

BEST From WASTE

Empowering
Eco-Friendly
Energy



Radhe ENGINEERING CO.

Biomass processing Technology

BRIQUETTING | PELLETING | DRYING | SIZING

- 
- **Biomass Briquetting Plant**
RE-90 | RE-70 | RE-60 | RE-40
 - **Biomass Pellet Plant**
 - **Biomass Dryer**
 - **Biomass Hammer Mill**
 - **Biomass Shredder - Blade Type**
 - **Wood Chipper - Drum Type**
 - **Briquetting Machine Spares**



ABOUT US

Leader as a responsible care company in Bio-mass Energy Projects.

Radhe Engineering Co. is the core company of **Radhe Group of Energy** mainly engaged in the Research & Development, Manufacturing and Marketing of Non-conventional and Renewable Energy Equipments...

- **Biomass Briquetting Plant**
RE 90 - RE 70 - RE 60 - RE 40
- **Biomass Pellet Plant**
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- **Briquetting Machine Spares**

The Company was spun-off as an independent organization since ninety's. **Radhe Engineering Co.** has worked closely with clients to help them utilize the waste, more efficiently and for more agile businesses.

From its founding, Radhe Engineering Co. was built with a global mind set. With headquarters in Rajkot, Gujarat, India and a rapidly expanding delivery footprints under the aggressive marketing expertise of **Mr. Vijay Kalavadia** & technical expertise of **Mr. Vimal Kalavadia**, establish extremely close partnerships that fosters continuous operational improvements and better bottom results for clients.

Key Highlights :

- ISO-9001:2008 Certified Company.
- Well Establish Work Shop with Steel Cast Foundry.
- Unique blend of passionate professionals.
- Strong relationships with 700+ active customers worldwide.
- Offering Proactive solutions for improving operational efficiency, complying with industry regulations, and improvident customer service levels.

Recognized as a Leader :

We are gratified that our passion for building stronger businesses and utilizing the agro waste by applying engineering to environment is consistently recognized by independent sources and clients.

THE PROJECT

Bio-mass Briquetting is the Best Project to Convert Bio-mass to Briquettes and contributing towards a better ecology & economy.

Energy is the key factor in economic development of every country. The demand of energy is increasing and supply sources are limited so a huge gap is built between the demand and supply of energy.

While it is red alert for fossil fuels like Petrol, Kerosene, Furnace Oil, LDO, Natural Gas, LPG, Lignite, Coal etc. Thus Renewable and non-conventional energy is the only solution, Among the non-conventional sources of energy, the use of the energy potential in agricultural wastes show good promise.

The project is simple process of converting Agro-forestry or Bio-mass waste into **Briquettes/Bio-coal/White Coal**. Briquetting is the process of densification of biomass to produce homogeneous, uniformly sized solid pieces of high bulk density which can be conveniently use as a fuel.

The Government Of India Declared The Incentives As Under* :

- Income Tax benefit as per IT - 80JJA
- Doesn't require NOC from pollution control board.
- Prompt finance Available from nationalized bank.

(* Kindly Check the Updates.)

Social Benefits :

- Employment generation & rural development.
- Saves import duty on fossil fuel.
- Reduces green house gases.
- Saves trees & control pollution.

Salient Feature Of The Project :

- Easy availability of various raw materials.
- Does not require any binder or chemical.
- Excellent project viability.
- Rising demand of finished Briquettes.
- Short payback period.
- Pollution free and non-hazardous project.

BIOMASS BRIQUETTING PLANT

RE-90 is a flagship model of Briquetting Industry with high production, Low conversion cost & easy operation.

There are three models in briquetting plants as per production capacity. The flagship product of Radhe Engineering Co. is JUMBO - 90 Model. It has jumbo production capacity with minimum operating cost compared to other models. Some latest modifications make it more economical and the most effective model.

Briquetting Plant

RE-90

- Input Raw Material Form : Up to 20 mm Size
- Production Capacity : 1500 Kg / Hr.*
- Finished Product size : 90 mm Diameter
- Required Electric Load : 91 HP

Briquetting Plant

RE-70

- Input Raw Material Form : Up to 10 mm Size
- Production Capacity : 900 Kg / Hr.*
- Finished Product size : 70 mm Diameter
- Required Electric Load : 63 HP

Briquetting Plant

RE-60

- Input Raw Material Form : Up to 10 mm Size
- Production Capacity : 500 Kg / Hr.*
- Finished Product size : 60 mm Diameter
- Required Electric Load : 50 HP

Briquetting Plant

RE-40

- Input Raw Material Form : Up to 5 mm Size
- Production Capacity : 200 Kg / Hr.*
- Finished Product size : 40 mm Diameter
- Required Electric Load : 30 HP



** Prod. Capacity depends on the Bulk Density and type & size of input Raw materials.*

RAW MATERIAL

Any type of Agro-forestry Waste i.e. Bio-mass with defined specification can be used as a Raw Material.

