

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

ENERSOL BIOPOWER PVT. LTD.

Founded in 2013 by **Mr. Rai Singh Dahiya**, a pioneering innovator in biomass gasifier technology, our company is renowned for developing small-scale biomass gasifiers, smokeless biomass stoves, and other sustainable energy solutions. Committed to innovation and sustainability, we provide efficient and eco-friendly products that promote renewable energy adoption.



ESB-R50 BIOMASS GASIFIER

**50KW/62.5KVA
BIOMASS GASIFIER**



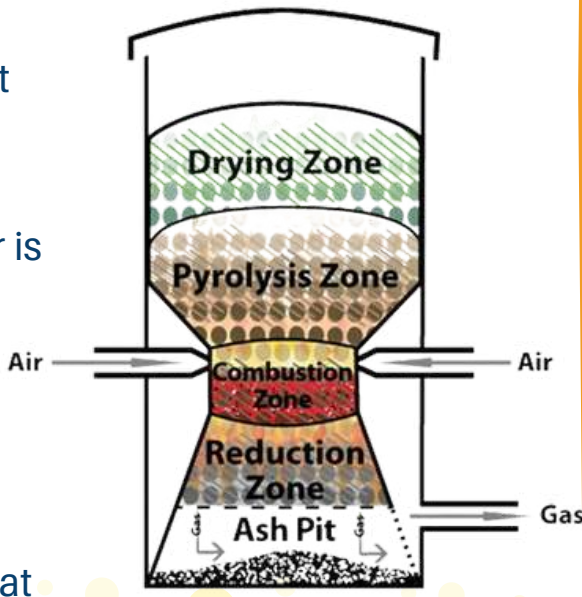
ESB-R50 BIOMASS GASIFIER DESIGN

The ESB-R50 50kW biomass gasifier is an **ideal solution for small 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**.

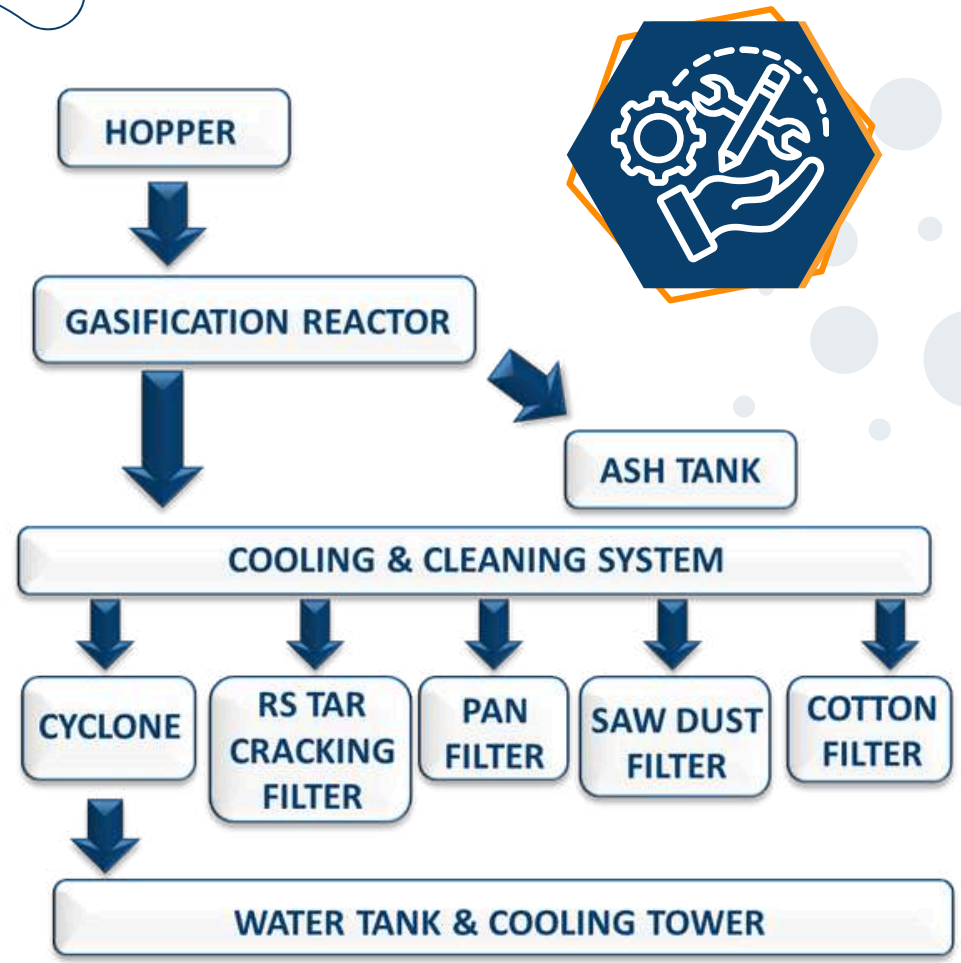
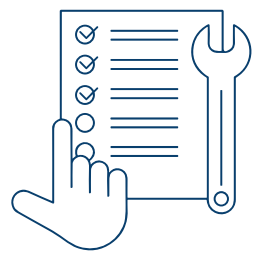
TECHNOLOGY- DOWNDRAFT

