

BEST FROM WASTE



"PRODUCE ENERGY, SAVE ENVIRONMENT"

JUMBO-90 BRIQUETTING PLANT



SHREE KHODIYAR
ENGINEERING WORKS

BEST FROM WASTE



Cotton Flower



Cotton Stalk



Cummin Waste



Forest Leaves



Caster Seed Shells



Groundnut Shells



Bittlenut Shells



Jute Waste



Almound Shells



Finished Product



Macoddana Bhells

"PRODUCE ENERGY, SAVE ENVIRONMENT"

INDEX



■ Introduction	2
■ Company Profile	3
■ Land Layout	4
■ Briquettes White coal	5
■ Raw material	6
■ Briquetting Plant Model	8
■ Finishing product - Briquettes	15
■ Benefits	17
■ Calorific value	18
■ The Whole Project	19

SHREE KHODIYAR
ENGINEERING WORKS



INTRODUCTION

We all know that we exist because the nature exists. The nature has energy, enthusiasm and eliteness. The great poets have created a lot in the lap of nature. Inter dependency of human being and nature is unchangeable. The prevention of nature is prime duty of mankind. It is essential to keep ecological, environment well balanced in this world of advanced technology. As we know, haphazard use of natural resources will put us in grave one day.

To overcome this problem, we have white coal as an alternative fuel. The coal made from agricultural and forest wastes & residues in the form of briquettes have been named as white coal. It can be efficiently used to replace liquid fuel, charcoal and firewood. The white coal or solid briquettes are converted from agro wastes to solid cylindrical shape. The white coal is converted from agro wastes using mechanical pressure without using any binders or chemical. This white coal is substitute bio fossil fuel energy.

COMPANY PROFILE



"SHREE KHODIYAR ENGINEERING WORKS" has a pleasure to contribute in maintaining and preserving nature and ecological balance. Some of the natural wastages or unused material such as industrial & the agricultural wastages are input for our finished product, It produces energy to utilize the natural resources at the most and create a product which again creates energy, such a cyclical process is the way to preserve the natural resources. Our "Briquetting Machine" works on the above theory, without creating pollution which is again a great enemy of ecological preservation system. Let us join our hands to maintain nature without pollution and increase the life span of our mankind for antes and ages to come.

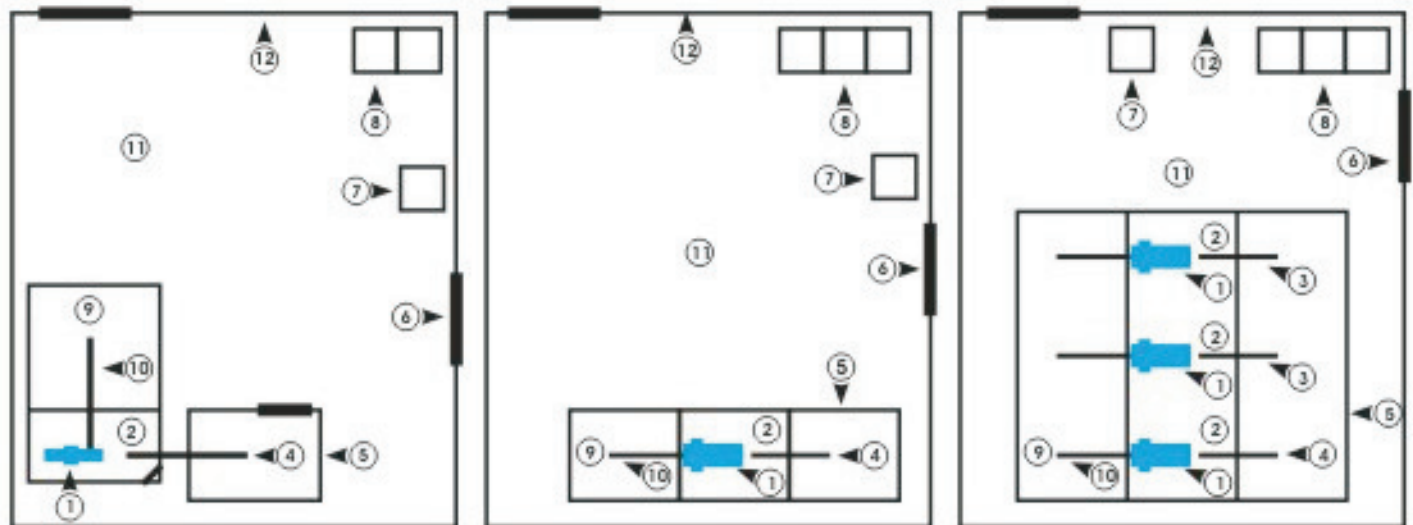
Our company's infrastructure is the best as.

