



LOW RPM WIND ALTERNATOR

Problem Statement Title : OPEN INNOVATION

Team Name : LENTO TURBINES

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Institute Name: : SRI SAIRAM ENGINEERING COLLEGE

Theme Name: : CLIMATE CHANGE(RENEWABLE ENERGY)



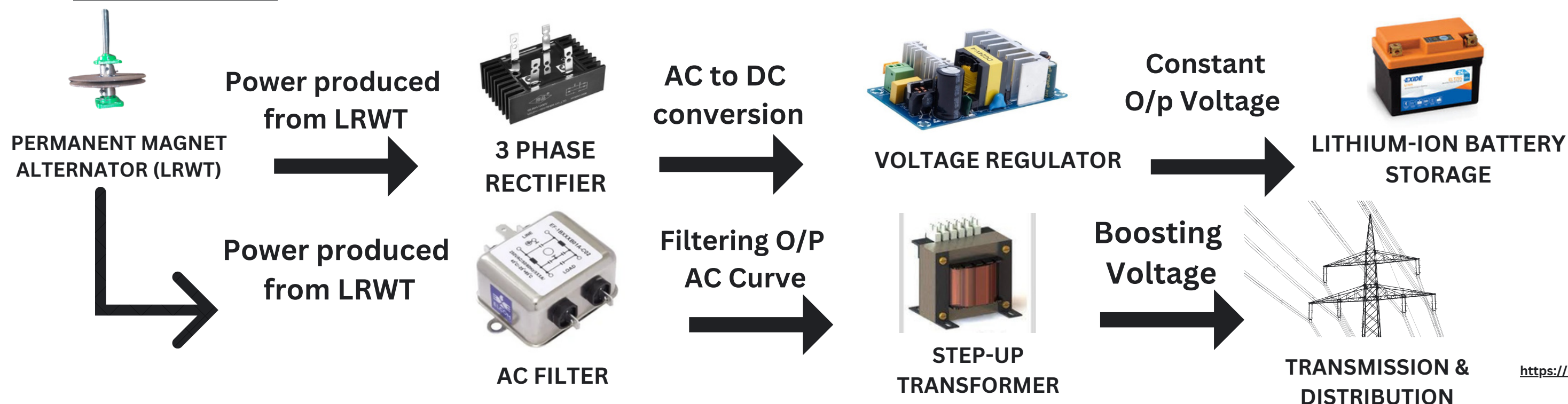
OUR PROPOSAL

- We have developed an innovative Low RPM Wind Turbine (LRWT) designed to address the energy needs.
- Our project aims to harness more power even in low wind speeds
- Ensuring minimal maintenance requirements and a compact design suitable for urban settings.

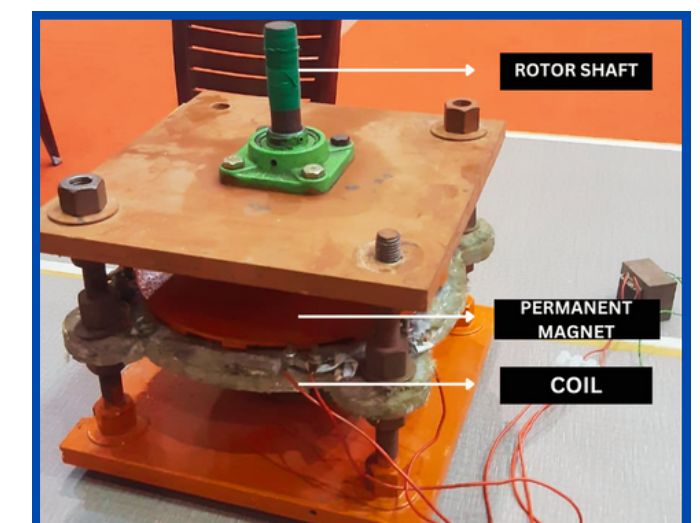
TECH STACK

- 3-phase rectifier - power electronics
- Constant o/p voltage - regulated power supply
- Wind turbine - permanent magnet alternator
- Off-grid - lithium-ion battery storage
- High speed safety system-Electronic brakes
- Filters - power electronics

TECH FLOW



LOW RPM WIND ALTERNATOR



OUTPUT OF LRWT

<https://drive.google.com/drive/folders/103M2EAcGZjDDTtUbxU75SmrwmxLFoFfa>



A VISION FOR CLEAN ENERGY FUTURE



FLOW CHART



Reduced fossil fuel dependency: LRWTs generate electricity from wind energy, a renewable resource, which can help to reduce our reliance on fossil fuels for electricity generation



Green house gas: LRWTs produce **electricity without emitting CO2** or other harmful pollutants, helping to combat climate change by reducing greenhouse gas emissions.