Every year million tons of agricultural waste are generated. These are either non used or burnt inefficiently in their loose form causing air pollution. Handling and transportation of these materials is also very difficult due to their low density.

Radhe Engineering Co. provides the solution to convert this waste into best form. These waste can be easily converted into high density fuel (Briquettes) with the help of Biomass Briquetting Plant.

Major Agro-Waste Available :

- Groundnut Shell
- Sugarcane Baggasse
- Caster Seed shells / Stalk
- Saw Dust & Wood Chips
- Cotton Stalks / Chips
- Bamboo Dust
- Coffee Husk
- Tobacco Waste
- Tea Waste
- Paddy Straw
- Mustard Stalk / Shell
- Sunflower Stalk
- Jute Waste
- Palm Husk
- Soybeans Husk
- Wheat Straw
- Barks & Straws
- Forestry Waste
- Coir Pitch
- Rice Husk
- Seeds Cases
- And lots more...



Specifications OfThe Raw Material :

- Size : Max.20mm
- Moisture : Below 10%

Process OfRaw Material : (If required)

- Most of Biomass can be used directly as per specification.
- If the raw material is having more then 10% of moisture content, then it requires Drying process.
- If the raw material is longer then 20mm size, then it requires Cutting process.

Rate OfRaw Material :

- Rates of raw material are variable depending on season & location.
- Availability of raw material is very important for economical viability of biomass briquetting project.

FINISHED PRODUCT

Briquettes are Ideal & Eco friendly fuel with uniform shape, good calorific value & low ash contain.

Briquettes / Bio-coal / White coal are densification of biomass to produce homogeneous, uniformly sized solid pieces of high bulk density which can be conveniently used as a fuel.

Briquettes have high specific density (1200Kg/m³) and bulk density (800 Kg/m³) compared to 60 to 180 Kg/m³ of loose biomass.

Briquette Is An Ideal Fuel Due To :

- Eco friendly & Renewable Energy fuel
- Economical and cheaper than other solid fuels.
- Thermal calorific value approx 4000 Kcal/Kg.
- Pollution free & non-hazardous.
- Lower ash contain 2% - 5%.
- Consistent high burning efficiency.
- Contains high density & higher fix carbon value.
- Easy for transportation, feeding & combustion.
- Combustion is more uniform.
- Due to high rise in fossil fuel prices.



Applications Of Briquettes / Bio- Coal :

Briquettes are ready substitute of Lignite / Coal / Wood in thermal applications & replaces costly liquid fuels like FO, Diesel, LDO, Kerosene etc. Use of BRIQUETTES as a fuel for green energy has shown very promising results.

