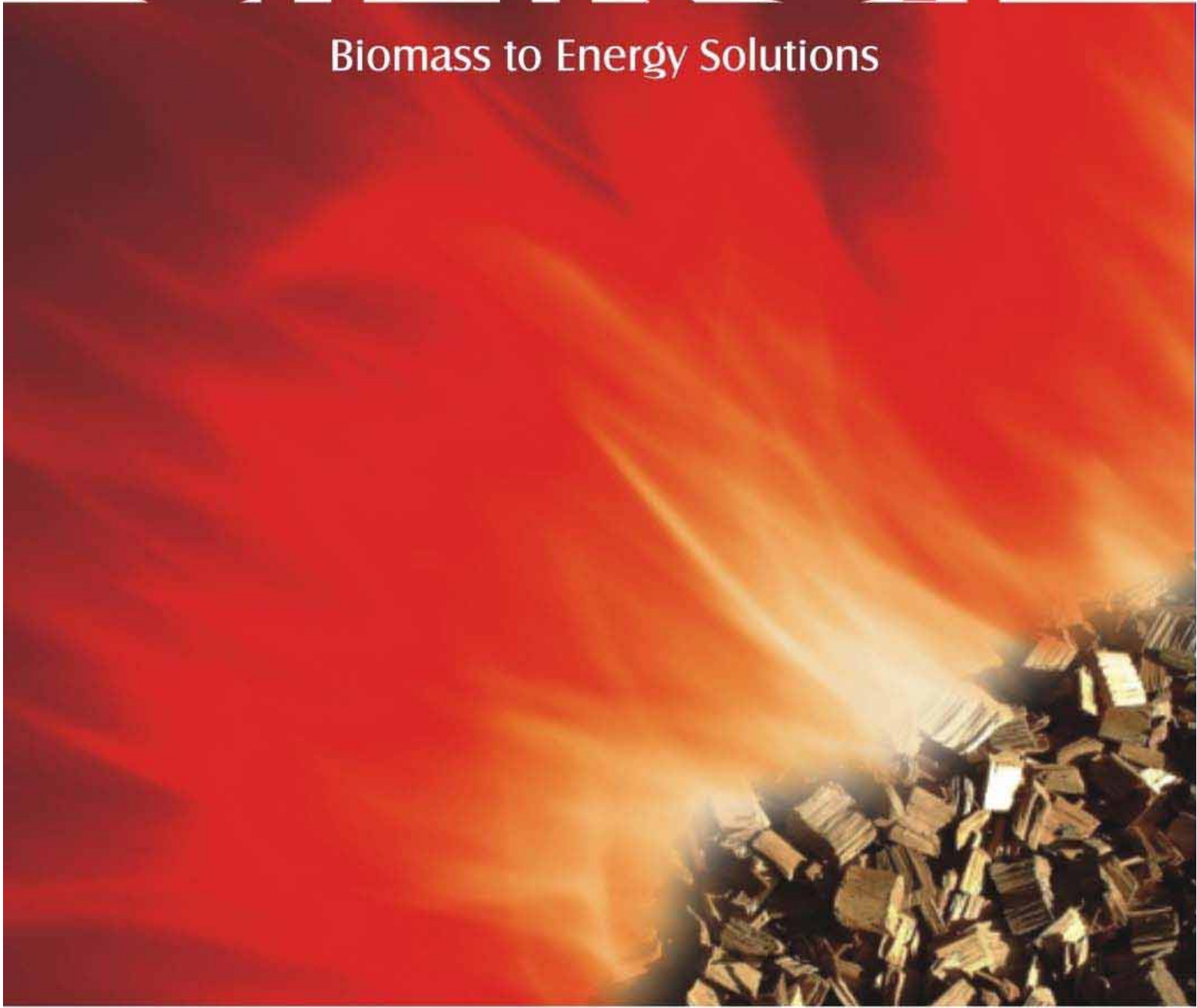
