BIOMASS GASIFIER-BASED DISTRIBUTED/OFF-GRID PROGRAMME

FOR RURAL AREAS AND GRID POWER PROGRAMME

Biomass gasification is deemed as one of the best ways to power rural households across the world. It is basically the conversion of solid biomass (wood, agriculture residues, and so on) into a combustible gas mixture known as Producer Gas.

In India, small-scale biomass gasifiers have been installed in various states. And the MNRE (Ministry of New and Renewable Energy) has been implementing a wide range of national-level programmes for encouraging the use of this technology in the country. Here are the main highlights of the 'Biomass gasifier-based distributed/off-grid power programme for rural areas and grid power programme' under implementation by the MNRE.

Programme components

i. Biomass gasifier-based distributed/off-grid power programme for rural areas: Biomass gasifier-based distributed/off-grid power systems in rural areas limited to 250 kW installed capacity, which have surplus biomass resources and unmet demand of electricity for interalia lighting, water pumping, and microenterprises, including telecom towers, will be supported. The project may preferably be set up following a cluster approach.

ii. Biomass gasifier-based captive power generation in rice mills: Biomass gasifier-based captive power plants will be supported in rice mills for meeting their captive needs and surplus power fed into the grid or distributed in local areas.

iii. Biomass gasifier-based grid-connected power programme:
   a. Biomass gasifier-based MW (megawatt) level grid-connected power plants with 100% producer gas engines will be supported.
   b. Biomass based grid-connected BTG (boiler-turbine-generator) projects, preferably at tail end of the grid and with a decentralized distribution component, would also be supported.
   c. The maximum installed capacity of each such project would be 2 MW.

iv. Promotional activities: Support to activities such as awareness creation, publicity measures, and seminars/workshops/business meets/training programme; to expand local manufacturing capacity; and to support service facilities under the programme.

Implementation strategy

Programme Implementing Agencies/Organizations

Project proposals as per guidelines could be submitted online/directly to the MNRE by the SNAs (State Nodal agencies)/departments,

ESCOs (Energy Service Companies), Cooperatives, Panchayats, SHGs (self-help groups), NGOs (non-governmental organizations), manufacturers or entrepreneurs, independent power producers, promoters and developers, and so on.

Submission and approval process

The following methodology would be followed for submission and approval of project proposals.

i. Programme Implementing Agencies/Organizations will submit proposals to the MNRE with requisite information, separately for village-based proposals through gasifiers and gasifier-based captive power project in rice mills using husk.

ii. Grid-connected project proposals should contain DPRs (Detailed Project Reports). The project developer should enter into agreement with the utilities for sale of power or third party sale, and furnish all requisite documents. Only grid-interactive projects which have envisaged fuel linkage mechanisms to ensure regular supply of the required quantity of biomass feedstock and provision of collection, processing, and storage of biomass would be supported. The projects based on BTG route should have provision for decentralized distribution component and details should be provided in the project proposal.

iii. A PAC (Project Advisory Committee) set up by the MNRE would evaluate and recommend the proposals for issue of in-principle approval based on the programme guidelines, project details, and commissioning schedule. PAC would consider in-principle approval for the projects cumulatively costing up to 125% of the approved budgetary allocation for the given year.

Pattern of Central Financial Assistance

Pattern of CFA (Central Financial Assistance) for various components is given below.

Items	Pattern of CFA
Distributed/off-grid power projects in rural areas and grid-connected power projects with 100% producer gas engines or biomass-based combustion projects.	Rs 15 000 per kW
Biomass gasifier systems retrofitted with dual fuel mode engines	Rs 2500 per kW
Captive power projects (captive power less than 50%) and/or feeding surplus power to grid in rice mills (with 100% producer gas engines or biomass-based combustion projects).	Rs 10 000 per kW
Projects involving installation of 100% gas engines with an existing gasifier.	Rs 10 lakh per 100 kW
Biomass gasifier projects for distributed/off-grid for rural areas and grid-connected power projects for ensuring regular availability of biomass, provision of collection, processing and storage, and operation and maintenance, including compulsory AMC (annual maintenance contract) for 5 years after the guarantee period.	Rs 1.5 lakh per 50 kW
Support towards lighting devices and distribution network	Financial support limited to a maximum of 3 km, that is, Rs 3 lakh per project (@Rs 1 lakh per km).
Support towards project formulation	Financial incentives of Rs 5000 per project to the banks/FIs (financial institutions), manufacturers, promoters, consultants, and service providers for developing firmed up and bankable proposals for a minimum of 10 projects or above.
Service charges for verification and certification	Rs 10 000 per 100 kW subject to maximum of Rs 1 lakh for a project of 1 MW capacity. A minimum service charge would be Rs 10 000 per site.
Preparation of DPRs for centralized distributed/ grid-connected/captive power generation project: • Projects between 100–500 kW capacities. • Projects above 500 kW capacities. • DPR is not required for the projects below 100 kW capacities.	Rs 0.5 lakh Rs 1 lakh
HRD (human resource development) and training • O&M (operation and management) Technician's Course • Gasifier Entrepreneur Development Course • Awareness promotions, such as organization of seminars, business meets, workshops, and so on.	- @Rs 2 lakh per course - @Rs 3 lakh per course - Maximum up to Rs 3 lakh
Support for gasifier manufacturers/suppliers for establishing service centers in areas where cluster of systems – minimum 10 – have been set up in one district/region.	Rs 5 lakh (one-time funding)
Special category states and islands	20% higher CFA