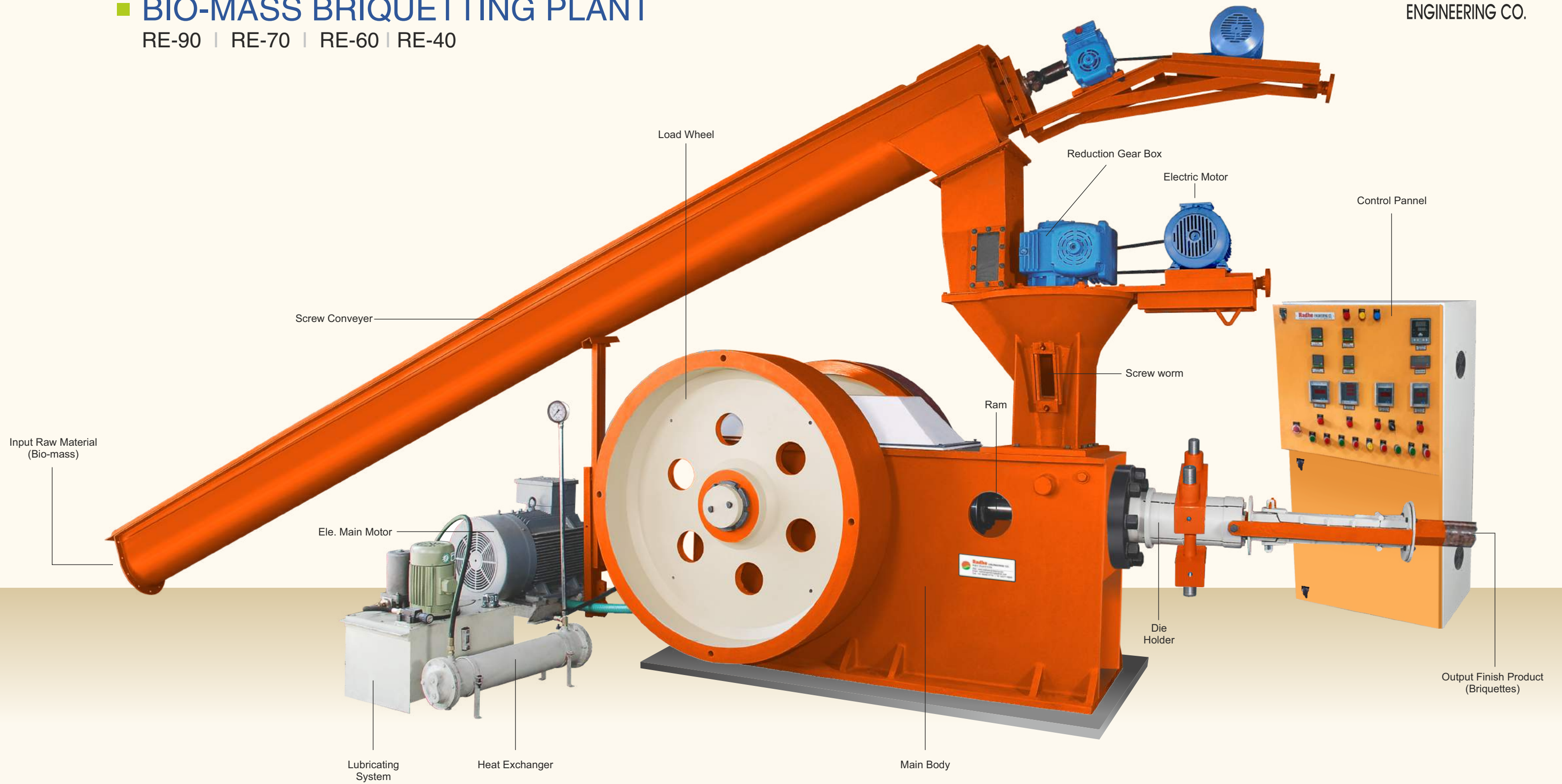
Use Of Finished Briquettes In Various Industries :

(Thermal Applications)

- | | |
|--------------------------------|----------------------|
| • Gasifier System Applications | • Vegetable Plants |
| • Ceramic Industries | • Textile Unit |
| • Refractory Industries | • Spinning Mill |
| • Solvent Extraction Plant | • Lamination Ind. |
| • Chemical Industries | • Leather Industries |
| • Dyeing Units | • Brick Making Units |
| • Milk Plant | • Rubber Industries |
| • Food Processing Industries | • Any Industrial |

■ BIO-MASS BRIQUETTING PLANT

RE-90 | RE-70 | RE-60 | RE-40

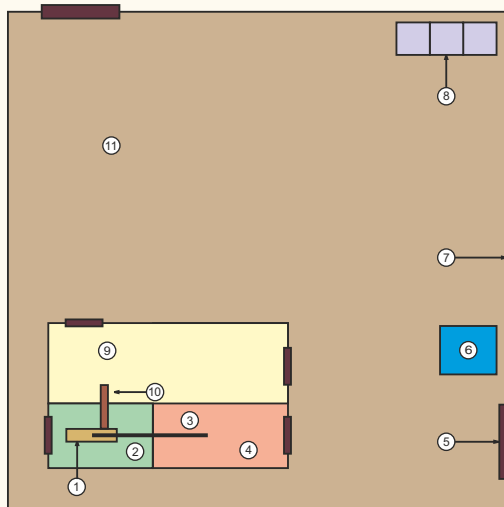


LAND LAYOUT & UTILITY

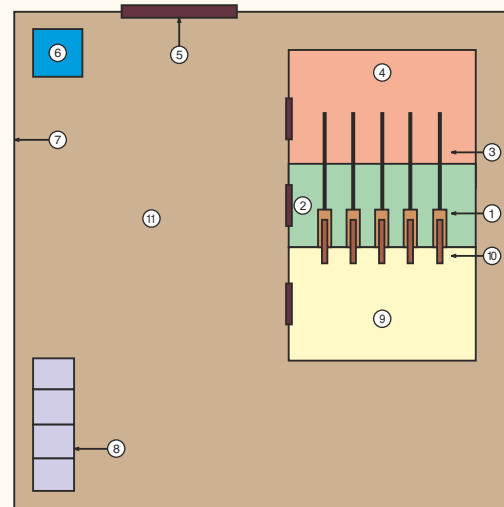
Ideal Lay-Out for better Utilization of Raw Material storage, Machine room & Finished Product area.

