Innovative microgrids with 24/7/365 reliable power supply in remote areas

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The Need for a Backbone

As much as exclusive use of solar and wind energy is desirable, every microgrid must be built on some form of backbone (or “baseload” or “dispatchable”) generation capacity to ensure power is available when needed. Besides expensive batteries, thermal biomass power plants are frequently proposed as a solution.

The Carbon-neutral Gen-set Approach

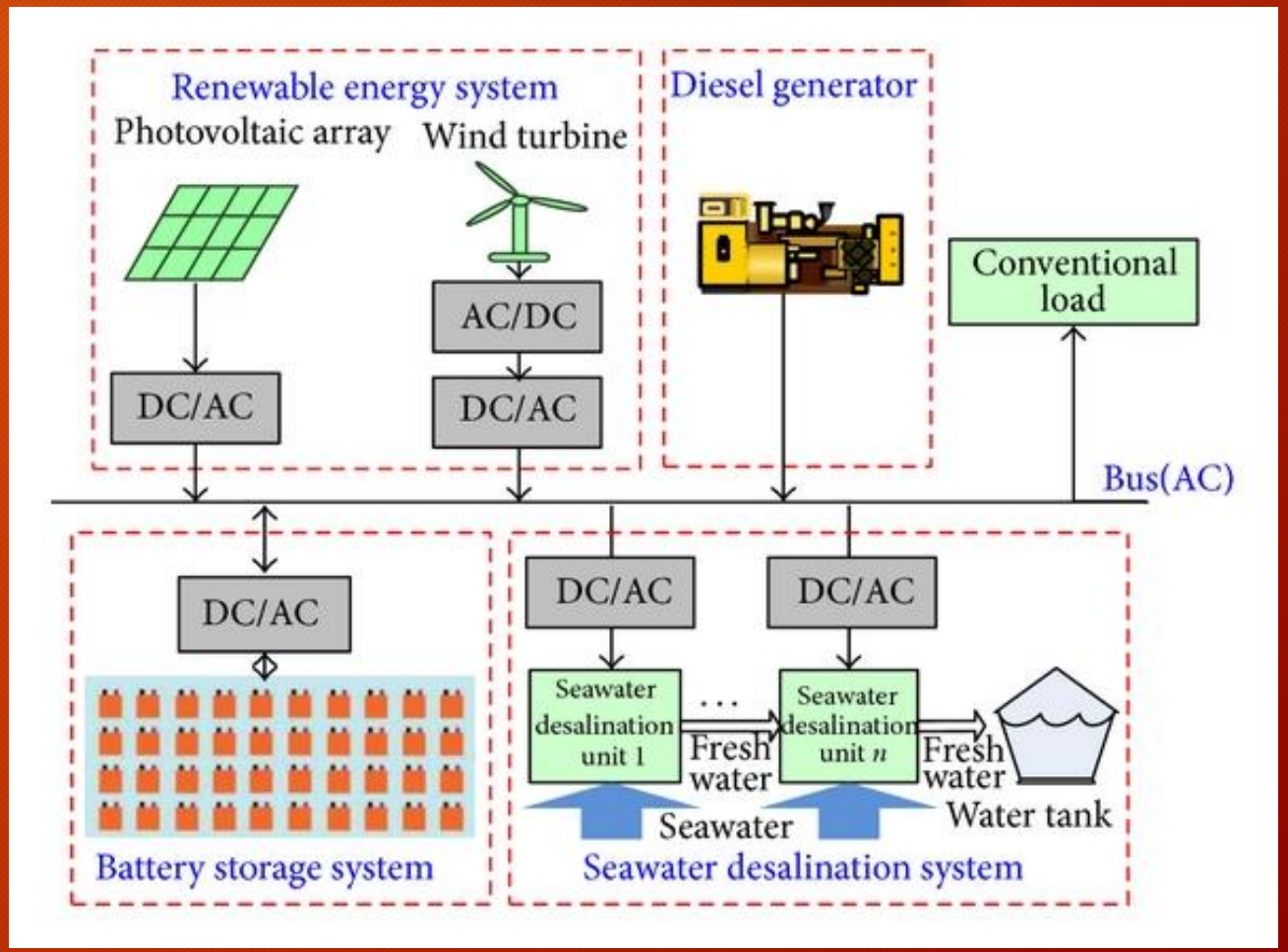
Biomass To Electricity

The Paradigm Shift – An Innovative Approach

Gen-sets are popular

- CAPEX $300-$600/kW compared with $1750-$4500/kW for biomass power plants
- Fuel storage and supply substantially easier
- Less pollution, especially when using catalyzers
- Higher flexibility
- Double the electricity yield per MJ fuel input

Microgrid with Wind, Solar, Storage and Diesel



The Usual Way…..

