, biomass energy boilers, biomass energy systems, biomass energy furnaces, cogeneration systems, cogeneration system components.
- **Address:** 2006, Emerold House, S.D.Road, Secunderabad, Secunderabad, A.P. India 500003
- **Telephone:** 7818946, 7815920
- **FAX:** 7815920

## Chanderpur Works

- **Business type:** manufacturer, exporter
- **Product types:** biomass energy systems, biomass energy system components, biomass energy furnaces.
- **Service types:** design
- **Address:** Jorian, Yamuna Nagar, Haryana India 135001
- **Telephone:** 0091-1732-297460/ 61/62
- **FAX:** 0091-1732-297463

## Dev Powergen Pvt Limited

- **Business type:** wholesale supplier
- **Product types:** steam turbine electric generators, biomass energy systems, fuel powered electric generators, hybrid power systems, biomass energy system components, packaged power systems, Energy Services - Electric & Heat energy supply to large Industries / consumers..
- **Address:** 2203/D12, New Santhepet,, Mysore., Karnataka India 570 021
- **Telephone:** +91 821 421981 or 423965

## ERENA Technologies(India)

- **Business type:** manufacturer, wholesale supplier, exporter
- **Product types:** solar air heating systems, solar cooking systems, solar water heating systems, solar tracking systems, hydro energy system components (large), biomass energy systems.
- **Service types:** installation, engineering, project development services, maintenance and repair services
- **Address:** No.52,Dodanna Industrial Estate,Near Peenya 2nd stage,, Bangalore-560091, Karnataka India 5600
- **Telephone:** +91-80-3488053
- **FAX:** +91-80-3488053

## Excel Engineering

- **Business type:** manufacturer, exporter
- **Product types:** biomass energy systems, larger capacity biomass fuel-briquettes manufacturing machines.
- **Service types:** consulting, design, installation, engineering, project development services
- **Address:** PL--9, Sarswatnagar Society, Piplod, Surat, Gujarat India 395007
- **Telephone:** +91-261-222735

## Global Investors Inc.

- **Business type:** manufacturer
- **Product types:** biomass energy systems.
- **Address:** 303, Centre Point, Surat, Gujrat India 395007
- **Telephone:** 91-0261-3461698
- **FAX:** 91-0261-3472542

## Green India Renewables Private Limited

- **Business type:** Manufacturer, wholesale supplier, exporter
- **Product types:** Solar photovoltaic modules, solar lanterns, solar water heating systems..
- **Service types:** consulting, design, installation, construction, project development services, site survey

and assessment services, architectural design services, contractor services, maintenance and repair services, recycling services

- **Address:** 57/804, Mahakavi G.Road,, Cochin, Kerala India 682011
- **Telephone:** +91-484-2382531, 2382532, 3096171
- **FAX:** +91-484-2382531

## Greenfield Consulting Group

- **Business type:** manufacturer
- **Product types:** geothermal energy systems, biomass energy systems, waste treatment systems, wind power plants, cogeneration systems, heat pumps, modification & retrofitting of conventional power generation and combined cycle systems, energy auditing & energy efficient technologies.
- **Address:** #49-266/2, Padmanagar Phase I, Chintal,, Hyderabad (Ap), India 500 055
- **Telephone:** +91-40-5545 6252 / 098488 77131

## Inkas India

- **Business type:** manufacturer, wholesale supplier, exporter, contractor
- **Product types:** solar air heating systems, solar cooking systems, solar outdoor lighting systems, solar air heating systems, photovoltaic systems, biomass energy systems, solar water purification plant, solar home lighting system, solar lanterns, solar power packs, & handicraft. We undertake contract jobs like: THERMAL / ACOUSTIC INSULATION / FRP LINING / SAND-SHOT BLASTING / UNDERGROUND PIPE COATING / EPOXY PAINTING / HDPE PIPE FABRICATION AND ERECTION / ETC..
- **Address:** E-14, Zinnia Block, Ashiana Gardens, Sonari,, Jamshedpur, Jharkhand India 831011
- **Telephone:** 91657421334 / 223708
- **FAX:** 91657421334