- We are having sufficient space for manufacturing and storing the machines in bulk.
- We have well established workshop.
- We have sufficient tool room & fixtures.
- We have well - experienced team of engineers and technical staff, design and drawing, customer care and after sale service, research and development department.

SHREE KHODIYAR
ENGINEERING WORKS



LAND LAYOUT



1. Foundation for Briquetting Press (LENGTH X WIDTH X DEPTH) - 16' x 5' X 7'
2. Shed for Briquetting Press - 25' x 30' x 14'
3. Proposed Second M/c.
4. Cooling Lines for Output Briquettes - 30'
5. Shed for Finished Briquettes Galvanized Roof - 40' x 40' x 20'
6. Entry Gate - 15'
7. Office Building - 10' x 10'
8. Proposed Labor Rooms
9. Shed for Raw Material-Galvanized Roof - 60' x 40' x 20'
10. Conveyor for Raw Material Feeding
11. Open space for Raw Materials Storage.
12. Compound Wall

BRIQUETTES / WHITE COAL



The entire world at present is concerned over limited natural resources which are becoming scarce day by day. The Scientists all over the world are exploring the use of non - conventional energy sources. Briquetting technology is a step towards this to achieve the above goal.

In recent years there has been a significant increase in the consumption of conventional fuels via furnace oil, coal lignite, wood etc. in small & medium industries for their process involving heat treatment in their production pattern. This is ever increasing demand for conventional fuel and making the erosion of the natural sources without replacing them. India is already in the midst of fuel crises. There is a need to adopt some innovative technologies which can produce energy by recycling available inputs without charging the quantum of existing one.

There is a tremendous scope to bring down the waste of conventional energy sources to a considerable level through the development, propagation & population of non considerable level through development, propagation & population "BRIQUETTING TECHNOLOGY" for production of briquettes agro residue to meet thermal Energy requirements. Therefore this substitute energy medium is to give national priority as it appears to be the only permanent solution that one can think of the survival & growth of the small & medium industries resulting into restrictions of national loss.



THE RAW MATERIAL

Every year million tons of agricultural waste are generated. These are either none used and burnt inefficiently in their loose form causing air pollution. Handling and transportation of these materials is also very difficult due to their low density. So Shree Khodiyar Engineering Works Provides the solution to use this wastage into best form. This wastage can easily convert into high-density fuel (briquettes) with the help of Biomass Briquetting plant. In India & other agricultural based countries, there is large scope of this project due to huge availability of Biomass Agro waste.

SPECIFICATION OF RAW MATERIAL

Size: Max. 20 mm.

Moisture %: Bellow 10%.

RATE OF RAW MATERIAL (APPROX)

The rate of raw material (Bio-mass) may be free of cost to Rs. 2000/MT. (The rate of raw material may be varies its availability and location.)

PROCESS OF RAW MATERIAL (If required)

Most of Biomasses can be used directly as per above specification. If raw material has more than 10% of moisture contains, it requires to drying by a dryer machine. If the raw material is longer than 20 mm. It requires cutter machine to cut.

THE RAW MATERIAL

The following are the examples of country wise availability of raw material.

- Malaysia** : Palm husk, Rice husk char, Saw Dust and Rice husk.
- Nepal** : Labakshi, Lantana, Banmara, Water hyacinth, Agerntum, Ficus, Thakalkanda, Katra Ghass, Rice husk.
- Netherlands** : Miscalthus (Elephant grass).
- Thailand** : Corn cob, Corn cob waste, Saw Dust.
- U.K.** : Ceder cones.
- U.S.A.** : Commercial Briquettes
- Vietnam** : Saw Dust, Wood Chips, Rice husk, Rice char (ash), Rice stem, Rice busha.
- India** : Amla seed, Bamboo dust briq, Cashew shell, Coconut shell, Ground Nut Shell, Jute waste, Palm fonds, Saw dust, Sugarcane, Tobacco waste, Almonds Shell, Bagasse, Castor seed shell, Coffee husk, Cotton shells, Paddy straw, Rice husk, Soya been husk, Tea waste, Wheat stalk & Mustard Stalk.