KEY FEATURES

- Simple and efficient design.
- Produces low tar content, as most tar is burned in the combustion zone.
- Ideal for use in gas engines.
- Generates fewer particles in the gas at lower loads.



BASIC STEPS INVOLVED



KEY FEATURES OF ESB-R50

The 50kW ESB-R Biomass Gasifier is specially designed to empower small villages by providing sustainable and independent energy solutions. Here are its 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.



Most reliable & rugged system



Compact system

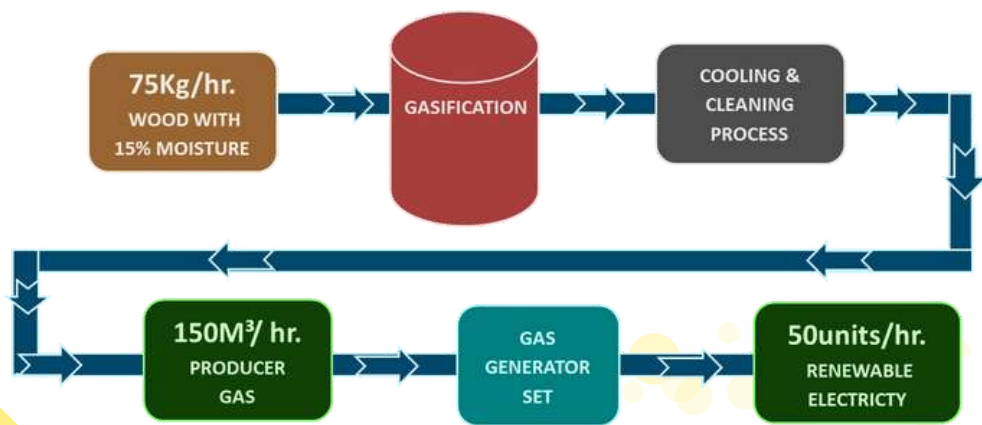


Accepts all kind of biomass



BASIC PARAMETERS- ESB-R50

- ✓ 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.
- ✓ The gasifier works with producer gas which is basically manufactured 'ON-LINE'.
- ✓ Clean all the filters and do the required maintenance on time for better performance of gasifier.
- ✓ 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.



PATENTED RS FILTER

SELF-GENERATED WATER FOR CLEANING

EFFICIENT TAR CRACKING



CO2 EMISSION REDUCTION

EXTENDED FILTER LIFESPAN

TECHNICAL SPECIFICATIONS

Model Name
ESB-R BIO-50

Model NO.
ESB-R50

Auxiliary Power
4HP

Weight
8Ton

Dimension (Gasifier)
L25 x W18 x H22
(feet)

Dimension (Genset)
L13 x W4x H6
(feet)