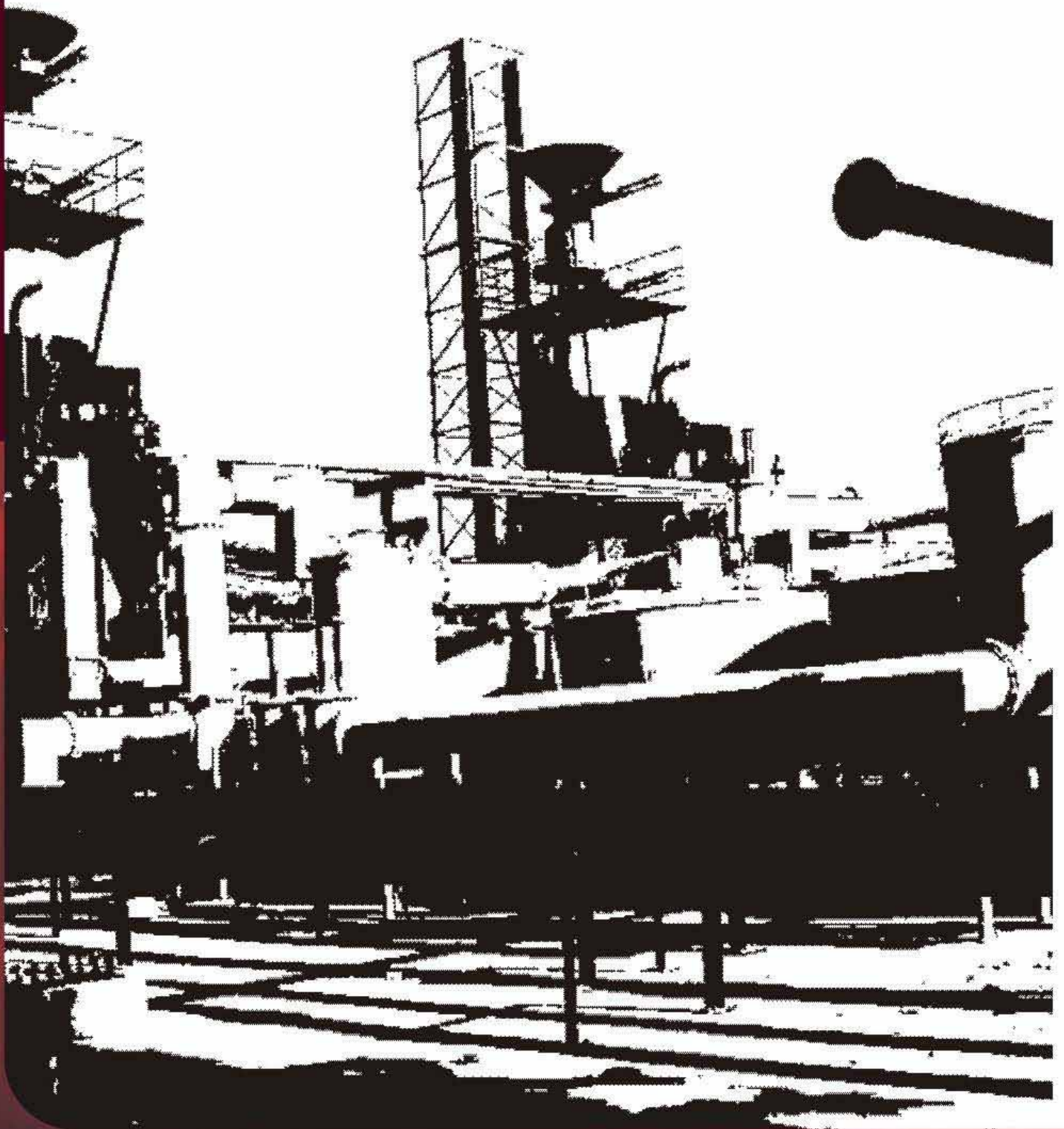