01. Foundation for Briquetting Press - 16'x5'x5'
02. Shed for Briquetting Press - 25'x30'x14'
03. Cooling Lines for Output Briquettes - 30'
04. Shed for Finished Briquettes - Galvanized Roof - 40'x40'x20'
05. Entry Gate - 15'
06. Office Building - 10'x10'
07. Compound Wall
08. Proposed Labor Rooms
09. Shed for Raw Material - Galvanized Roof - 60'x40'x20'
10. Conveyor for Raw Material Feeding
11. Open Space for Raw Material Storage.

LAND LAYOUT - 1
(For Single Press)



LAND LAYOUT - 2
(For Single / Multiple Press)



BIOMASS DRYER - FLASH TYPE

Flash Dryer is used for Drying Biomass like sawdust, Bamboo dust, sugarcane bagasse etc.

In the Flash Dryer system, Input Biomass (with Higher Moisture) feed in a screw Conveyor mix with hot air. Hot Air which is generated from furnace passes with wet Biomass in duct line. Due to ID Blower developed negative pressure in full system up to duct line. Moisture liberated from biomass due to more than 100°C Temperature inside system. Due to maximum Contact time and surface area moisture evaporated and separated through blower discharge. At the bottom of Cyclone dry biomass collected and discharged through RAV- rotary air lock valve. Moisture (Steam) and flue gases pass to ID fan to Bag house or Chimney.

Output Capacity of Flash Dryer :

- Output Production Capacity : 1500 Kg/Hr. (If input Moisture % Max. 30%)
- Input Moisture Percentage : 30%
- Output Moisture Percentage : 10%
- Water Evaporation Capacity : 400 Kg/Hr.

If moisture percentage is more than 30% Output production capacity will be proportionally less. Output drying capacity is depend on input material moisture %

System Specification :

- Type of Dryer : Flash Type
- Dry Threw : Hot air
- System Pressure : Negative/suction
- Fuel in Furnace : Solid coal
(Briquettes/Fire Wood)

Electrical Specification :

- Blower : 25 HP
- Rotary Air Lock Valve : 2 HP
- Rotary Separator : 2 HP
- Screw Conveyor-inlet : 3 HP
- Screw Conveyor-outlet : 3 HP



Atomization for Operating :

Feeding conveyor speed is operated as per cyclone outlet set point temperature & servo control valve is operated as per desire temperature for system.

BIOMASS HAMMER MILL

Biomass Hammer Mill is for converting long and uneven size of Biomass into uniform small size biomass raw material.

Application :

some agricultural stalk like cotton stalk. Sugarcane leaves, Soybean stalk, wood thin waste, veneer waste are available in big size, so it is not feedable for Briquetting machine. After hammering raw material gives better result in Briquetting machine.

It's require to cut below 10 mm to 15mm. Hammer mill is the best solution to sizing any kind of Biomass as per required size. Bottom screen can be changed as per desired output size. Screw conveyor feed input raw material to Hammering chamber, where no's of hammer rods are moving and hammering to biomass till converted in screening size Blower and Cyclone is for handling discharge of output material.

Production Capacity of Hammer Mill :

- Output Production Capacity : 1500 Kg/Hr. *

Input Raw material (Biomass) Specifications :

- Size of RM Length/Dia : Max. 100mm / 20mm)
- Moisture contain : Max. 8 %.

Output Raw material (Biomass) Specification :

- Size : 10mm -15mm
- Form : Uniform Semi powdery / Powdery
- Output Production Capacity : 1500 Kg/Hr. *

Electricity / Power :

- Total Connected power Load : 41.5 HP
- Practical used Amp. Load : 35 - 50 Amp (Approx)
- Power consumption : 20 - 25 Unit/MT (Approx)

Individual Electric data :

- Main Motor : 30 HP
- Blower Motor : 7.5 HP
- Screw Conveyor Motor : 3 HP
- Rotary Air Lock : 1 HP

Production Capacity :

Output capacity depends on the bulk density and type of Raw Material. So it will vary with different type and size of input raw material. If the raw material is bigger like stalk then Shredder / Cutter is required additionally. It will be 1000 Kg -1500 Kg/Hr.



BIOMASS SHREDDER - BLADE TYPE

Cutter / Shredder is to reduce bigger size for any kind of Biomass stalk and Wood bashes.