## INTEC Heating Solutions (India) Ltd.

- **Business type:** manufacturer, exporter
- **Product types:** biomass energy systems, wood burning stoves and furnaces, biomass energy furnaces, heat exchangers, biomass energy boilers, biomass energy system components, fluidics dental combustion; biomass energy; thermal-oil-heaters.
- **Service types:** consulting
- **Address:** Indo-German Chamber Of Commerce; 710 Nucleus Mall; Opp Police Comm. Office; 1 Church Road, Pune, India 411001
- **Telephone:** +49 151 14809733
- **FAX:** +49 7251 9324399

## Lehra Fuel Tech Pvt. Ltd.

- **Business type:** manufacturer, retail sales, wholesale supplier
- **Product types:** biomass energy systems, waste to energy systems.
- **Service types:** installation, contractor services, recycling services
- **Address:** V.p.o.jagera (opp. Bp Petrol Pump), Distt.ludhiana, Punjab India 141117
- **Telephone:** 91-99152-00437,98152-00337
- **FAX:** 91-1675-242981

## M/S Dimentional Engineers & Fabricators

- **Business type:** manufacturer
- **Product types:** Large production capacity (12.5 MT/Hr.) Biomass Fuel Briquetting Machine called

Biomass BULK Briquetting machine(BBM). Biomass energy systems and Biomass Energy based, minimum 500 KW capacity captive Power Generation Systems. .

- **Service types:** consulting, design, installation, engineering, project development services, research services, contractor services
- **Address:** PL-9, Saraswatnagar Society, Piplod, Surat--395007 ( Gujarat) INDIA., Surat, Gujarat. India. 395007
- **Telephone:** 0091-261- 3298291 (M) 0-9377464048.
- **FAX:** 0091-261-2277103.

### M/S Regional Engg Works

- **Product types:** biomass energy systems, air cooling system components.
- **Address:** E/C 1@2 Developed Plots Estate Thuvakudi Trichy, Trichirapalli, India 620015
- **Telephone:** 0431-2500187,0431-2501188

### M/S, Santhini Enterprises

- **Business type:** manufacturer, wholesale supplier
- **Product types:** biomass energy systems, biomass energy system components.
- **Address:** 771, Puliakulam Road, Pappanaikenpalayam Post, Coimbatore, Tamilnadu India 641 037
- **Telephone:** 91 422 218954
- **FAX:** 91 422 210438

### Nsy Energy Engineering & Consultancy Services (P) Ltd.,

- **Business type:** manufacturer
- **Product types:** biomass gasifiers for thermal applications specially for food processing industry, chemical industry, leather industry, tea industry , bread, biscuit , namkin manufacturing e.t.c (For replacement of liquid fuel), biomass energy products biomass briquetting & processing equipment .
- **Service types:** consulting services, contractor services, research and development
- **Address:** 149-A, I Floor, Baba House, Opp. Maharani Bagh, Kilokri, New Delhi, New Delhi India 110 014
- **Telephone:** 91-11-55191937, 09212084933
- **FAX:** 91-11-26903696

### Planters Energy Network

- **Business type:** manufacturer, wholesale supplier
- **Product types:** Solar drier of various capacities for processing fish, fruits & vegetables, herbal, spices, leather, laundry, tea, pulses & grain, chemicals solar air heating systems to replace/reduce fossil fuel used in all industries for processing.
- **Service types:** consulting, installation, project development services, research services
- **Address:** #5 Power House Street, N.R.T Nagar, Theni, Theni, Tamilnadu India 625531
- **Telephone:** +91 4546255271/ 72
- **FAX:** +91 4546-255271

### Pondy Technologies Ltd

- **Business type:** manufacturer, exporter
- **Product types:** biomass energy systems, solar water heating components, solar water heating systems.
- **Address:** 103D/1 Block "F", New Alipore, Kolkata, West Bengal India PIN - 700053



- **Telephone:** +91-33-24451461
- **FAX:** +91-33-24451460

## **PRAKASH DIESELS PVT. LTD**

- **Business type:** manufacturer, exporter
- **Product types:** biomass energy system components, biomass energy system components, Natural gas, Biomass gas genset and engines from 5 to 50 kW.
- **Address:** FOUNDRY NAGAR, AGRA, UP INDIA 282006
- **Telephone:** +91 562 2345073
- **FAX:** +91 562 2346028

## **Pune Gas Parts and Services Pvt. LTD.**

- **Business type:** manufacturer, wholesale supplier, service
- **Product types:** energy efficient appliances, biomass energy products, liquified petroleum gas equipments and burners.
- **Service types:** consulting services, contractor services, maintenance and repair
- **Address:** 381, BHAVANI PETH,, PUNE, MAHARASHTRA INDIA 411042
- **Telephone:** 91-20-654456

