

VILLAGE ELECTRIFICATION THROUGH BIOMASS GASIFIER

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POWER SCENARIO IN RURAL INDIA

- Nearly 63 % of rural houses in India do not have electricity.
- In India, it is estimated that around 80,000 un-electrified villages exist.
- Grid-based electrification is physically and economically not feasible in around 20,000 villages.
- Even for electrified villages, there is a tremendous shortage of power supply. It is common for these areas to have around 15 hours of power cuts every day.
- The state electricity boards provide rural areas with electricity on non-priority basis.



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POWER SCENARIO IN RURAL INDIA

- Rural areas in the country produce enough biomass & agricultural residues so that all its electricity demands can be met by using biomass based power plants.
- Through this apart from providing the rural energy self-sufficiency it can also generate enough employment opportunity to the rural people.
- Indian government has set up the Rural Electricity Supply Technology (REST) mission in the Union ministry of power. It is hoped through this mission to electrify all villages by 2010.



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POWER SCENARIO IN RURAL INDIA

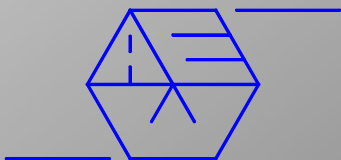
- In electrified villages, the panchayats spend most of their revenue by just clearing their Electricity Board outstanding bills, which was spent in water pumping and street lighting.
- They spare very few amount for the development of the village after paying the EB dues. Because of this most of the villages are found underdeveloped.
- They can generate their own cheaper electricity through renewable source of energy like Biomass Gasifier using the locally available fuels at just 25% of their EB bills.



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BIOMASS GASIFIER FOR RURAL INDIA

- **Areas of Power Requirement:** Home Lighting, Water Pumping, Street Lighting, Rural Industries.
- **Power Requirement:** 10 kWe to 100 kWe depending on size of village.
- **Generation cost in Biomass Gasifier:** Rupees 1.70-2.00 per Unit of electricity. Whereas the cost of grid based electricity is around Rupees 5.00.
- **Capital Cost of Biomass Gasifier:** Rupees 55,000/- per kWe
- **Payback:** 4-5 years.
- **Financial Assistance from Gol:** Available.
- **Mode of operation:** Village Energy Committee or Panchayat Staff or SHG's



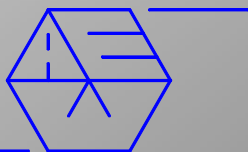
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APPLICATIONS OF GASIFIERS IN VILLAGES

- Water Pumping.
- Street Lighting.
- Home Lighting.
- Community Cooking.
- Rural Industries.
- Household Appliances.



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COST OF POWER THROUGH BIOMASS GASIFICATION

Input	Per Unit
Raw material wood @ Rs 1.00/Kg	Rs 1.20
Lube oil	Rs 0.10
Labour	Rs 0.20
Maintenance	Rs 0.20
	<u>Rs 1.70</u>
Miscellaneous	Rs 0.30
Total	<u>Rs 2.00</u>
The cost of EB power to Panchayat	Rs 4.50
Savings per unit	Rs 2.50



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OUR EXPERIENCE IN VILLAGE ELECTRIFICATION

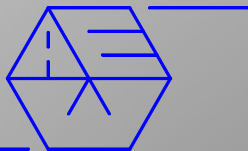
- **Village Name:** KASAI.
- **District & State:** Betul District, MP
- **Nature of Project:** Remote Village Electrification.
- **Equipment Installed:** 2 x 10 kWe Biomass Gasifier Power Plant.
- **Application:** Home Lighting, Home Appliances, Street Lighting, Flour Mill, Oil Expeller
- **Payback:** 4-5 years.
- **Financial Assistance from MNES:** Available.
- **Mode of operation:** Village Energy Committee