Sustainability: Designed for a long lifespan, reducing the need for continuous production and disposal of energy generation equipment.

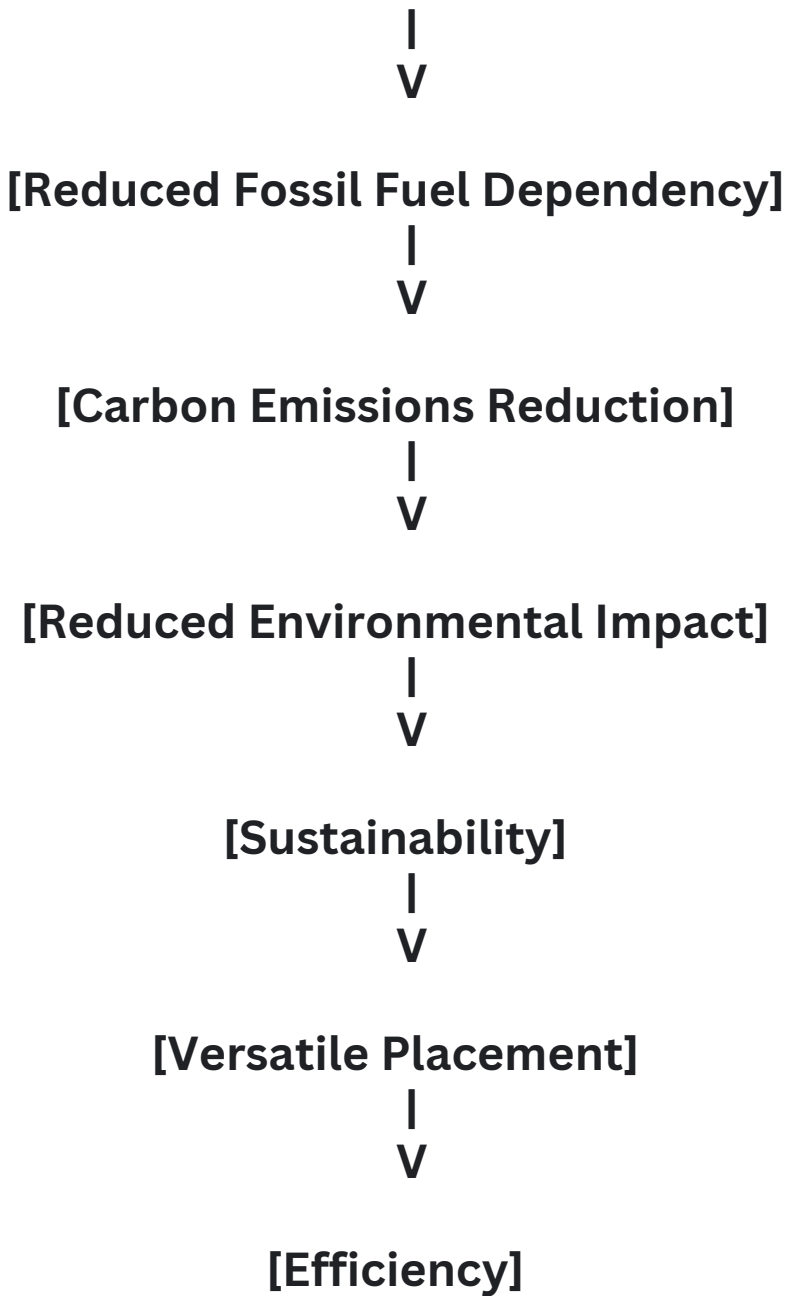


Versatile placement: They can be installed in urban and rural areas, including rooftops and coastlines, which can help decentralize energy generation.



Efficiency: generating electricity at **low wind speeds**, which makes them a more viable renewable energy option for a wider range of locations.

[Positive Environmental Impacts of LRWTs]



"LRWTs: Driving Progress Toward Sustainable Development Goals"



- They reduce the reliance on fossil fuels, which is essential for providing access to sustainable and clean energy for all.



- SDG 13: Climate Action:**
- LRWTs directly align with SDG 13 by reducing carbon emissions.
 - They generate electricity without emitting CO₂, helping combat climate change and mitigate its adverse effects.

