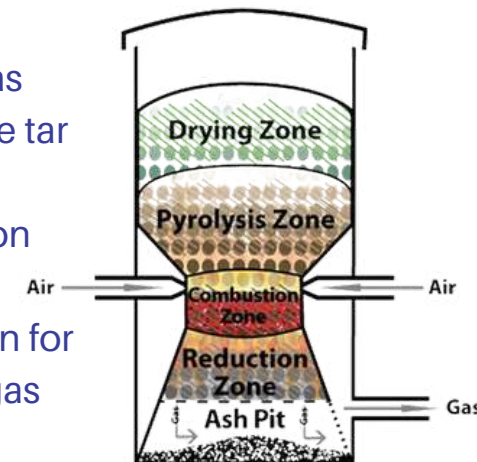




ESB-R24 BIOMASS GASIFIER DESIGN

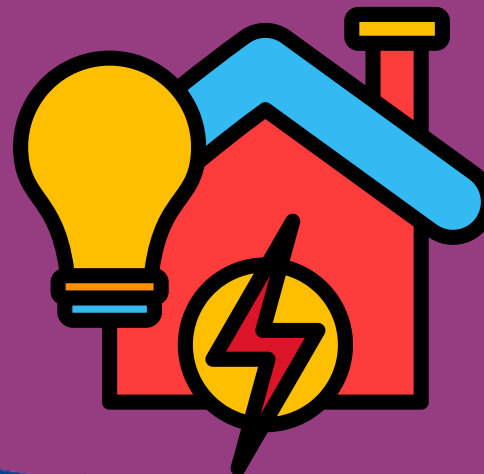
The ESB-R24 24kW biomass gasifier is ideal for research institutes and catering to small-scale electricity requirements. Featuring patented technology, the ESB-R24 biomass gasifier is designed to be compact, user-friendly, and low maintenance, making it a convenient solution for various applications.

- Simple design.
- Low tar contents as most of the tar is burnt in combustion zone.
- Best option for usage in gas engines.
- At lower loads, fewer particles in the gas.



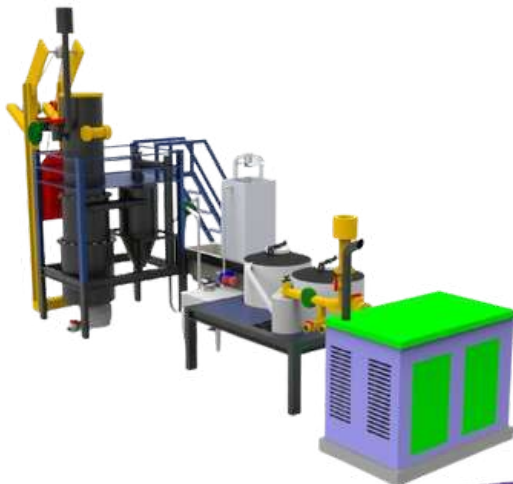
ENERSOL BIOPOWER PVT LTD

Established in 2013 by Mr. Rai Singh Dahiya, a grassroots innovator in biomass gasifier technology, our company is renowned for its small-size biomass gasifiers, smokeless biomass stoves, and other renewable energy products.



TURNING WASTE INTO WATTS
FROM FIELD TO FUEL.....

ESB-R24 24KW BIOMASS GASIFIER



KEY FEATURES OF ESB-R24

ESB-R24 24KW biomass gasifier has some unique features which makes it advantageous than other available models in the market. Some of them are listed below:

1 **Portable and Compact Design**

Smallest and lightest gasifier system, making it easy to transport and set up in any location.

2 **Soundproof Operation**

Ensures quiet performance, making it ideal for residential and rural applications.

3 **Sustainable Fuel Source**

Utilizes abundant agro-waste, providing a cost-effective and eco-friendly energy solution for rural communities.

4 **Automatic Initial Firing**

Equipped with advanced atomization technology for automated and efficient ignition, reducing manual intervention.

5 **Dry Filtration System**

Eliminates the need for water-based purification and costly filtration plants, ensuring cleaner and hassle-free operation.