BRIQUETTING PLANT - SK 6000

Shree Khodiyar Engineering Works has developed three models of Briquetting Plant. According to production capacity. Size of raw material and finished product. SK - 6000 Model, SK - 7000 Model & SK - 9000 Model.

MODEL : SK - 6000

SK - 6000 is first model developed by Shree Khodiyar Engineering Works. Although only drawback of this model is that it requires Hammer mill for powder form of material yet till now it is best model that require medium production capacity with minimum capital invest.

- Briquettes Diameter : 60mm
- Briquettes Length : 50mm - 200 mm
- Production Capacity : 600 Kg / hr. *
- Raw- material size : Powder form
- Moisture content of Raw Material : Max. 10 %
- Finished Product Shape : Cylindrical
- Process Cost / MT [Approx] : Rs: 600/- [In India]

Specifications of applicable Raw Material

Size of Raw Material : Powder Form

If bigger size of Raw Material, cutter required.

Moisture contain : Max. 10 %.

If Moisture contain is higher than Dryer is required.

Land Area in Feet (Machine Room) : 20' X 30' X 12' (Width X Length X Height) Electricity / Power

Required Power Connection : 37 hp (III phase).

Practical used Amp. Load : 45-50. Amp[Approx]

Power Consumption : 20-25 Unit/Tone.

Labor :

Trained & Skilled operator : One/shift

Unskilled labor : Six/shift

Production Data with Various Raw Materials (Approx) :

Sugarcane Baggasse : 300-400 Kg. / hr.

Groundnut shell : 400-600 Kg. / hr.

Saw Dust/Wood Chips/coconut Shell : 500-700 Kg. / hr.

Main Unit Consisting :

Briquetting Press consisting

- 30 HP Electric Motor with nylon belt
- Complete lubrication system, Filter & 2 HP Electric Motor.
- Feeding cyclone, Gearbox, 3 HP Electric motor
- Screw Conveyor- 15 feet long with Gearbox 2 HP Motor
- Cooling lines 30 feet with stand.
- Complete operating panel board.
- Foundation bolts & Channel for main Motor.
- All above Elec. Motors with 1440 RPM operating AC Power supply shall be 415V, 3Phase, 50Hz.



BRIQUETTING PLANT - SK 7000

Model : SK - 7000

This is latest version of SK - 7000 model. This model is best for those that want more production than SK - 6000 (750 to 1000 kg/hour) but want less capital investment than SK - 9000 model. It also requires Hammer Mill for converting powdery form of the raw material.

- Briquettes Diameter : 70mm
- Briquettes Length : 100mm
- Production Capacity : 1000 Kg / hr. *
- Raw- material size : 10mm Maximum
- Moisture content of Raw Material : Max. 10 %
- Finished Product Shape : Cylindrical
- Process Cost / MT [Approx] : Rs: 550/- [In India]

Specifications of applicable Raw Material

- Size of Raw Material : 10mm
- If bigger size of Raw Material, Hammer Mill required.
- Moisture contain : Max. 10 %.
- If Moisture contain is higher than Dryer is required.

Land Area in Feet(Machine Room) : 20' X 30' X 12' (Width X Length X Height) Electricity/Power

- Required Power Connection : 50 hp(III phase).
- Practical used Amp. Load : 60-70. Amp(Approx)
- Power Consumption : 25-35 Unit/Tone.

Labor

- Trained & Skilled operator : One/Shift
- Unskilled labor : Six/shift

Production Data with Various Raw Materials (Approx)

- Sugarcane Baggasse : 400- 500 Kg. / hr.
- Groundnut shell : 800- 900 Kg. / hr.
- Saw Dust/Wood Chips/coconut Shell : 900 -1000 Kg. / hr.