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OUR EXPERIENCE IN VILLAGE ELECTRIFICATION

- **Village Name: KASAI.**
- Forest Department of Madhya Pradesh identified 11 Remote Un-electrified Villages in the state for Remote Village Electrification Project and Kasai is the 1st among them.
- Kukuru is a small village which is 150 KMs away from the District Headquarters up to which the approach road is available and KASAI is 15 KMs away from Kukuru where there is no approach road available.
- KASAI has nearly 70 hut houses and now we have provided 2 light connections for every house and 10 street light connections.
- Also we have provided a commercial connection to run a 7.5 HP motor to operate a flour mill.
- In future, they are planning to connect a pump for drinking water supply from a well which is 500 meters away from the village.
- They operate the plant from 5.00 pm to around 5 to 6 hours a day.
- The life cycle of the villagers changed a lot and ray of hope is very much visible in their faces.
- Now they couldn't able to realize a life even after 5.00 pm, which is not known to them earlier.



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OUR EXPERIENCE IN VILLAGE ELECTRIFICATION

- **Village Name:** Jawalagiri.
- **District & State:** Krishnagiri District, TN.
- **Nature of Project:** Forest Village Development.
- **Equipment Installed:** 10 kWe Biomass Gasifier Power Plant.
- **Application:** Irrigation.
- **Payback:** 4-5 years.
- **Financial Assistance from MNES:** Available.
- **Mode of operation:** Forest Department



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OUR EXPERIENCE IN VILLAGE ELECTRIFICATION

- **Village Name: Jawalagiri.**
- **Jawalagiri is a forest village, 100 Kms away from the District Headquarters and 40 Kms away from the nearest industrial town Hosur.**
- **The District forest department are doing many projects under forest village development program and the power generation through the Biomass Gasifier for the village is one among them.**
- **We have installed a 10 kWe Biomass Gasifier Power Generating System.**
- **Presently they are utilizing the power for one irrigation water pump only**
- **Now they have decided to utilize this power for the entire village drinking water pump and street lighting application.**
- **This is being operated and maintained by the District Forest Department itself.**
- **After witnessing the success of the Biomass Gasifier in Village application, they are planning to adopt may such forest villages to implement Biomass Gasifier Power Generation System in Tamil Nadu.**



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OUR EXPERIENCE IN VILLAGE ELECTRIFICATION

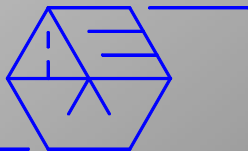
- **Village Name:** Periyampatti.
- **District & State:** Dharmapuri District, TN.
- **Nature of Project:** Village Panchayat.
- **Equipment Installed:** 12 kWe Biomass Gasifier Power Plant.
- **Application:** Water Pumping, Street Lighting.
- **Payback:** 4-5 years.
- **Financial Assistance from MNES:** Available.
- **Mode of operation:** Women from Self Help Group



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OUR EXPERIENCE IN VILLAGE ELECTRIFICATION

- **Village Name: Periyampatti.**
- Periyampatti village is 10 kms away from the district headquarters which located in the Dharmapuri-Bangalore Highways.
- The village panchayat felt that they spend most of their revenues including the government grants for the Outstanding Electricity Bills and finally they spare very few amount to spend on developmental works.
- It was found that their major electricity bill is from water pumping apart from street lighting.
- We have install a 12 kWe Biomass Gasifier for power generation to reduce their Electricity Bill burden and in the first phase they wanted to utilize it for one water pump only.
- In the later stages they wanted to utilize this power for four more water pumps and street lighting also.
- For the past three months, they are operating the gasifier for around three hours a day for one water pump only. After the three months, the level of confidence improved and now they want to utilize the Biomass Gasifier Power for all their water pumps and street lights.
- The plant is being operated by Women from Self Help Groups



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OUR EXPERIENCE IN VILLAGE ELECTRIFICATION

- **Village Name:** Debrabandi.
- **District & State:** Harda District, MP
- **Nature of Project:** Remote Village Electrification.
- **Equipment Installed:** 2 x 10 kWe Biomass Gasifier Power Plant.
- **Application:** Home Lighting, Home Appliances, Street Lighting, Flour Mill, Oil Expeller
- **Payback:** 4-5 years.
- **Financial Assistance from MNES:** Available.
- **Mode of operation:** Village Energy Committee