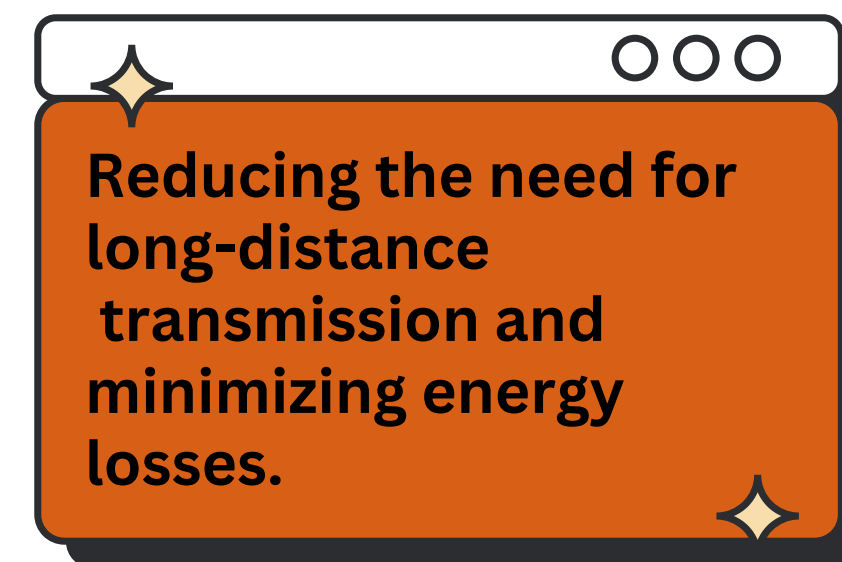
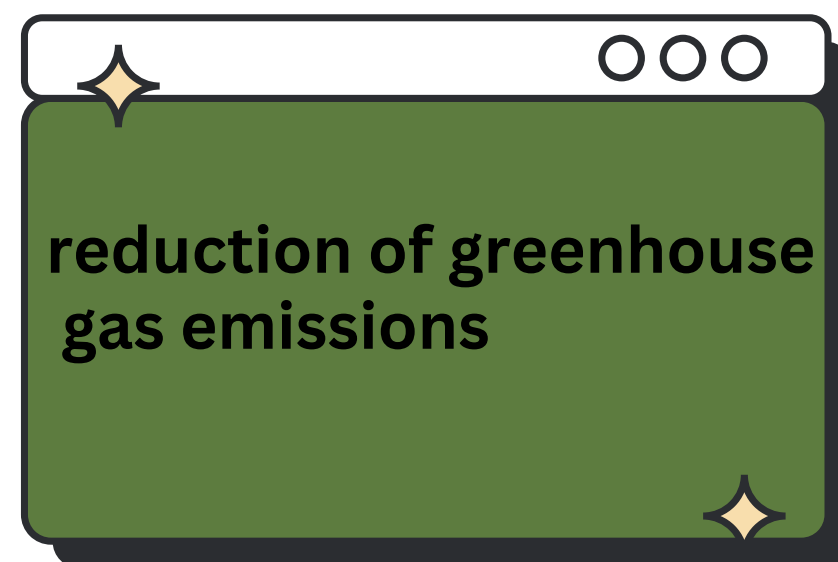
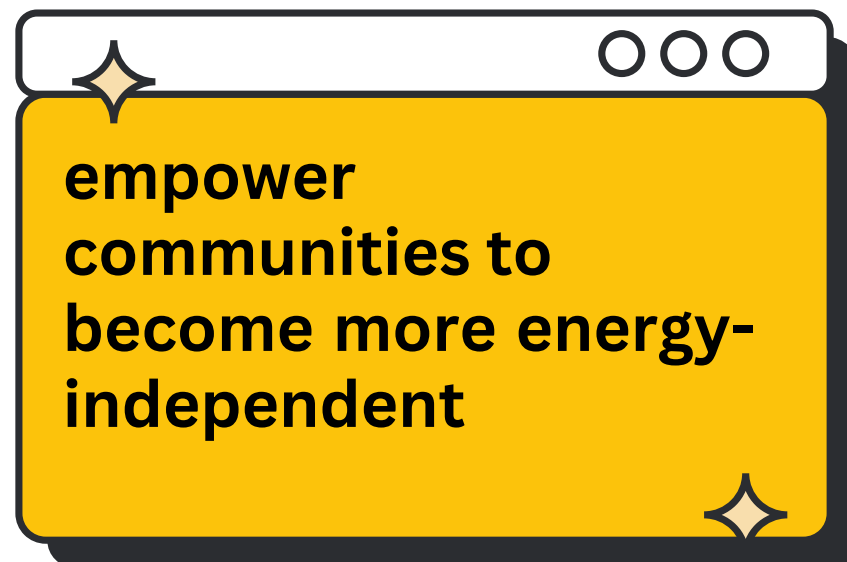


- LRWTs design and sustainability aspects contribute to the development of resilient and sustainable infrastructure.



- LRWTs' versatile placement options, such as urban areas and rooftops, support the development of sustainable and resilient cities by decentralizing energy generation and reducing environmental impacts.