- Diesel gensets are normally using fossil fuels (diesel, natural gas)
- Our approach – locally produced diesel from lignocellulosic biomass

Field-incinerated crop waste

Purpose-grown Biomass

The Paradigm Shift

Recent technological breakthroughs have made a different approach for the use of Biomass with better and more flexible results possible:

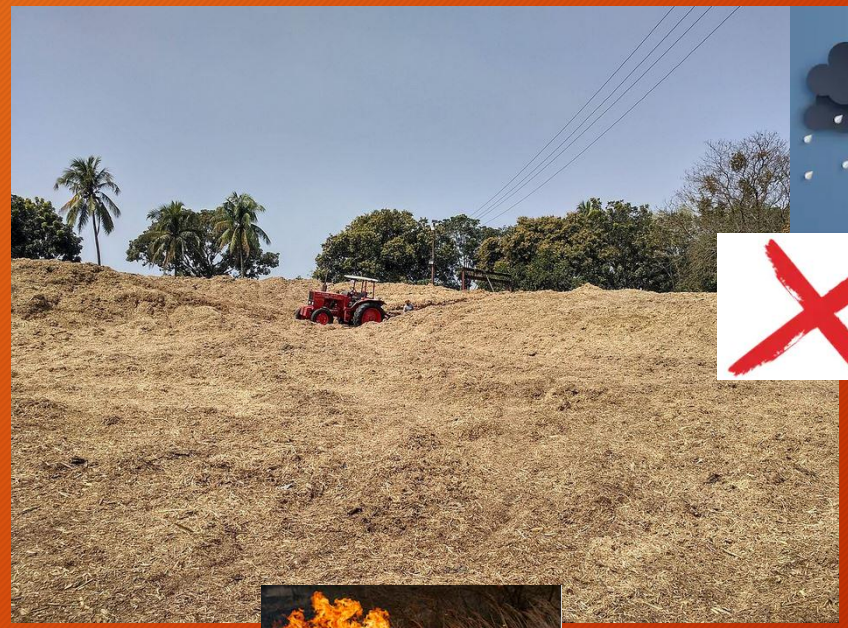
- Converting the lignocellulosic biomass into low-cost carbon neutral or even carbon-NEGATIVE (climate positive)
- Operating existing or new diesel generators with renewable, carbon-neutral fuel
- Preventing stranded assets

Converting Biomass to Carbon-neutral Diesel

The paradigm shift is preventing major problems of the current system

Facilitating storage, THE single most difficult problem of biomass

Rain and humidity



Spontaneous Combustion Tendency
A serious problem!!

Safe

1.0 m3 (1000 L)
Biomass
to
0.042 m3 (42 L)
Renewable Diesel

Why are diesel power plants more advantageous?

Ultimate flexibility and adaptability to the requirements of the grid

1 FAST START
GRID STABILITY

FEATURES
- Power to grid in 30s
- 2 min to full power
- Start up efficiency

2 BASELOAD
COMPETETIVE COST AT ANY OUTPUT

FEATURES
- Highest simple cycle efficiency
- Multi unit → high firm capacity

3 LOAD FOLLOWING
BALANCE RENEWABLES

FEATURES
- Part load efficiency unaffected
- No EOH cost for cycling

4 LOW-LOAD OPERATION
RUN ONLY WHEN PROFITABLE

FEATURES
- 1 min shutdown
- No minimum down time
- Zero fuel cost
- Zero emissions

5 FAST STOP
OPTIMAL EFFICIENCY

FEATURES
- 1 min shutdown
- No minimum up time
- No EOH calculation

Simple, efficient, environmentally sound

Home-grown Renewable,
Carbon-neutral Fuel
With Diesel Generators
The Ideal Sturdy Solution for
Micro Grids in Remote Areas