



Sustainability action · Project Renewable Energy and Energy Efficiency

Integrated Biomass and Solar PV Project, Singapore

This innovative project integrates a biomass power plant with solar rooftop solar PV. It is the first photoelectric biomass integrated demonstration project and the largest biomass plant in terms of installed capacity in Singapore.

The plant has installed a 45th vibrating grate Sub-high-temperature sub-high-pressure natural circulation boiler. Furthermore, on the plant's rooftop the 521 kWp photo-photovoltaic installation generates electricity for the plant's own consumption.

Project

The CGN Integrated Biomass and Solar PV Project started supplying electricity to the Singaporean electricity grid on 26 December 2014. It is a demonstration project developed by CGN Solar Energy Development Co. Ltd, part of the China General Nuclear Power Corporation (CGN). With an installed capacity of 10.5MWe (biomass 10MW, photo-photovoltaic 0.5MW), the project uses as feedstock 83,000 tons per year of local wood residues (sawdust) and horticultural and garden wastes generated within Singapore.





Location

This innovative power plant coupling two renewable energy technologies is located on 45 Shipyard Road in the heart of Singapore. Singapore is entirely dependant on fossil fuels for its energy demand. 95% of electricity consumed in Singapore in 2014 was generated by natural gas while the remaining 5% was generated by oil, municipal waste, coal and biomass. Most of natural is imported.

Project achievements

Socio-economic impact

- The biomass power plant generates over 62'500 MWh of clean electricity per year to the Singaporean residents. The electricity generated by the PV system is consumed within the power plant itself and is not exported to the grid.
- The project contributed to the creation of local jobs.
- A first-of-its kind technology that couples a biomass power plant with solar PV
- The project is an example of a successful international cooperation between Singapore and China- for the development for innovative renewable energy projects

Environmental impact

- The project significantly reduces the use of fossil fuels, particularly natural gas in the Singaporean power sector.. The estimated annual GHG emission reductions of this project are 3'000 tCO₂e of greenhouse gases per year.
- The project reduce smoke pollution from open burning of biomass residue as well as sulphur dioxide (SO₂), nitrogen oxides (NO_x) and particulate matter that are typically associated with the burning of fossil fuels.



Checklist Project

Commercial Operation Date

26 December 2014

Total capacity

10.5 MW (10 MW Biomass + 0.5 MW Solar Photovoltaic)

Estimated Annual Electricity Generation

approx. 62.500 MWh

Quality Assurance and Verification

In accordance to the I-REC Code

I-REC Registration

Project is in the process of being registered with I-REC registration

Transparency

I-RECs listed in I-REC Registry (<https://registry.irecservices.com/Public/Home/>)

Marketing material

High-resolution pictures available

Reportability

Meets GHG Protocol Scope 2 Guidance criteria

I-RECs Standard



I-RECs reportable under



<http://thesouthpolegroup.com/sustainability-solutions/renewable-energy>

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