Unit Consisting :

- Bio-mass Briquetting press with
- 40 HP Electric Motor with nylon belt
- Complete lubrication system with Filter & 2 HP Electric Motor.
- Feeding cyclone, Gearbox, 3 HP Electric motor
- Screw Conveyor- 15 feet long with Gearbox 2 HP Motor
- Cooling lines 30 feet with stand.
- Complete operating panel board.
- Foundation channel for main Motor.
- Foundation bolts.

All above Elec. Motors with 1440 RPM operating AC Power supply shall be 415V, 3Phase, 50Hz.

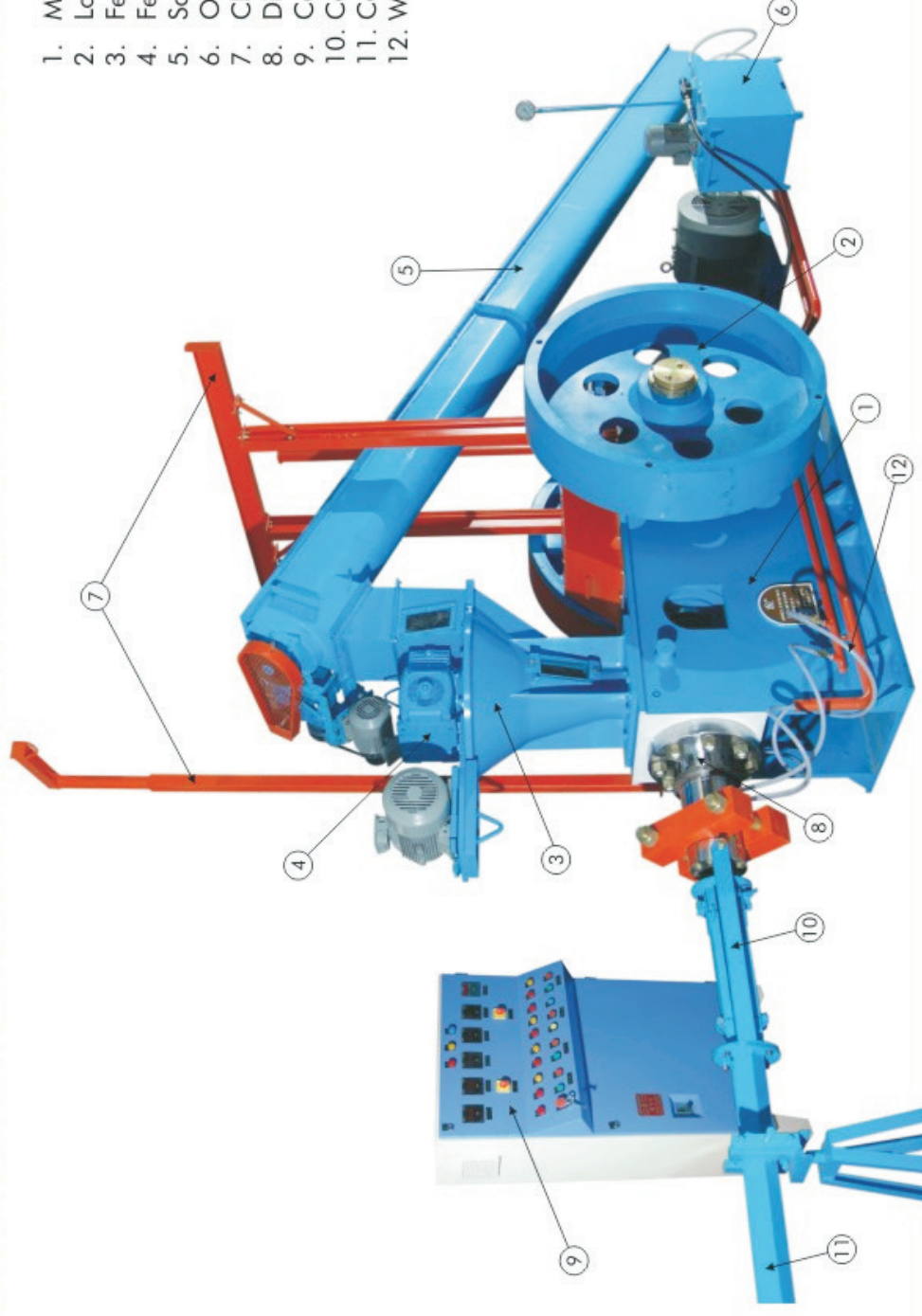


BRIQUETTING PLANT - SK 9000K 9000

BRIQUETTING PLANT - SK 9000K 9000

JUMBO-90 BRIQUETTING PLANT

1. Main Body
2. Load Wheel
3. Feeding Cyclone
4. Feeding Cyclone Gear Box
5. Screw Conveyor
6. Oil Pump
7. Chain Pulley Stand
8. Die Holder
9. Control Panel Board
10. Cooling Line Socket
11. Cooling Line
12. Water Circulating Line





BRIQUETTING PLANT - SK 9000

The flagship product of Shree Khodiyar Engineering Co. is SK - 9000 Model. It has jumbo production Capacity with minimum operating cost compare to other models. Some latest modifications introduce sensor technology make economical and most effective model.

Model : SK - 9000

- Briquettes Diameter : 90 mm
- Briquettes Length : 100mm - 500mm
- Production Capacity : 1500 Kg / hr. *
- Raw- material size : Max. 20 mm
- Moisture content of Raw Material : Max. 10 %
- Finished Product Shape : Cylindrical
- Process Cost / MT [Approx] : Rs: 500/- [In India]