6 **User-Friendly Operation**

Intuitive controls make it easy for anyone, including villagers, to operate effectively.

7 **Automatic Initial Firing**

Equipped with advanced atomization technology for automated and efficient ignition, reducing manual intervention.

**Most
reliable &
rugged
system**

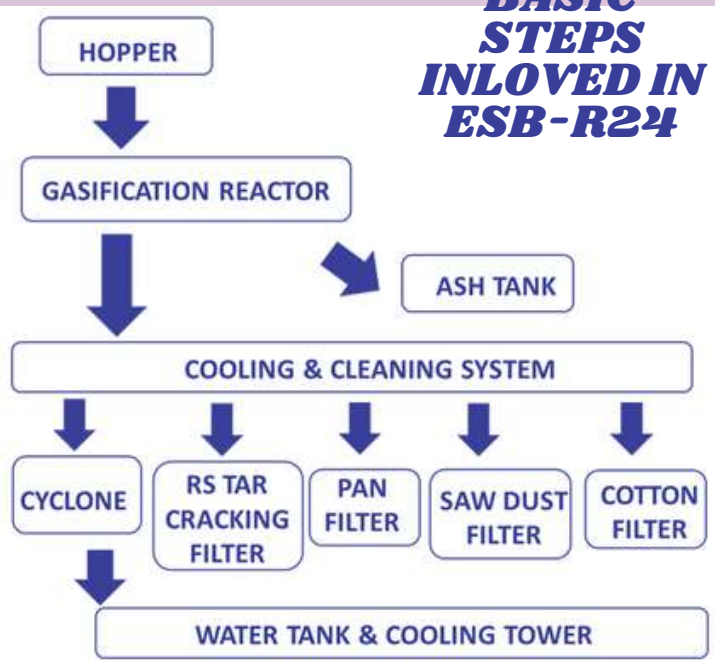


**Compact
system**

WORKING PARAMETERS

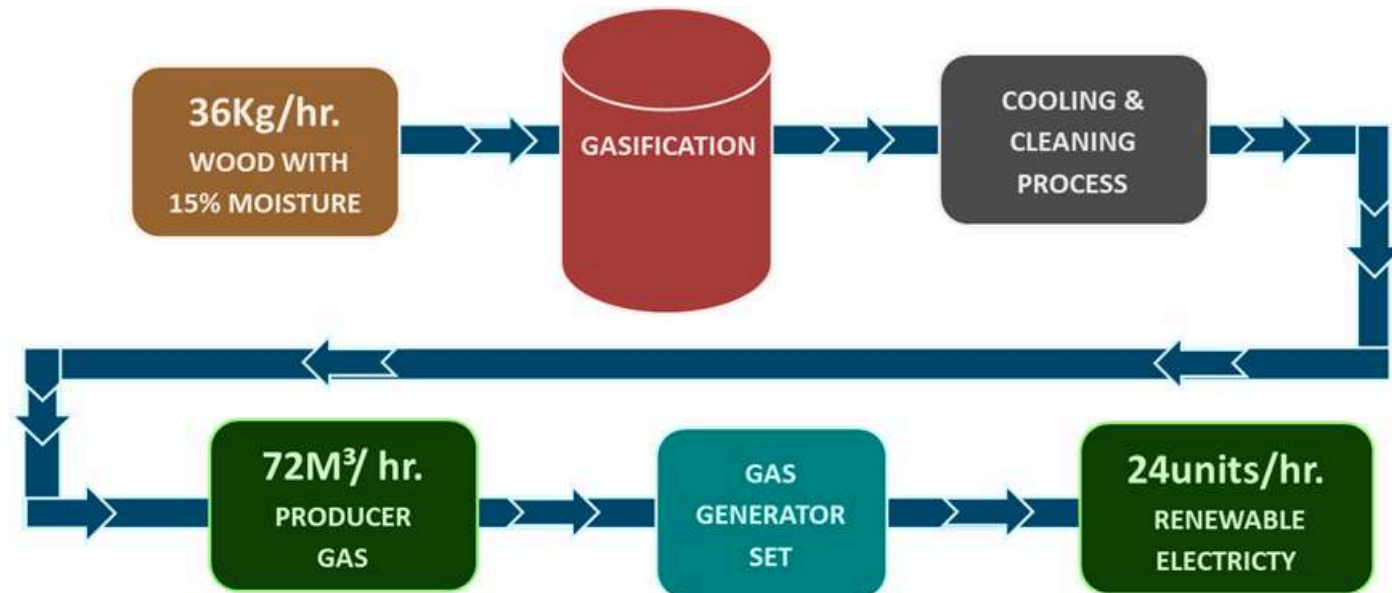
- 1 ESB-R Biomass Gasifier can operate at any type of agricultural or forest waste residues with limited moisture in feedstock. To know more about acceptable feedstock, kindly refer the "ESB-R Biomass Gasifier Catalogue" enclosed with this quotation.
- 2 The gasifier works with producer gas which is basically manufactured 'ON-LINE'.

