

# NAGA SRIRAM VEJENDLA

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## Professional Summary

My Experiences are "Real time", especially past 20 years, every second is not like a Sine Wave form, it had lot of Harmonics which caused damages. I have included Filters, Capacitors, Boost choppers and some times Buck Converters to get rid of the unwanted things to get the Simplest and Similar Sine wave.

But as a Passionate Engineer having tough Experience in the field of Electrical, Electronics and Renewable Energy my responsibilities are to develop new Technologies and Methodologies to implement in Various Sectors.

- My Research and Development Skills are the finest assets for all these years to work on various platforms.
- 7 months of Experience on Prepaid Net meters for Farming Project.
- 2 months of incredible internship working Solar Plants Performances under different weather conditions, where facing the issues like inverter failures, lightening erection and working the solar panel cleaning prototype has given immense knowledge.
- Worked as an Automation Engineer during installation of 10 MW Solar Power Plant

*Apart from my previous gained knowledge, I am currently on various Research works - Weather Forecasting for PV plants (5-10 days), Agri-Photovoltaics, Prototype - which generates maximum KW using PV, CSP, Turbines with limited spaces especially for the utilization of Household purpose and Grid connectivity.*

## Ultimate Goal

- Focusing on reducing Global Warming by reducing pollution
- Replacement of Fossil Fuels vehicles and EV Mobility must have given priority
- Encouraging latest Technology Integrated Vehicles (Volve XC40 - Pure EV, PoleSatar2 cars), Volvo EV based buses in Sweden, Lexus (which runs both on Fuel and Battery based on RPM)
- Creating Awareness about Energy Saving (1 unit saved = 2 Generated)

## Employment history

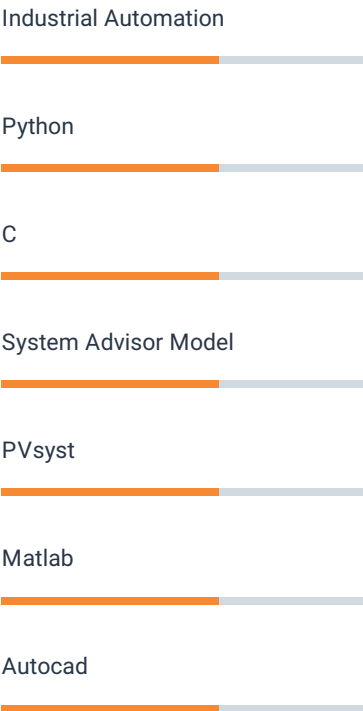
Research and Development Electrical Engineer, EL Source Private LTD.  
Vijayawada, Andhra Pradesh  
Jun. 2019 – Dec. 2019

- Done Research on Prepaid Net metering for future development in the field of Farming.
- Net Meters are mainly dumped with required code with required Programming code which helps them to work during particular hours during the day.
- Mother Board, Circuit Board, Display, Relays are placed in the Meter with protection and safety.
- Testing the Active, Reactive, Total Power, Running time, Relay Working of each meter has been observed which includes each Phase Voltage and Currents, Line to Line Voltages and Currents.

## Languages



## Skills



## **Analyst - R and D Engineer- Intern, Shri Shakti Alternative Energy Ltd.**

### **Hyderabad, Telangana**

Apr. 2019 – May. 2019

- Documentation on Performance Ratio(PR %) and Capacity Utility Factor (CUF %) of PV Power Plants.
- Worked on BIPV using Design Builder for the office location and at major locations in India.
- Assisted for Solar Cleaning panel prototype at one plant located near Vikarabad.
- Based on the prototype, I have added inputs to make the device to work more precisely.
- I have made research on glazing effect caused by PV plant, if it was aligned on the side of Runway in RGIV, Hyderabad Airport.

## **Automation Engineer, Elektromontaż Wschód. Bialystok, Poland**

Oct. 2018 – Nov. 2018

- I worked as an Automation Engineer, taking responsibilities while installing the 10MW Solar Power plant.
- Engaging with the people from various countries - Italian(Project Owner), Organization(Poland), Assistants (Ukraine) which has helped me to do and learn what are the measures to be taken while installing the projects.