# ankur

Biomass to Energy Solutions









## **Vision**

Ankur Scientific endeavors to provide energy that is  
Green,  
Clean,  
Sustainable,  
Convenient,  
At costs that enable all to use it.

## **Profile**

Ankur Scientific Energy Technologies Pvt. Ltd., a company established in 1986, has been in the forefront of research and developmental activities in the area of non-conventional energy sources. Founded by Dr. B.C.Jain (B.E. – BITS, Pilani; Double M.S., M.B.A. And Ph.D. from MIT, Cambridge, U.S.A.), an internationally acclaimed technocrat, the company has, since its inception, an enviable record of development in the area of Biomass to Energy Solutions.

The company has successfully developed and commercialized a wide range of biomass gasifiers ranging in size from as small as 5 kgs per hour biomass consumption to 2000 kgs per hour of biomass consumption. Ankur's competitive edge lies in its long history of developing and improving the technologies that drive its business. Ankur has patents for various technical features and it has also won awards from the Federation of Gujarat Industries (FGI) as well as Government of India for excellence in Research in Science and Technology. It has a Government of India approved lab and the company is now ISO 9001, 14001 and OHSAS 18001 certified. Its products are CE certified. The company has extensive manufacturing facilities and as the sole focus is on production of biomass-to-energy equipments, the facilities have been specifically designed and are frequently upgraded to ensure least cost and most efficient production.

A number of field installations (>900) in India and abroad (in Europe, USA, South America etc.) are a testimony not only to the long-term reliability of the gasifiers, but also of the growing acceptance of the technology.

## The Company

Award For  
Best SSI Unit

Awards for Excellence  
in Research in  
Science & Technology

DSIR, Govt. Of India  
approved  
In house R&D

Senior Management  
Well known  
International  
experts in Gasification



>300 Employees  
Extensive  
Mfg. Facilities

TuV Certified  
ISO 9001  
ISO 14001  
BS OHSAS 18001  
Company

More than 900  
field installations

CE Certified  
Technology

## Strengths

### ✓ One Stop Shop

Ankur Scientific develops its own technology, manufactures the equipments, installs and then services the same. It can also take up complete EPC projects for power as well as heat generation.

### ✓ Simple State-of-Art System

The system design allows for extremely clean gas generation and for easy operation and maintainability.

### ✓ Organizational Capability

With a team of more than 40 erection/commissioning and service engineers, the Company is capable of doing a number of projects in parallel (more than 15 projects done abroad each year).

### ✓ Largest field experience

'Ankur' has the largest number of field installations in the world, thus allowing it to constantly develop the technology.



## Technology Offered and Applications

Ankur Scientific has been known as a world leader in the design, development and deployment of Biomass Gasifiers. The company now also offers Biogas plants based on the Anaerobic fermentation technology. The company also offers range of gasifiers (Pyro Gasifiers) that are used primarily for generation of charcoal. The gas generated is a byproduct and can be used for power/process heat application.

### What is Biomass Gasification?

Conversion of solid fuels into combustible gas mixture called Producer Gas ( $\text{CO} + \text{H}_2 + \text{CH}_4$ ). Involves partial combustion of biomass.

Four distinct processes in the gasifier viz.

- ✓ Drying
- ✓ Pyrolysis
- ✓ Combustion
- ✓ Reduction



### Applications in which 'Ankur' equipment can be used

#### Power Generation

- ✓ Irrigation Pumping
- ✓ Village Electrification
- ✓ Captive Power (Industries)
- ✓ Grid-fed Power
- ✓ Simultaneous Charcoal and Power Production

#### Thermal Applications

- ✓ Hot Air Generators
- ✓ Dryers
- ✓ Boilers
- ✓ Thermic Fluid Heaters
- ✓ Ovens
- ✓ Furnaces & Kilns

#### Charcoal Generation



## **Biomass Gasifiers - Product Portfolio**

Ankur Scientific has successfully gasified a number of different biomasses:

- ✓ Wood / Bamboo Pieces or Chips.
- ✓ Nut Shells like Coconut, Peanut, Almond, Brazil Nut, Macadamia etc.
- ✓ Rice Husk and Rice Straw (used without briquetting).
- ✓ Agri Residues (threshed/briquetted) like Mustard, Cotton, Soya Bean Stalk, Soya Bean Husk, Sunflower Hulls.
- ✓ Cow Manure & Chicken Manure .
- ✓ Lignite.

**Ankur Scientific offers four series of Gasifiers:**

### **WBG (Woody Biomass Gasifier) Series**

- ✓ Can use most feeds defined above except Rice Husk and Straw.
- ✓ Ranges from 5- 2,000 kgs/hr. of Biomass Consumption.
- ✓ Thermal output from 12,500 - 5,000,000 kCals/hr.

