



TURNING WASTE INTO WATTS FROM FIELD TO FUEL

ENERSOL BIOPOWER PVT. LTD.

Established in 2013 by Mr. Rai Singh Dahiya, a trailblazer in biomass gasifier technology, our company specializes in developing compact biomass gasifiers, smokeless biomass stoves, and other sustainable energy solutions. Dedicated to innovation and environmental sustainability, we offer high-efficiency, eco-friendly products that support the widespread use of renewable energy.

We are proud to collaborate with esteemed partners such as UNDP, NTPC Limited, IIT-Roorkee, IIT-Ropar, NIT Mizoram, BITS-Pilani, VIT-Vellore, and many others.



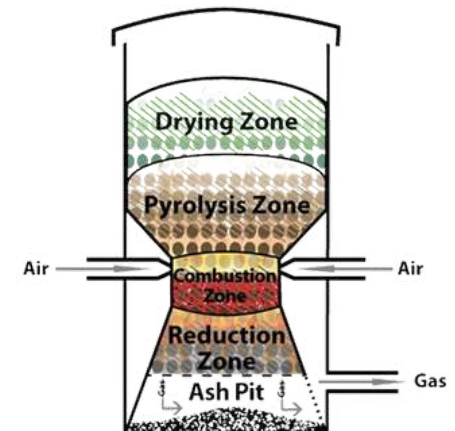
ESB-R100 DESIGN

TECHNOLOGY- DOWNDRAFT

The ESB-R1-0 100kW biomass gasifier is an ideal solution for village electrification, offering a compact, user-friendly, and low-maintenance design. Featuring patented technology, it ensures efficient and reliable performance, making it a versatile choice for various applications in sustainable energy generation.

ESB-R100 BIOMASS GASIFIER

100KW(125KVA) BIOMASS GASIFIER



Downdraft Gasifier

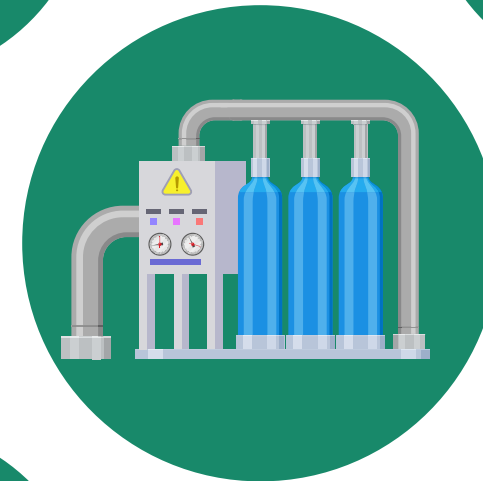
KEY FEATURES

- ✓ **Sustainable & Renewable Energy Source**
 - Utilizes biomass like wood chips and agricultural waste, reducing reliance on fossil fuels.
- ✓ **High Efficiency & Reliable Power Output**
 - Generates 50kW of electricity, enough to power small communities and essential services.
- ✓ **Advanced Gasification Technology**
 - Uses a low-tar gasification process, ensuring efficient and eco-friendly energy production.
- ✓ **Off-Grid & Decentralized Energy**
 - Supports standalone microgrids, enabling villages to become self-sufficient in power.
- ✓ **Low Maintenance & Easy Operation**
 - Designed for simple operation, requiring minimal technical expertise and upkeep.
- ✓ **Economic & Environmental Benefits**
 - Reduces diesel dependency, lowers emissions, and creates local employment opportunities.
- ✓ **Scalable & Adaptable Design**
 - Can be integrated with solar or wind energy, making it a flexible solution for rural electrification.

PATENTED RS FILTER

SELF-GENERATED WATER FOR CLEANING

EFFICIENT TAR CRACKING



CO2 EMISSION REDUCTION

EXTENDED FILTER LIFESPAN

TECHNICAL SPECIFICATION

BASIC PARAMETERS

Model Name
ESB-R BIO-100

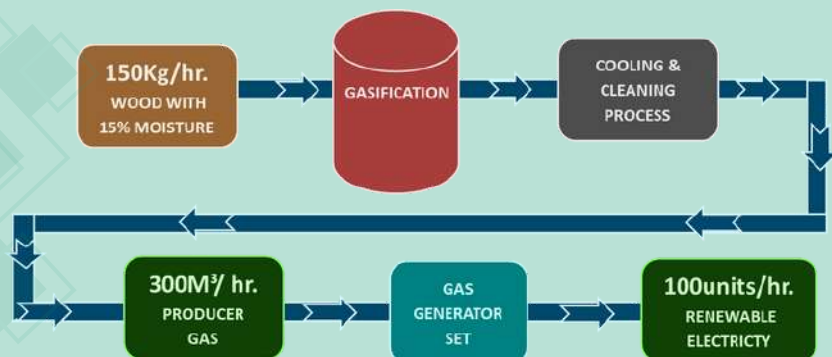
Model NO.
ESB-R100

Auxiliary Power
4HP

Weight
10-12Ton

Dimension (Gasifier)
L32 x W20 x H25
(feet)