## **R P Energy & Engg Company**

- **Business type:** manufacturer, wholesale supplier, exporter
- **Product types:** biomass Gasifiers for Thermal/electric Power Generation, Diesel/Propane/Producer Gas Fired Ovens/Furnaces, Solar/Wind Energy based Systems.
- **Address:** M G College Road, Gorakhpur, U P India 273001
- **Telephone:** 91-551 2340612;91-9415212901,91-9336429290

## **Radhe Renewable Energy Development Pvt. Ltd.**

- **Business type:** Manufacturer of Bio-mass Gasifier, Biomass Hot Air Generator, Biomass Briquetting Machine
- **Product types:** Biomass Briquetting Machine production capacity 500 ,750,1500 kg/hr . Biomass updraftGasifier production capacity 500 Kwth to 8000 Kwth for thermal application.Biomass fluidized bed hot air generator direct and indirect , production capacity 8,60,000 Kcal/Hr. upto 81,70,000 Kcal/Hr..
- **Service types:** Bio-mass Gasifier for Thermal & Power Application
- **Address:** D-110 Rajdoot Industrial Estate, 4-Umakant Pandit Udyog Nagar, Rajkot, Gujarat India 360004
- **Telephone:** +91-281-2372567, 2377823
- **FAX:** +91-281-2372557

## **Rajbhashkar Power Generation Ltd**

- **Business type:** manufacturer
- **Product types:** biomass energy systems, biomass energy furnaces, biomass energy boilers, biomass energy system components, hydro energy system components (small).
- **Address:** Flat No.361, Block, B4, Yelahanka, Bangalore, Karnataka India 560064
- **Telephone:** 919341967449
- **FAX:** 91805656395

## Reva Enviro Systems Pvt. Ltd.

- **Product types:** biomass energy systems, waste treatment systems.
- **Service types:** consulting, design, installation, construction, engineering, project development services
- **Address:** 9, Sunderlal Rai Path, Ramdaspath, Nagpur, Maharashtra India 440010
- **Telephone:** 91-712-544817, 18.1
- **FAX:** 91-712-544813

## Revolve Engineers Private Limited

- **Business type:** manufacturer
- **Product types:** Water Treatment Plants, Waste Water Treatment Plants, Chemical Recovery Plants, waste heat recovery systems, air filtering and purification system components, biomass energy systems, cogeneration systems, geothermal energy systems, heat exchangers, hydro energy systems (large), Solar Cooking Systems, Hydrogenation Plants, Solvent Extration Plants, Mineral Processing Plants, Petroleum Processing Plants, Polymer Plants, Etc.,.
- **Address:** 6-3-1186/A/5/2, 2nd Floor, Balreddy Complex, Behind Blue Moon Hotel, Begumpet,, Hyderabad, A.P. India 500 016
- **Telephone:** +91-40-3091 1143, +91-098488 77131
- **FAX:** +91-40-2341 5969

## Safe Motors Ltd

- **Business type:** manufacturer, retail sales, wholesale supplier, exporter
- **Product types:** Solid waste processing machines for Aerobic and Anaerobic plant and all type of size reduction machines table top to Gaint.
- **Address:** Edavilangu, Kodungallur, Kerala India 680671
- **Telephone:** 0488 804008
- **FAX:** 0488 807650

## Sesocon Technologies

- **Business type:** manufacturer, retail sales, wholesale supplier
- **Product types:** biomass energy systems, solar water heating systems, meters and measuring equipment, photovoltaic systems, solar air heating systems, solar outdoor lighting systems, all solar systems & biomass gasifier power plants.
- **Address:** 13/ A-1. Uppukkottai. Bodi Road. THENI-625534, Madurai, T.N India 625534
- **Telephone:** 9842155190

## Solaris Systems (P) Ltd

- **Business type:** manufacturer, wholesale supplier
- **Product types:** portable power systems, solar outdoor lighting systems, telecommunications power systems, photovoltaic module manufacturing equipment, biomass energy systems, refrigerators and freezers.
- **Service types:** design, project development services
- **Address:** 34/1241 I Floor, Sachu Tower, Beena Anjumana Road, Edapally, Cochin, Kerala India 682024
- **Telephone:** +91-484-333561
- **FAX:** +91-484-333561