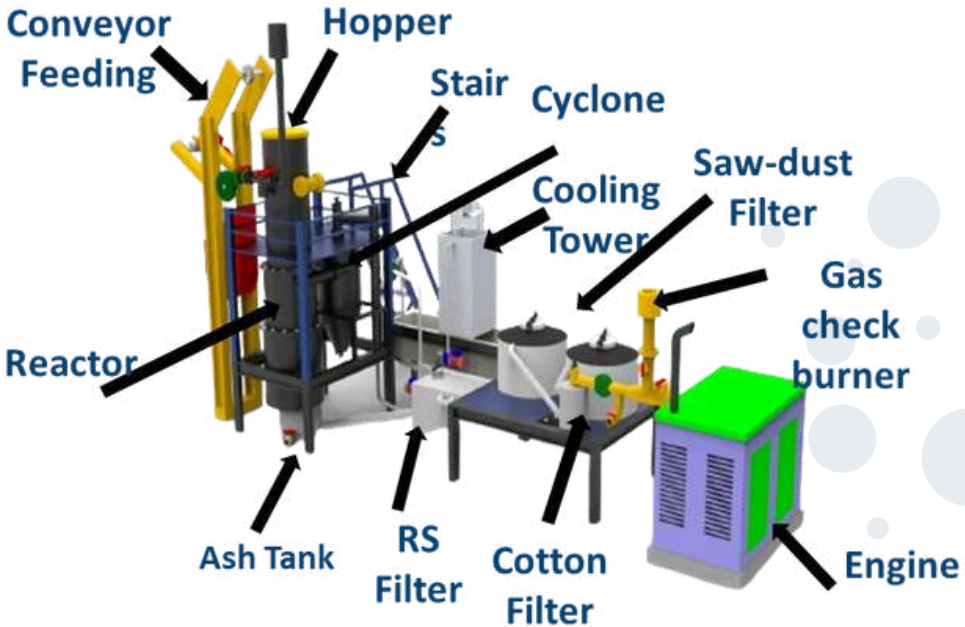
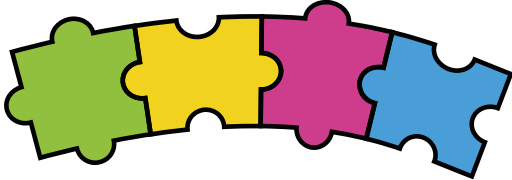
BASIC PARAMETERS

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%

50KW 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 75kg/hr.
✓ Acceptable biomass size	-	2 X 2"
✓ Acceptable moisture content	-	less than 20%
✓ Ash content	-	up to 5-7%




BIOMASS GASIFIER OUTPUT

PARTICULAR	-	DETAILS
✓ Biomass consumption	-	up to 75kg/hr.
✓ Gas Flow (NM ³ /hr.)	-	150NM ³
✓ Peak Rated Thermal Output	-	1,57,500Kcal - 1,87,500Kcal/hr.
✓ Continuous Duty Rated Thermal Output (80%)	-	1,26,000Kcal- 1,50,000Kcal/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%
✓ Turn Down Ratio	-	Not less than 50% of rated capacity




TYPICAL GAS COMPOSITION


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%




Carbon monoxide (CO)
21.4%




Hydrogen (H₂) - 18.9%



Nitrogen (N₂) - 46%



Methane (CH₄) - 3.4%



Carbon dioxide (CO₂) - 10.2%

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



BASIC PARAMETERS

Model Name
ESB-R
Bio-Gen62.5

Model No.
ESB-RBG62.5

Capacity
62.5KVA/50KW

**Producer Gas
Consumption**
150M3

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)	- 82amps/phase at 100% 65amps/phase at 80%
✓ Governor	- Electronic
✓ Acoustic enclosure	- Provided



ENGINE SPECIFICATIONS

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	- 22ltrs.
✓ 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	- Enersol Biopower / 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



CONNECT US ON YOUTUBE



- <https://www.youtube.com/watch?v=OD9ueNYjf1Q>
- <https://www.youtube.com/watch?v=pbSpC4cl8GI>
- 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=LKDIbvXdHyM>
- <https://www.youtube.com/watch?v=7MVHph7NfkY>

OUR PRESTIGIOUS PARTNERS



+ 91 9414535665



www.enersolbiopower.com

www.enersolbiopower.in

AWARDS & EXHIBITIONS