Dimension (Genset)
L16 x W7x H8.5
(feet)



PARAMETERS

DETAILS

✓ Brand	- Enersol Biopower®
✓ Type of Gasifier	- Downdraft
✓ Fuel	- 100% Biomass
✓ Manpower Required	- 1no
✓ Auxiliary power consumption	- 4hp
✓ Auxiliary Power Details	- Cooling fan ,Vibrator motor, Water pump, Distillation Pump, Conveyor motor,RS filter pump

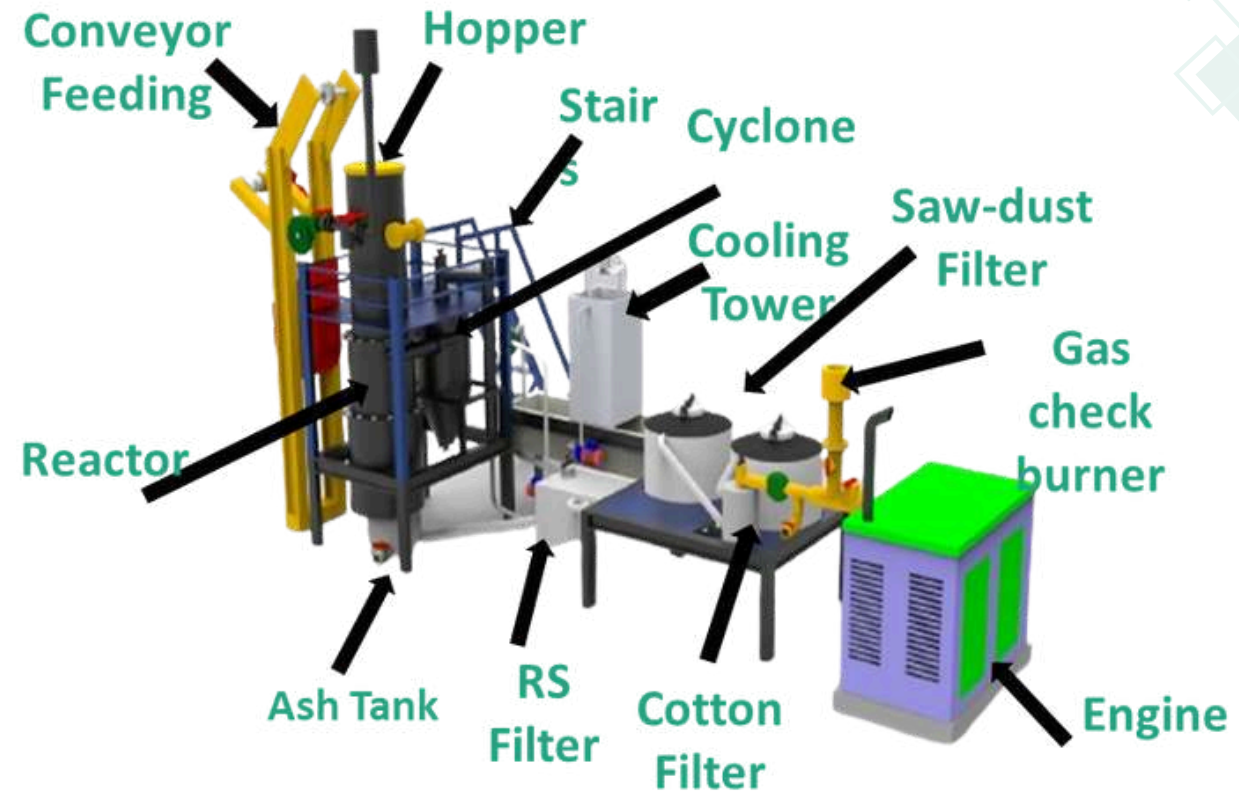
PARAMETERS

DETAILS

✓ 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%

BIOMASS GASIFIER PARTS

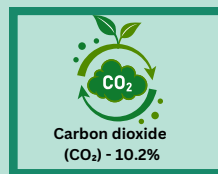
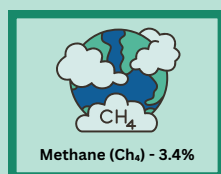
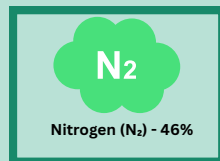
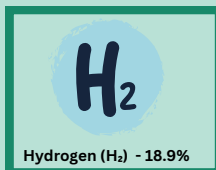
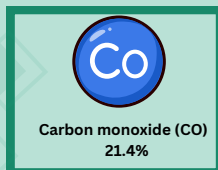
PARTS NAME	-	MADE OF
✓ Hopper	-	Mild Steel
✓ Reduction chamber	-	Stainless Steel & Ceramic bricks
✓ Ash storage tank	-	Mild Steel
✓ Ash removal tank	-	Mild Steel
✓ Cyclone	-	Mild Steel
✓ Scrubber	-	Stainless Steel
✓ RS Filter to remove tar	-	Mild Steel & Stainless Steel
✓ Distillation tank	-	Stainless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



BASIC DETAILS

PARTICULAR	-	DESCRIPTION
✓ Start-up	-	Automatic ignition
✓ Biomass feeding system	-	Automatic feeding
✓ Ash removal system	-	Automatic feeding
✓ Biomass consumption an hr.	-	up to 150kg/hr.
✓ Acceptable biomass size	-	2 X 2"
✓ Acceptable moisture content	-	less than 20%
✓ Ash content	-	up to 5-7%

GAS NAME	AVERAGE PERCENTAGE	IN ESB-R50
✓ 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%



BIOMASS GASIFIER OURPUT

PARTICULAR	-	DETAILS
✓ Biomass consumption	-	up to 150kg/hr.
✓ Gas Flow (NM ³ /hr.)	-	300NM ³
✓ Peak Rated Thermal Output	-	3,15,00Kcal - 3,70,000Kcal/hr.
✓ Continuous Duty Rated Thermal Output (80%)	-	2,52,000Kcal- 3,00,000Kcal/hr.
✓ Average Gas Calorific Value (Kcal/Nm ³)	-	≥1,100