Pattern of release of funds

i. CFA, as applicable under the scheme, will be disbursed post-commissioning through one installment directly to the promoters or lending institutions/FIs, after receipt of commissioning and verification reports and submission of the requisite documents/reports.

ii. The service charges for IVA (Independent Verification Agency) or SNAs, as the case may be, would be provided after commissioning and certification by the designated agencies as per the guidelines. The service charges would be provided to the designated agencies, including the SNAs and FIs, including banks, to cover their expenses.

iii. Programmes related to Training and Awareness Promotion: 75% of the eligible CFA will be released to implementing organizations along with the sanction order. The balance will be released on receipt of the utilization certificate, audited statement of expenditure, and the final report.

Independent verification system

1. The MNRE will separately empanel IVAs other than the SNAs.
2. Verification would be conducted after the operation of project at least for a period of one month.
3. The IVAs would be required to furnish the following requisite documents/reports:

- Verification and commissioning reports along with Joint Commissioning Report.
- Statement of expenditure duly audited by a chartered accountant or other designated authority as per the Government of India rules.
- The Utilization Certificates in the prescribed format as per the GFR Form-19A to be submitted after the receipt of funds.
- Verifying agency certificate ensuring that the agreement between the user and supplier of the gasifier systems for full guarantee and warrantee for one year, followed by AMC for two years, has been entered into.

HRD and training

O&M Technician's Course

Financial support would be provided for organizing training programmes to train gasifier operators at selected engineering colleges/polytechnics in the identified cluster, involving programme implementation organizations and gasifier and engine

manufacturers. The training would be for eight weeks, involving limited classroom exercises with hands-on training. Each training programme will have a minimum of 10 candidates. The tentative schedule for such training course is suggested below.

- Training at institute: 4 weeks
- Visit to biomass gasifier and engine manufacturer: 2 weeks
- Field visits: 2 weeks

Under these training programmes, stipend @Rs 5000 per month (total Rs 10 000) would be paid to the trainees for the entire 8 week duration. In addition, financial support for institutional charges, field visits, materials, tools (including contingencies), and so on would be provided @Rs 2 lakh per course.

Gasifier Entrepreneur Development Course

Financial assistance will be provided for organizing EDPs (Entrepreneurship Development Programmes). Such EDPs would be provided for about 3 months for 15 persons per batch. Financial assistance would include institutional faculty charges and training expenses (field visit, classroom training, manuals and other materials, contingencies, and so on). Such course would be supported @Rs 3 lakh per course, as per the existing provisions of the scheme.

Single or multiple courses would be organized in association with engineering colleges/polytechnics, gasifier manufacturers, programme implementing organizations, and so on.

Technology Demonstration Component

For technological demonstration, the existing level of subsidy will be provided for the gasifier with 100% producer gas engines components. In addition, financial assistance of up to 50% of the cost of plant and machineries – VAM (Vapour Absorption Machine) for cooling/chilling system and steam generating system from waste heat – would be provided. Financial assistance would not be provided for land and building.

It is proposed to take up about 25 demonstration projects in rice mills, replacing steam engines/boilers with biomass gasifier coupled with 100% producer gas engines for power generation, along with provision for meeting the entire thermal requirement through waste heat recovery. Under some of these projects, demonstration of cold storage or ice-making units would also be taken up using waste heat for chilling/cold storage through VAM and steam generating systems.

The projects would be taken up as per RD&D (Research, Design, Development, and Demonstration) policy of the MNRE for technology demonstration on a 50:50 cost sharing basis. The proposals will be examined by a committee set up in the MNRE for the purpose. The selected projects will be placed before TDPAC (Technology Demonstration Project Appraisal Committee), as provided under the RD&D Policy of the MNRE.

For more information, visit <www.mnre.gov.in>

Courtesy: MNRE

Did You Know?

- The photovoltaic cell was discovered in 1954 by Bell Telephone researchers examining the sensitivity of a properly prepared silicon wafer to sunlight.
- The world's largest wind farm, the Horse Hollow Wind Energy Center in Texas, has 421 wind turbines that generate enough electricity to power 2,20,000 homes per year