### **FBG (Fine Biomass Gasifier) Series**

- ✓ Special design for rice husk and straw.
- ✓ Ranges from 20 -1,000 kgs/hr. of Biomass Consumption.
- ✓ Thermal output from 50,000 – 2,000,000 kCals/hr.

### **COMBO (Combination Biomass Gasifier) Series**

- ✓ Can use all of the above fuels.

### **Pyro Gasifier Series - Simultaneous Charcoal & Gas Generation**

- ✓ Upto 40% of biomass by weight converted into high grade charcoal.
- ✓ Simultaneous gas production.
- ✓ Extremely high overall energy efficiencies - of the order of 90%.
- ✓ Process totally eliminates any adverse environmental impact.
- ✓ User & Operator-friendly systems.



## **Ways of Working Together**

### **Equipment Sale**

We are in the business of designing and selling biomass-to-energy equipment. Whatever your needs, please talk to us – we will be happy to assist.

### **EPC**

A project more often than not, involves equipment beyond what we manufacture. You could procure this equipment yourself or we could offer you a turnkey solution wherein we offer you everything needed, for the entire project.

In certain special cases, we could also take up the permitting (power plants for example need more than ten approvals) as needed, along with the local works like civil etc.

### **Asset Ownership - Electricity Generation**

Ankur Scientific now has an arm that is setting up biomass-to-electricity assets for itself. The power either gets sold to the grid or to an industrial user. Talk to us if you want to partner with us in this endeavor or if you want us to partner in your power plant.

### **Asset Ownership - Process Heat Generation**

Ankur Scientific also offers BOOT/ BOO kind of arrangements for process heat applications. In such a scenario, Ankur sets up the equipment and then operates and maintains it. This allows the customer to focus on his core business while enjoying the environmental and economical benefits of a biomass solution.

### **Operation & Management Services**

Depending on the size of the plant, 'Ankur' could offer long term Operation & Maintenance Services, including Annual Maintenance Contracts.



## Economic Benefits

- ✓ Typically the cost of fuel for power / process heat generation reduces by more than 50%.
- ✓ Gasifiers generate charcoal with a calorific value of more than 5,000 kCals/Kg - an extremely good and marketable fuel.
- ✓ If the system is used for power generation, free waste heat is available for generating hot water, air or chilling.

## Social Benefits

- ✓ Value to an erstwhile waste.
- ✓ Enrichment of Rural Economy through job creation and because biomass procurement is from the local area.
- ✓ Power Plants can be installed quickly in areas where there is no power, thus aiding development.
- ✓ Ash generated by the system can be used as a soil binder for increasing Agricultural productivity.
- ✓ Charcoal generated by the system can be used for smokeless cooking.