System Specification :

- Feeding by : Manual by belt conveyor
- Output Cutting Size : 20 mm (Approx)
- Output capacity : 1 MT/Hr*
- Input Size Length : Any
- Input size Diameter : Max. 25mm
- Moving Scope : By two wheels
- Operated By : Tractor / 25HP Ele. Motor

Production Capacity :

Output capacity depends on the type of Raw Material and Feeding Style.



WOOD CHIPPER - DRUM TYPE

Drum Chipper is utilized for converting green / Dry Wood branches or agriculture stalk into powdery form.



Production Capacity of Drum Chipper :

- Output Production Capacity : 1500 Kg/Hr *

Input & Output Material (Biomass) Specification :

- Input Size Material : Woods logs up to 5" Dia
- Output Size of Material : Powdery Form 5mm (Approx.)

Electricity / Power :

- Main Motor : 60 HP
- Belt Conveyor Motor : 02 HP

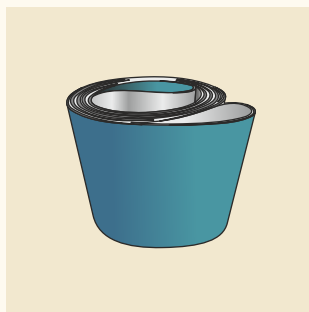
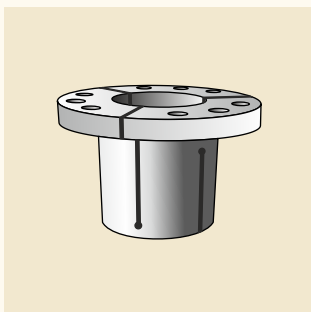
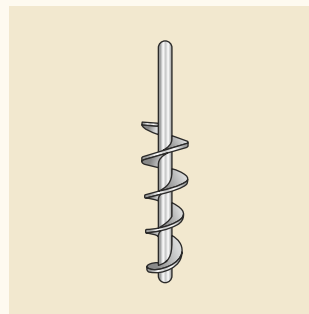
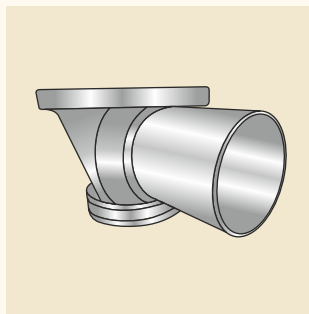
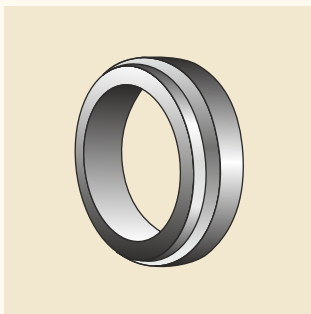
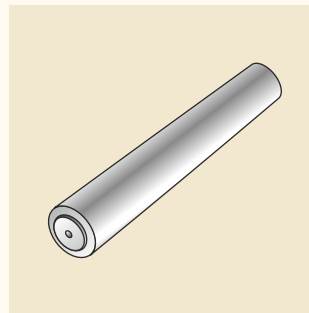
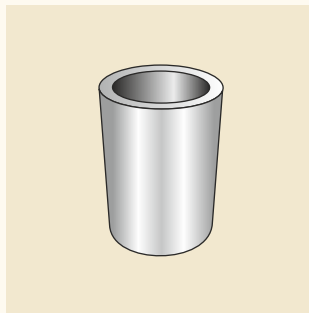
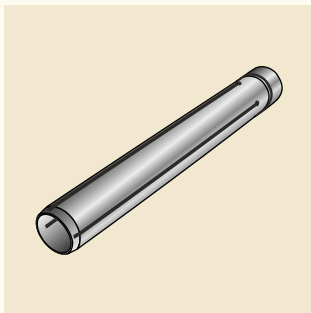
** Output capacity depends on the input material size & shape.*

SPARE PARTS & ACCESSORIES

*Due to heavy load In briquetting machine some parts are consumable. It should be changed after specific hours.
Life of spare is depended on abrasion of raw material.*

Genuine Spares for Briquetting Machine :

- | | | | |
|----------------|--------------|--------------|--------------|
| • Ram | • Ram Holder | • Oil Seals | • Die Holder |
| • Tapper Die | • Coupler | • Oil Pump | • Main Belt |
| • Splite Die | • Screw Worm | • Oil Filter | • Bushes |
| • Collete Ring | • Feeder Box | • Bushes | • Gajjan Pin |





📍 D-111, Rajdoot Industrial Estate,
5 - Umakant Udhog Nagar,
Nr. Ashok Garden,
Rajkot-360 004. Gujarat-India.

🏠 Plot No.-5, Survey No.-58/1/2p1,
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District - Rajkot-360 311, Gujarat-India.

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