BASIC STEPS INVOLVED IN ESB-R24



- 3 Clean all the filters and do the required maintenance on time for better performance of gasifier.
- 4 Since Gasifier being a new technology equipment, we advise clients to get properly acquainted with all operational aspects & optional items of Gasifier like biomass characteristic (recommended moisture level, its bulk density, size etc.) as well as suitability of optional items like wood dryer, wood cutter etc. and any other associated accessories.

ESB-R24 BIOMASS GASIFIER LAYOUT



TECHNICAL SPECIFICATIONS

BIOMASS GASIFIER

Model Name
ESB-R
BIO24

Model NO.
ESB-R 24

Auxiliary
Power
3.5HP

Weight
3-3.5Ton

Dimension
(Gasifier)
L18x W15 x
H20 (feet)

Dimension
(Genset)
L8 x W4 x
H6(feet)



BASIC PARAMETERS

PARAMETERS

| | |
|----------------------------------|--|
| ✓ Brand | - Enersol Biopower® |
| ✓ Type of Gasifier | - Downdraft |
| ✓ Fuel | - 100% Biomass |
| ✓ Manpower Required | - 1no |
| ✓ Auxiliary Power consumption | - 3.5hp/hr. |
| ✓ Auxiliary Power Details | - Cooling fan, Vibrator motor Water pump, Distillation Pump Conveyor motor, RS filter pump |

DETAILS

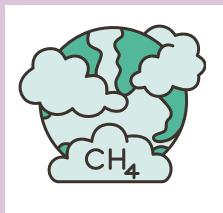
PARTICULAR

| | |
|---|--------------------------|
| ✓ Gas in 1 kg wood with 15% moisture | - up to 2NM ³ |
| ✓ Wood Calorific Value | - 2100K-2500kcal/kg |
| ✓ Bulk density | - 200kg/m ³ |
| ✓ Biomass consumption kg/kw/hr. | - 1.4 ± 0.2 kgs/kw-hr. |
| ✓ Char generation | - 5-7% |

DETAILS

PRODUCER GAS COMPOSITION

| GAS NAME | AVERAGE PERCENTAGE | IN ESB-R05 |
|-------------------------------------|--------------------|------------|
| ✓ Carbon dioxide (CO ₂) | 10-15% | 10.2% |
| ✓ Hydrogen (H ₂) | 15-20% | 18.9% |
| ✓ Carbon monoxide (CO) | 20-25% | 21.4% |
| ✓ Methane (CH ₄) | 2-5% | 3.4% |
| ✓ Nitrogen (N ₂) | 40-50% | 46% |



BASIC PARAMETERS

| PARTICULAR | DESCRIPTION |
|-------------------------------|--------------------------------|
| ✓ Start-up | - Automatic ignition |
| ✓ Biomass feeding system | - Manual/ Automatic Feeding |
| ✓ Feeding Frequency | - Every 1.5-2 hrs./ continuous |
| ✓ Ash removal system | - Manual |
| ✓ Frequency of removing ash | - Every 2-3hrs. |
| ✓ Biomass consumption an hr, | - up to 36kg/hr. |
| ✓ Acceptable biomass size | - 2 X 2" |
| ✓ Acceptable moisture content | - less than 20% |
| ✓ Ash content | - up to 5-10% |