Specifications of applicable Raw Materials (any agro waste)&Other infrastructure

Size of Raw Material : Max. 20 mm.

If bigger size of Raw Material, cutter required.

Moisture contain : Max. 10 %.

If Moisture contain is higher than Dryer is required.

Land Area in Feet (Machine Room) : 20' X 30' X 14' (Width X Length X Height) Electricity / Power

Minimum Total Land require for whole plant [Machine area / Raw materials area] 5000 Mtr [Approx] Electricity / Power

Required Power Connection : 90 hp. (III phase)

Practical used Amp. Load : 80-90. Amp (Approx)

Power Consumption : 35-40 Unit/Tone.

Labor

Trained & Skilled operator : One/Shift

Unskilled labor : Six/shift

Total weight of complete unit : 8500 Kg. (Approx)

Require one 20 feet container

Total Size of complete unit : 25' X 30' x 14' (Length X Width X Height) (Approx)

Production Data with Various Raw Materials (Approx)

Sugarcane Baggass/ Soybean Husk : 800- 900 Kg. / hr.

Groundnut shell : 1200-1500 Kg. / hr.

Saw Dust/Wood Chips/coconut Shell : 1200-1600 Kg. / hr.

Main Unit Consisting :

- Briquetting Press Machine consisting
- 75 HP Electric Motor with nylon belt
- Complete lubrication system, Filter & 2 HP Electric Motor.
- Feeding cyclone, Gearbox, 10 HP Electric Motor
- Screw Conveyor-20 feet long with Gearbox 3 HP Motor
- Cooling lines 30 feet with stand.
- Complete operating panel board.
- Foundation bolts & channel for main Motor.

All above Elec. Motors with 1440 RPM operating AC Power supply shall be 415V, 3Phase, 50Hz.