## Sree Engineering Works

- **Business type:** manufacturer, retail sales, wholesale supplier, exporter
- **Product types:** biomass energy systems, biomass energy system components, BRIQUETTING MACHINES & PLANTS FOR SAW DUST, CHARCOAL POWDER, COAL & COKE.
- **Service types:** design, installation, engineering, project development services
- **Address:** 7-1-1/C, Ferozguda, Bowenpally, Hyderabad, Andhra Pradesh India 500011
- **Telephone:** +91-40-27752820
- **FAX:** +91-40-27751841

## sunline Solar`s

*SUN LINE SOLAR`S SHIMOGA, We are dealers and service centre for renewable energy systems like solar and bio mass based energy systems in india. We have 10 years experience in designing and installing Solar Enrgy Equipment with well experienced installation team , 2 years experienced in Bio-Mass Based Systems to provide good after sales service to our customer to uphold the reputed name as SUN LINE SOLAR`S in the market. We are leaders and trend setter in our respective field. Our team comprised for core professionals in this field, who have been dedicated to solar industry for Past 12 years. The combined experience of our core group exceeds 25 year in solar water heating and SPV. Our team in Marketing, Production, quality and projects ...*

- **Business type:** manufacturer, retail sales, wholesale supplier, exporter, importer, publisher
- **Product types:** biomass energy systems, solar water heating systems, solar air heating systems, biomass energy furnaces, solar pool heating systems, solar outdoor lighting systems.
- **Address:** Near Najanppa Hospital,Kuvempu Road , SHIMOGA-577201, Karnataka, India India 577201
- **Telephone:** +91 98456-08309
- **FAX:** +91 8182 228438
- **E-mail:** [Send Email to sunline Solar`s](#)

## Sustainable Development Agency

- **Business type:** manufacturer, exporter,
- **Product types:** solar cooking systems, solar water heating systems, biomass energy systems, water storage tanks, waste treatment systems, solar garden lights.
- **Address:** Parathodu, Kottayam, Kerala India 686512
- **Telephone:** 91482890646

## Technology & Resource Management Consulting Group

- **Business type:** manufacturer, retail sales, wholesale supplier, importer
- **Product types:** air filtering and purification systems, water filtering and purification systems, waste treatment systems, heat exchangers, air heating system components, biomass energy systems, cogeneration systems; waste heat recovery systems; heat recovery steam generators; geothermal energy sytems; renewable energy systems; pumping stations; fuel transfer stations; hydronic radiant heating systems ; hydro, thermal and combined cycle electric & energy generating systems; gasifiers; solar energy, cooking and pumping systems; wind mills & power generation stations; natural resources conservation studies; wealth from waste concepts; etc..
- **Address:** 49-266/2, Padma Nagar Phase I, Chintal, , Ranga Reddy Dist. - 500055, A.P. India 500 055
- **Telephone:** +91-40-5545 6852 / +91-0-98488 77131

## Thermal Systems (Hyderabad) Pvt. Ltd

- **Business type:** manufacturer, wholesale supplier, exporter, importer

- **Product types:** biomass energy boilers, cogeneration system components, heat exchangers, cogeneration system components, biomass energy systems, biomass energy furnaces, waste heat boilers for sap, sip, zinc & cu smelters & roasters.
- **Service types:** consulting, design, installation, construction, engineering, project development services, research services, contractor services, testing services
- **Address:** #1, Apuroopa Township, Ida, Jeedimetla, Hyderabad, AP India 500055
- **Telephone:** +91-40-3091801
- **FAX:** +91-40-3097433

## TRUEBELL OVERSEAS

- **Business type:** manufacturer, exporter, importer
- **Product types:** biomass energy systems, diesel electric generators, fuel powered electric generators, photovoltaic module manufacturing equipment, gas turbine electric generators, solar lighting systems.
- **Address:** B 87-2, DEFENCE COLONY,, NEW DELHI, DELHI INDIA 110024
- **Telephone:** 0091 9910044055
- **FAX:** 0091 11 24334014

## UES

- **Product types:** CAPACITY ENHANCEMENT OF STEAM BOILER,STEAM TURBINE,PROJECT EXECUTION FOR POWER PLANT,COGENERATION PLANT.
- **Address:** A-302,2nd floor,vikaspuri, New Delhi, INDIA 110018
- **Telephone:** 91-09810139601