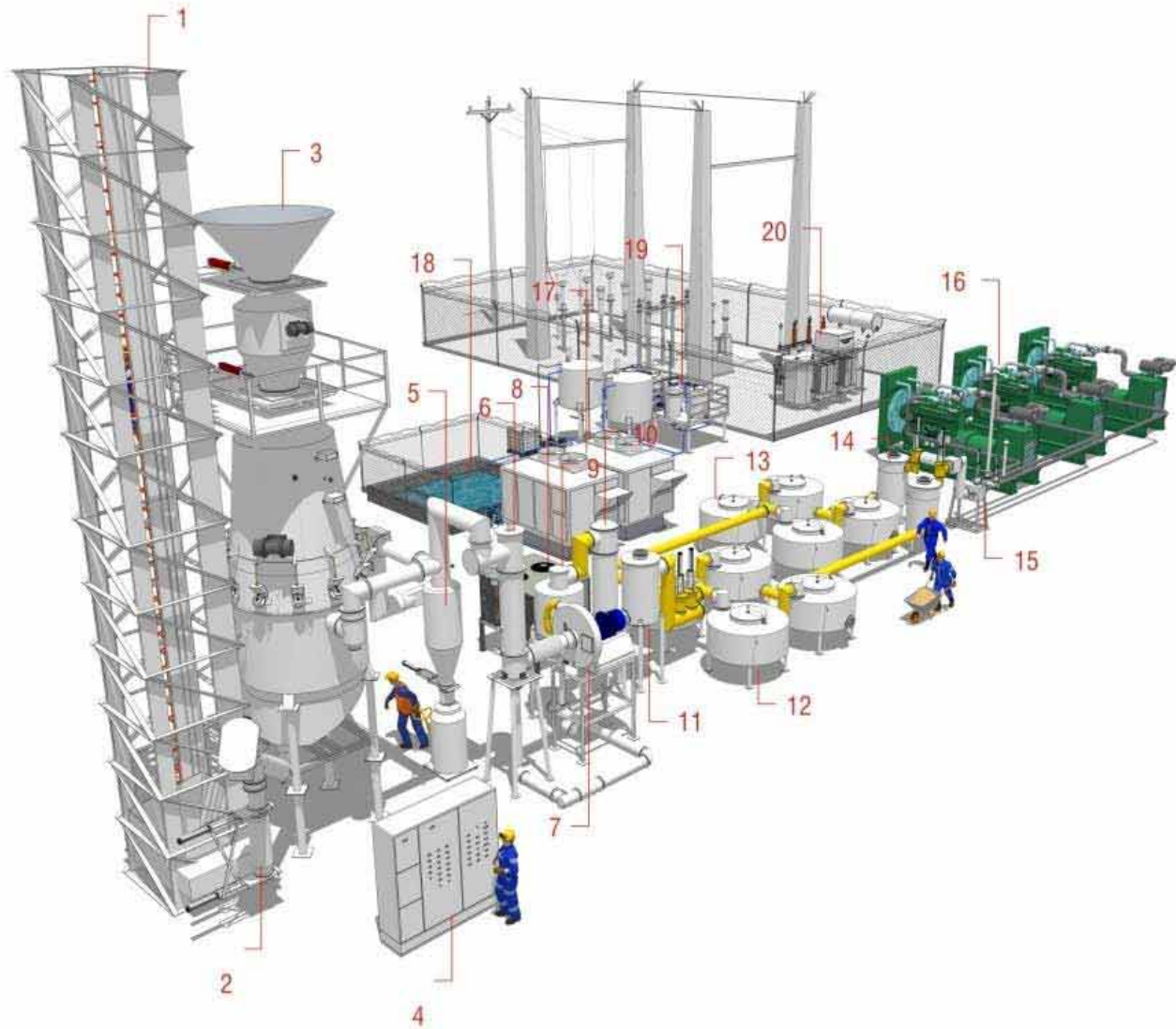
## Environmental Benefits

Biomass is carbon-neutral, thus avoiding global warming. The system as designed has no harmful emissions :

- ✓ **Water** - Used in re-circulation mode with zero discharge.
- ✓ **Air** - Gasifier does not release any gases to the atmosphere. Combustion in user equipments (connected to gasifier) is much cleaner compared to liquid fuels.
- ✓ **Solid Waste** - Charcoal can be used as fuel. Biological ash can be returned to the soil.
- ✓ **Noise** - In case of major user equipment i.e. genset, noise level is lower than with 100% liquid fuels.



## Typical Scheme for a Power Plant based on 'Ankur' System



### Legend

No.	Description	No.	Description	No.	Description
1	Skip Charger	8	Chiller	15	Header Box and Flare
2	Dry Ash Collection Box	9	Separation Box	16	Biomass Generator Sets
3	Gasifier	10	Heat Exchanger	17	Cooling Towers
4	Control Panel	11	Mist Eliminator	18	Water Pond
5	Cyclone	12	Primary Fine Filters	19	Water Treatment Plant
6	Promiser	13	Secondary Fine Filters	20	Transformer
7	Blower	14	Pleated Filters		

2 X WBG-1500 gasifiers for Drying Application, India



Rice Husk based 250 kWe Power Plant,  
India



40 kWe Power Plant,  
Colombia





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



**Ankur Scientific Energy Technologies (P) Ltd.**

**Office**

Ankur, Near Navrachana School, Sama, Vadodara - 390 024, India  
Ph. : +91-265-2793098, Fax : +91-265-2794042  
E-mail : [ascent@ankurscientific.com](mailto:ascent@ankurscientific.com), [info@ankurscientific.com](mailto:info@ankurscientific.com)

**Factory**

Vadodara-Savli Road, Near Village Gothda-391 773, India  
Ph. : +91-2667-222342 / 223343, Fax : +91-2667-223342

VARUN # 19825459440



ISO 9001  
ISO 14001  
OHSAS 18001