BRIQUETTING PLANT - SK 9000

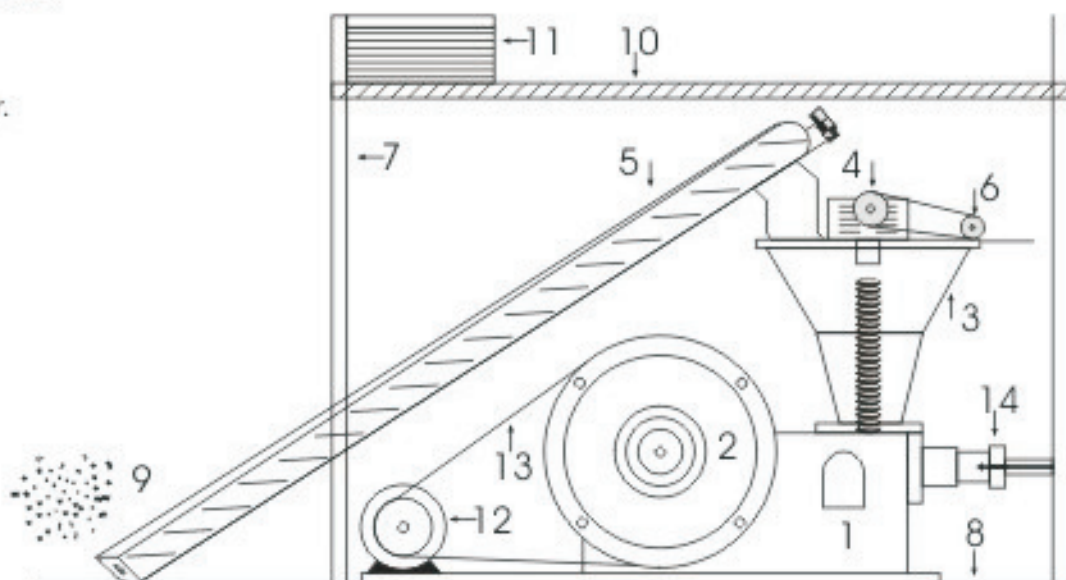


THE FEATURES OF SK 9000

- Maximum production capacity.
- Heavy structure with standard design.
- Acceptability up to 20 mm size of raw material. (No need of powdery form)
- Easy operating system.
- High - density of finished product with 90 mm diameter.
- Lowest production cost per MT due to state of art technology.
- Lower electric consumption due to direct feeding without hammer mill.
- Lower maintenance cost.
- Lower management cost due to High production capacity.
- No loss of production & air pollution due to direct feeding system.

SK - 9000 SIDE ELEVATION WITH BACK CONVEYOR...

1. Briquetting Press.
2. Load Wheel.
3. Feeding Kuppy.
4. Reduction Gear.
5. Screw Conveyor.
6. Electric Motor.
7. Bricks Wall of Shade.
8. Ground Flooring.
9. Space for Raw Material.
10. Open Terrace.
11. Water Tank.
12. Main Electric Motor.
13. Flat Belt.
14. Die Holder.





POWDER MAKING UNIT

As mentioned that SK - 6000 & SK - 7000 will accept only powdery form of raw material so it require powder making unit. Powder making unit consist of following parts :

- **Screw Conveyor** : Regular feeding of Raw material up to Hammer mill.
- **Hammer Mill** : Reducing size of Raw material up to Powdery form.
- **Blower, Pipe, Cyclone & Air lock** : Transporting the processed Raw material.
- **Holding Bin** : Storage of powdery Raw material.
- **Screw Conveyor** : Convey the material up to Briquetting press.

LAYOUT OF SK - 6000 & SK - 7000

1. Briquetting Press
2. Screw Conveyor
3. Holding Bio
4. Cyclone
5. Rotary Air Lock
6. Connecting Pipe
7. Blower
8. Hammer mill
9. Screw Conveyor for R.M. Feeding
10. Space for Raw Material
11. Ground Flooring
12. Die Holder (Output of Briquettes)
13. Main Electric Motor

FINISHED PRODUCT - BRIQUETTES



Briquettes are ready substitute of Lignite/Coal/Wood in industrial boiler and brick kiln for thermal application. Biomass briquettes are Non - conventional Source of energy. Eco-friendly. Renewable in nature, non polluting and economical made through It is binder less technique without use of any type of chemical so it is 100% natural.

Briquettes have high specific density (1200 kg/m^3) and bulk density (800 Kg/m^3) compared to 60 to 180 Kg/m^3 of loose biomass. This can stand the ardors of long distance transport. Loading/unloading and transportation costs are much less and storage requirement is drastically reduced. Compared to fire wood or loose biomass, briquettes give much higher boiler efficiency because of low moisture and higher and higher density. Use of bio coal is increasing day-by-day and it has very high demand in a market due to its fuel cost saving and pollution free characteristic.

BRIQUETTES IS AN IDEAL FUEL DUE TO

- Eco friendly & renewable energy fuel
- Economical and cheaper than other solid fuels i.e. coal & wood.
- Higher thermal calorific value around 4000 Kcal/Kg.
- Pollution free because there is no sulphur or any hazardous contain.
- Lower ash content 2-5%. There is no fly ash when burn.
- Consistent high burning efficiency due to the low moisture.
- Contain high density & higher fix carbon value.
- Easy for transportation, feeding & consumption due to unique shape.
- Combustion is more uniform compared to other coal.
- Demandable market due to high price rise in fossil fuels price.