## **Education**

### **Warsaw University of Technology, Warsaw, Poland**

Master of Science, Electrical Engineering, Jul. 2018

### **Dalarna University, Borlange, Sweden**

Master of Science, Solar Energy Engineering, Jun. 2015

### **Koneru Lakshmaiah University, Vaddeswaram, Andhra Pradesh**

Bachelor of Science, Electrical and Electronics Engineering, May. 2013



## **Research Projects**

### **1. Construction process and Efficiency improving of Solar power farms according to Indian Weather Conditions[Master Thesis]**

- The most challenging research I have done during my Masters
- In India mostly Solar Plants are installed using Photovoltaic panels for power generation, but in my research I have included another most important technology which generates power all the day.
- Concentrate Solar Power (CSP) is the most effective technology across the world, include huge investment as well as risk.
- Solar Power Towers, Linear Fresnel, Parabolic Troughs and Parabolic Dish Technologies are the Four major CSP generated systems.
- In general CSP systems are used for cooking especially Parabolic Troughs and Parabolic Dish Technologies in India and also for power generation.
- Out of all Four Technologies, only Solar Power Towers use Molten Salt as Heat Transfer Fluid (HTF), remaining systems uses mostly uses either Water or Synthetic Oil.
- Efficiency of the systems varies on HTF variants, Size of the systems, Heat Exchangers, Turbine Efficiency, Efficiency cycle (eg - Rankine Cycle)
- In PV systems, efficiency varies on different technologies like Mono crystalline, Poly crystalline, Amorphous silicon, CIS, CIGS etc.
- The alignment of strings(Series or Parallel) through DC wires, Inverter rated capacity effects the efficiency.
- Hotspots on panels leads in drop of efficiency, so Bypass Diodes and Blocking Diodes creates the path for flowing current through cells by avoiding damaged cells.

- With Hotspots the overall Fill Factor of the systems decreases, which effects on efficiency, in order to maintain certain level of system balance and Fill Factor, Bypass Diodes and Blocking Diodes plays key role until the damaged the panel is identified and replaced.
- While installation of system, system's configuration cross check plays vital role, other Miss match losses between the panels/Wires/Inverters etc causes huge drop of efficiency.
- Some of the most important factors which boosts for efficiency - Location, Type of Tracking(Single or Dual), Tilt Angles at different location.

## **2. Methodologies of optimal location of the energy storage systems in power grid.**

- If different Power generated sources are connected to grid, fluctuations through grid happens, which sometimes causes failure in grid.
- Renewable energy sources(RES), Diesel- Generator sets are generally to grid to inject power to the grid, while Commercial sources, House hold sources, all power drawn sources from the grid.
- In order to balance the grid (maintaining Active, Reactive, Total power) some methodologies using various mathematical solutions and simulation technologies, which gives optimal location to inject power sources.

## **3.State of the art micro wind turbine technology - a review of the market.**

- Currently there are two major varieties of Wind turbine technologies.
- Horizontal(3,4 blades) and Vertical(3,4,5 blades)
- Among these two Horizontal turbine technology is widely used across the world in the market for off-shore and on-shore purpose.
- Vertical turbine technology has low market and increasing nowadays for small scale power generation purpose.

## **4.Multi- Junction Solar Cells.**

- There are wide variety of PV cell technologies available.
- Each cell technology has various efficiencies, some of the them are Mono crystalline, Poly crystalline, Amorphous silicon etc
- Efficiency of the cell-Module-String depends on their crystalline structure.
- There are few technologies like CIS, CIGS, CdTe other generation called 3rd and 4th group which are the integrated with more layers to obtain optimal efficiencies by reducing the thickness of the panels etc.
- Still many researches were going on on these type of Multi - Level or Multi Layer technologies to obtain maximum efficiency.

## **5.Concept project of hybrid power supply system for different locations (2) with RES**

- HOMER simulation software is used for Designing 1KW off-grid systems at two different locations in Poland.
- Renewable Energy Sources - PV, Wind Turbine(AC/DC), Inverter, Storage back in the form Lithium-ion Batteries are used.
- The observations has considered for the whole year.

## **6.Current state of photovoltaic panel technology - market analysis**

- Mono crystalline, Poly crystalline PV technologies are widely used across the global.
- These technologies had good market with wide variety of specifications (Size, Rated capacity, Watt etc)
- Though the Cell technologies are same, there were many variants produced by manufacturers in countries like Germany, Sweden, China.
- China has the largest production with variants products to meet the demands at low prices.

## **7.Technical and economic aspects for Island PV systems.**

- Designed a Small scale Island PV system i.e off-grid for own house according to the load requirements.
- System has been designed based on Quick- Designed procedure includes Determining the Load, Sizing the Battery, Solar Panel specifications to meet the requirements.
- HOMER simulation software is used for optimal results.
- Payback period for the system design has also been calculated.



## Additional information

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## References

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