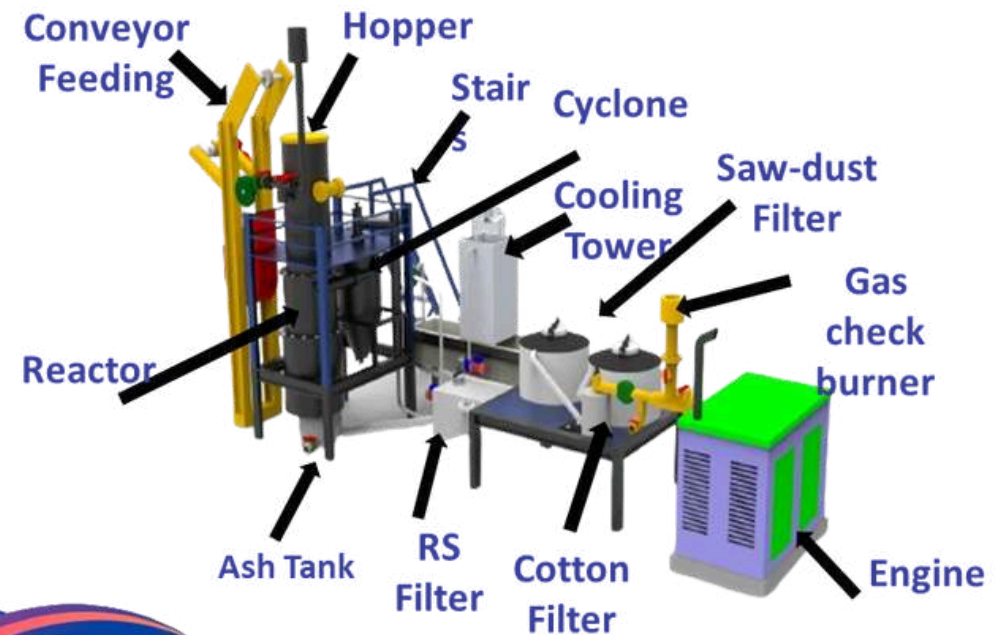
| PARTICULAR | DETAILS |
|---|------------------------------|
| ✓ Biomass consumption | - up to 36kg/hr. |
| ✓ Gas Flow (NM ³ /hr.) | - 72NM ³ |
| ✓ Peak Rated Thermal Output | - 75,600Kcal -90,000Kcal/hr. |
| ✓ Thermal Output at 80% | - 60,480-72,000Kcal/hr. |
| ✓ Average Gas Calorific Value (Kcal/Nm ³) | - ≥1,100 |
| ✓ Gasification Temperature | - 1050 – 1100°C |
| ✓ Temperature of Gas at Gasifier Outlet | - 300 to 500°C |
| ✓ Indicative Gasification Efficiency (Hot gas mode) | - >85% |
| ✓ Indicative Gasification Efficiency (Cold gas mode) | - >75% |

ESB-R24 BIOMASS GASIFIER PARTS NAME & MADE OF

| PARTS NAME | MADE OF |
|---------------------------|--|
| ✓ Hopper | - Mild Steel (MS Sheet) |
| ✓ Reduction chamber | - Stainless Steel (SS Sheet) & Ceramic bricks |
| ✓ Ash storage tank | - Mild Steel (MS Sheet) |
| ✓ Ash removal tank | - Mild Steel (MS Sheet) |
| ✓ Cyclone | - Mild Steel (MS Sheet) |
| ✓ Scrubber | - Stainless Steel (SS Sheet) |
| ✓ RS Filter to remove tar | - Mild Steel (MS Sheet) & Stainless Steel (SS Sheet) |
| ✓ Distillation tank | - Stainless Steel (SS Sheet) |
| ✓ Saw-dust filter | - Stainless Steel (SS Sheet) |
| ✓ Pan filter | - Stainless Steel (SS Sheet) |
| ✓ Water tank | - Mild Steel (MS Sheet) |
| ✓ Cooling tower | - Aluminum sheet with PVC fills |