APPLICATIONS

APPLICATIONS OF BRIQUETTES/BIO-COAL

Briquettes are widely used for any type of thermal application like steam generation in boilers, heating purpose, drying process & gasification plant to replace existing convention fuel like coal, wood & liquid fuel like FO, Diesel, LDO, Kerosene etc. Use of BRIQUETTES as a fuel for green energy has shown very promising results.

USE OF FINISHED BRIQUETTES IN VARIOUS INDUSTRIES (THERMAL APPLICATION)

- Gasifier System applications
- Ceramic Industries
- Refractory Industries
- Solvent Extraction Plant
- Chemical Industries
- Dyeing Units
- Milk plant
- Food Processing Industries
- Rolling Mill
- Vegetable plants
- Textile Unit
- Spinning Mill
- Lamination Industries
- Leather Industries
- Brick making units
- Rubber Industries
- Any Industrial thermal application

Bio coal is a forth-coming fuel of the world. It is a high quality asset towards economical, ecological & advanced environmental company policy.



BENEFITS

- Depreciation on plant and Machines in the Income-tax burden.
- Easily availability of various type Raw materials
- No excise duty on product in most of the state.
- Finance against plant and Machinery available from financial institutions.
- Elimination of problems relating to disposal of all type or waste making the environment pollution free.
- Excellent project viability.
- No requirement of NOC from pollution control board.
- Eco-friendly renewable green energy Project.





EXAMPLES OF CALORIFIC VALUE

Cal/Kg and ash percentage of major agro wastes available...

Agro Wastes	Cal./Kg	Ash Contents
Groundnut Shell	4524K.	3.80%
Bagasse	4380K.	1.80%
Caster Seed Shells	3862K.	8.00%
Saw Dust Briq.	3898K.	8.20%
Cotton Stalks/Chips	4252K.	3.00%
Bamboo Dust	4160K.	8.00%
Babool [Wood]	4707K.	0.90%
Coffee Husk	4045K.	5.30%
Tea Waste	2910K.	31.50%
Tobacco Waste	4237K.	3.80%
Paddy Straw	3469K.	15.50%
Mustard Stalk	4200K.	3.40%
Mustard Shell	4300K.	3.70%
Wheat Straw	4100K.	8.00%
Sunflower Stalk	4300K.	4.30%
Jute Watse	4428K.	3.00%
Palm Husk	3900K.	4.90%
Soya Bean Husk	4170K.	4.10%
Sugarcane	3996K.	10.00%
Barks Wood	1270K.	4.40%
Forestry Waste	3000K.	7.00%
Coir Pitch	4146K.	9.10%
Rice Husks	3200K.	19.20%
Wood Chips	4785K.	1.20%

Others So many 3700 K. Apx.

THE WHOLE PROJECT



Shortage of conventional fuel like fire wood, coal lignite, oil, etc. develops the market for Briquetted fuel. Briquetted fuel can be easily marketed in its ready market as it has higher fuel efficiency than firewood and conventional fuel can be substituted by it. This fuel can be used in industrial, commercial and domestic areas.

We have two types of machines screw type and ram type. The sun dried raw material (Individual or mixed) is feed into the hopper of the machine. From the hopper, the raw material falls into the crushing area from where it enters into the heating chamber. The heating chamber is controlled thermostatically at a preset temperature. From the heating chamber the briquette is formed and extruded out. The briquette is cut into required length and stored, stocked for dispatch or packed in bags for shipment. There is no binder required in the process of this biomass Briquetting. Two types of dyes can be made. It is in the shape of cylinder, square or hexagon in case of Screw & Ram type machine. In case of roller type Briquetting machine, dyes are in shape of oval or Pillow. When the briquettes are cool, they can be packed for the market in paper or plastic sack of about 5 Kgs. or as per market convenience.



CONCLUSION

To save environment is the duty of each and every human being. It is not possible for us to stop environment pollution, but of course, we can control pollution so, let's join together and save our nature.



NOTES



BEST FROM WASTE



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