IMPACT ON SOCIETY



USE CASES

Well suited for urban environment

Low wind speed areas simplicity and durability

Reduced fossil fuel dependency

Less impact on wildlife

Power generation cost is half that of a solar cell

Electricity can be generated in remote areas

DEPENDENCIES

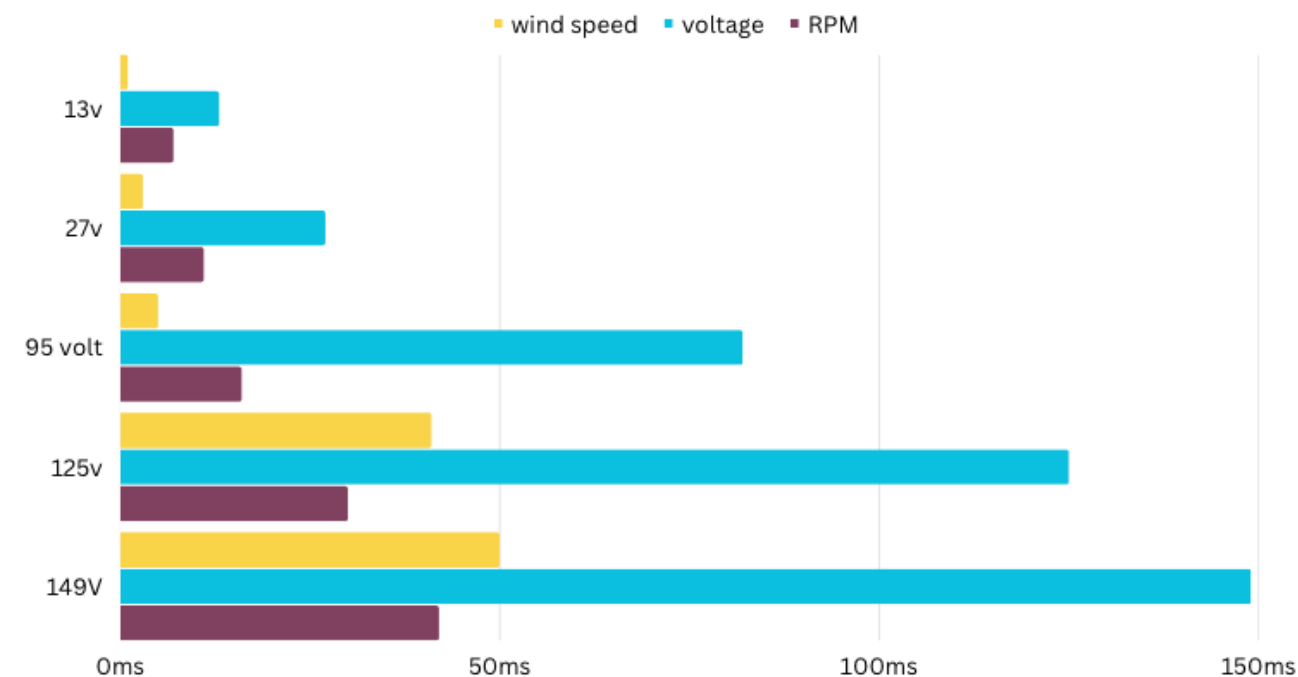
»»» SURFACE ROUGHNESS

»»» AVG WIND SPEED

»»» BUILDING HEIGHT

»»» GENERATOR EFFICIENCY

OUTPUT VOLT WITH WINDSPEED AND RPM



»»» WOW FACTORS »»»

- Our Alternator (LRWT) design maximizes output at low wind speed achieving a remarkable 70% increase over existing alternators.
- Compact in design and half the cost of solar panels Per/KW.

- Cut-in wind speed 1m/s Cut-off wind speed 51m/s
- Cut-in voltage 1 volt cut-off voltage 150 volt

YOUTUBE LINK

https://youtu.be/hpWSBkxe2hE?si=hNMIfP_Cs1oTxPSh

Team Member Details

Team Leader Name : **SHARAVANA VELL KT.K**
Branch (BE) Stream (EEE) Year (II)

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Branch (BE) Stream (EEE) Year (II)

Member 3 Name : **VIGNESH J**
Branch (BE) Stream (EEE) Year (II)

Member 4 Name : **S SHANJANA**
Branch (BE) Stream CSE(IoT) Year (II)

Team Mentor 1 Name: **AZHAGU MURUGAN .R**
Category (Academic): Expertise (SPECIAL MACHINES) Domain Experience (10)

Team Mentor 2 Name: **KANNAN .KT**
Category (Industry): Expertise (TRANSFORMER DESIGN AND FABRICATION) Domain Experience (25)