FILTER CLEANING

| FILTER NAME | CLEANING TIME | REMARK |
|-----------------------|---|------------------------------------|
| ✓ Cyclone | Every 40-50 hrs. | Ash to be removed |
| ✓ Scrubber filter | Every 25-30 hrs. | To be checked |
| ✓ Saw-dust filter | Every 80-100 hrs. | Replace sawdust /coconut husk etc. |
| ✓ Distillation tank | Every 2-3hrs. | Extra water need to be removed |
| ✓ Pan filter | Every 80-100 hrs. | To be cleaned |
| ✓ Cotton filter | Every 80-100 hrs. | Replace cotton fabric |
| ✓ Water tank capacity | 700-800ltrs. Approx. | |
| ✓ Water level | Need to maintain minimum 75% water level all the time | |



TECHNICAL SPECIFICATIONS

BIOGAS GENSET

Model Name
ESB-R
BIO-GEN30

Model NO.
ESB-RBG30

Capacity
30kva(24kw)

**Producer Gas
Consumption**
72NM3/hr.

Ignition
Spark Ignition

Battery
Exide



BASIC PARAMETERS

PARAMETERS

| PARAMETERS | | DESCRIPTION |
|----------------------------------|---|-----------------------------------|
| ✓ Make | - | Enersol Biopower® |
| ✓ Fuel mode | - | 100% producer gas |
| ✓ Power factor | - | 0.8 P.F. |
| ✓ Starter | - | 12V starter |
| ✓ Frequency (Hz) | - | 50Hz |
| ✓ Voltage (V) | - | 415v |
| ✓ Phase | - | Three |
| ✓ Rated current (amps/phase) | - | 42 Amps at 100% 33 Amps at 80% |
| ✓ Governor | - | Mechanical / Electronic |
| ✓ Acoustic enclosure (canopy) | - | Provided |



CONTROL PANEL

| PARAMETERS | | DETAILS |
|--|---|---------|
| ✓ Control pressure gauge | - | Yes |
| ✓ Water temperature gauge | - | Yes |
| ✓ Starting switch | - | Yes |
| ✓ Hour meter | - | Yes |
| ✓ Multi meter (Energy, Voltage, Amps, & Frequency indicator) | - | Yes |
| ✓ Phase indicator lamp | - | Yes |
| ✓ Overload relay contractor | - | Yes |
| ✓ Voltage low/high cutoff protection | - | Yes |
| ✓ Frequency low/high cutoff protection | - | Yes |
| ✓ Phase loss protection | - | Yes |
| ✓ Battery charging indicator | - | Yes |

ENGINE SPECIFICATION

| PARAMETERS | | DESCRIPTION |
|--------------------------|---|--|
| ✓ Stroke | - | Four stroke engine |
| ✓ Bore x stroke(mm) | - | 107 x 120 |
| ✓ Rated speed | - | 1500RPM |
| ✓ Cooling system | - | Water cooled radiator |
| ✓ Number of cylinder | - | 6nos. |
| ✓ Lube oil sump capacity | - | 18ltrs. |
| ✓ Lube oil change period | - | 1 st change:50-80hrs. 2 nd change: 150-200hrs. Subsequent changes: every 250-300hrs. |
| ✓ Alternator | - | Enersol Biopower / Kirloskar / Mahindra etc. |



CONNECT US ON YOUTUBE



- <https://www.youtube.com/watch?v=OD9ueNYjf1Q>
- <https://www.youtube.com/watch?v=pbSpC4cl8Gl>
- https://www.youtube.com/watch?v=_Ee0_gxwpGc&t=31s
- <https://www.youtube.com/watch?v=fjULT8k4Ayg>
- <https://www.youtube.com/watch?v=fjULT8k4Ayg>
- <https://www.youtube.com/shorts/pSmLx4dQAoQ>
- <https://www.youtube.com/watch?v=-XmU5L6lytM>
- <https://www.youtube.com/watch?v=2jYnwcBU1lk>
- <https://www.youtube.com/watch?v=LKDlbvXdHyM>
- <https://www.youtube.com/watch?v=7MVHph7NfkY>

AWARDS & EXHIBITIONS



OUR PRESTIGIOUS PARTNERS



+ 91 9414535665



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