✓ Gasification Temperature	-	1050 – 1100°C
✓ Temperature of Gas at Gasifier Outlet (°C)	-	300 to 500°C
✓ Indicative Gasification Efficiency (Hot gas mode)	-	>85%
✓ Indicative Gasification Efficiency (Cold gas mode)	-	>75%

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	1800-2000ltrs. Approx.	
✓ Water level		Need to maintain minimum 75% water level all the time

BASIC PARAMETERS

Model Name
ESB-R
Bio-Gen125

Model No.
ESB-RBG125

Capacity
125KVA
(100kW)

**Producer Gas
Consumption**
300M3

Ignition
Spark Ignition

Battery
Exide



GENSET BASIC DETAILS

PARTICULAR	-	DETAILS
✓ Make	-	Enersol Biopower®
✓ Fuel Mode	-	100% on Producer gas
✓ Power factor	-	0.8P.F.
✓ Starter	-	24V starter
✓ Frequency (Hz)	-	50Hz
✓ Voltage	-	415V
✓ No. of Phase	-	Three phase
✓ Rated current (amps/phase)	-	170amps/phase at 100% 136amps/phase at 80%
✓ Governor	-	Electronic
✓ Acoustic enclosure	-	Provided



ENGINE SPECIFICATION

PARTICULAR	DETAILS
✓ Stroke	- Four stroke engine
✓ Ignition system	- Electronic coil
✓ Battery charge	- 24V battery charging alternator
✓ Rated speed	- 1500RPM
✓ Cooling system	- Water cooled radiator
✓ Number of cylinder	- Six cylinder
✓ Lube oil sump capacity	- 40ltrs.
✓ Lube oil change period	- 1 st change: 50-80hrs. 2 nd change: 150-200hrs. Subsequent changes: Every 250-300hrs.
✓ Air & fuel controller & mixing system	- Yes
✓ Starting switch	- Yes
✓ Aspiration	- Natural
✓ Alternator	- Cummins/ Kirloskar / Mahindra



CONTROL PANEL

CONTROL PANEL	
✓ Oil pressure gauge	- Yes
✓ Water temperature gauge	- yes
✓ Starting switch	- yes
✓ Hour meter	- yes
✓ Multi meter (Energy, Voltage, Amps & Frequency Indicators)	- 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



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AWARDS & EXHIBITIONS