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OUR EXPERIENCE IN VILLAGE ELECTRIFICATION

- **Village Name:** Barasel.
- **District & State:** Hosangabad District, MP
- **Nature of Project:** Remote Village Electrification.
- **Equipment Installed:** 2 x 10 kWe Biomass Gasifier Power Plant.
- **Application:** Home Lighting, Home Appliances, Street Lighting, Flour Mill, Oil Expeller
- **Payback:** 4-5 years.
- **Financial Assistance from MNES:** Available.
- **Mode of operation:** Village Energy Committee



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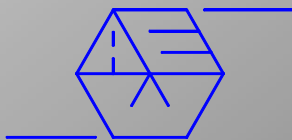
VILLAGE ELECTRIFICATION PROJECTS UNDER PROGRESS

1. 1x12 kWe-Irrungattukottai Village, Kanchipuram Disitric, TN.
2. 1x12 kWe-Killukottai Village, Pudukottai District, TN.
3. 1x12 kWe-Gudalore Village, Pudukottai District, TN.
4. 1x12 kWe-Muthaiyapuram Village, Tuticorine District, TN.
5. 2x10 kWe-Suplani Village, Hosangabad District, MP.
6. 2x10 kWe-Mana Village, Hosangabad District, MP.
7. 2x10 kWe-Bhajindunsara Village, Jhabua District, MP.
8. 2x10 kWe-Badkhodra Village, Dhar District, MP.
9. 2x10 kWe-Bawdikhodra Village, Dhar District, MP.
10. 2x10 kWe-Khubi Rayat Village, Seoni District, MP.
11. 2x10 kWe-Surangwani Village, Mandla District, MP.
12. 2x10 kWe-Khunajhir Village, Chhindwara District, MP.
13. 1x12 kWe-Chikkaseebi Village, Tumkur District, Karnataka.
14. 1x12 kWe-Nattalam Village, Kanniyakumari District, TN.
15. 1x12 kWe-Paalur Village, Kanniyakumari District, TN.



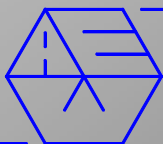
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OUR 10 kW_e GASIFIER & GAS ENGINE



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During Programming of Electronic Governor of Our 10 kWe Gas Engine



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DURING TESTING OF OUR 10 KWE GAS ENGINE



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DURING INAUGURATION OF INDIA'S 1ST REMOTE VILLAGE ELECTRIFICATION PROJECT IN KASAI VILLAGE, MP



**OUR 12 KWE GASIFIER INSTALLATION IN PERIYAMPATTI
VILLAGE, DHARMAPURI DISTRICT, TN**



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MNES OFFICIALS INSPECTION OF OUR 10 kW_e GASIFIERS IN REMOTE VILLAGE ELECTRIFICATION PROJECT



**DURING INSPECTION OF OUR 10 kW_e GASIFIERS
BY EXPERTS FROM IISC., BANGALORE**

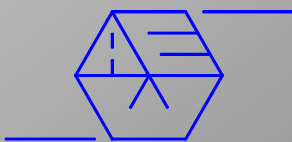


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DURING INSPECTION OF OUR 10 kW_e GASIFIERS BY TEDA, CMD



**DURING INSPECTION OF GASIFIER BY CHIEF
MINISTER OF PONDICHERY**



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MP FOREST DEPARTMENT OFFICIALS INSPECTION OF OUR 10 kWe GASIFIERS IN REMOTE VILLAGE ELECTRIFICATION



10 kW_e GASIFIERS IN REMOTE VILLAGE ELECTRIFICATION IN MP



Aruna Electrical Works (P) Ltd.,

Aruna Electrical Works (P) Ltd.,

Company is engaged in Power projects for nearly four decades, Having executed R&M of Hydro Power Projects upto 144 MW. Engaged in Research & Development of Non-conventional Energy as focus area. Have relevant experience, competent and capable in the energy field to assist the promoter in all key technical areas and in implementing the project cost effectively.

Meet us or call us at

**M/s. Aruna Electrical Works (P) Ltd., Biomass Division
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THANK YOU



Aruna Electrical Works (P) Ltd.,