



Basaveshwar Engineering College (Autonomous)

[AICTE Recognized, TEQIP-I, II & III, Permanently Affiliated to VTU Belagavi, NBA & NAAC Accredited]

Bagalkot-587103, Karnataka state, India

Department of Electrical & Electronics Engineering

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BEC - Energy Park

List of Major Equipment's

Sl.	Details of Equipment's	Year of Purchase	Amount
1.	Solar PV Panels – Mono Crystalline Solar PV Panels – Mono Crystalline Type, 180 Watts with Module voltage 12 Volts with mechanical support accessories fabricated as a single plane with MS steel tube structure with iron poles for vertical support at both ends	2021	75,400
2.	Solar PV Panels – Poly Crystalline Solar PV Panels – Poly Crystalline Type, 150 Watts with Module voltage 12 Volts with mechanical support accessories fabricated as a single plane with MS steel tube structure with iron poles for vertical support at both ends	2021	54,900
3.	DC-DC Converters 12 V input and output of 12, 24, 32, 48 V	2022	60,180
4.	SMF Batteries Batteries (12 V, 7 Ah; 12 V, 26 Ah; 12 V, 42 Ah)	2021	24,832
5.	DC Equipment's (Loads)	2022	49,251
6.	Automatic Weather Station Parameters to measure at 10m and 20m vertical heights. Weather station logger with weather proof enclosure. Air temperature (40 0 to 123.80 C) and Relative humidity sensor (RH range 0 100%). Rainfall sensor (100mm/hr res 0.20mm). Wind direction sensor (0360 0 with resolution of 1 0 , Wind speed sensor: at two same vertical heights · Solar radiation sensor (direct & diffuse) Application software CD. Data shuttle (memory card 4GB). Solar panel with mounting clamp · Batteries (SMF) · Provision to read all data online (display) and off line should be provided (data storage). Virtual Electronics Company, Roorkee	2012	3,86,650
7.	Solar Powered DC Water Pumps 0.5 HP with 400 W Panels (4 modules of 100 W) 1 HP with 900 W Panels (6 modules of 150 W) 2 HP with 1800 W Panels (10 modules of 180 W)	2013	3,75,000
8.	Wind Turbine Generator 1.5 KW/24V, 3 phase Generator without charge controller, AC generator to be placed on the 18 meter wind tower existing in Energy Park, BEC campus, Bagalkot. Output of the generator	2013	1,63,525



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	should be connected to inverter of 1.5 KVA, 24 volts. Provision should be provided to read and display voltage output of generator.		
9.	Performance Monitoring Systems for SPV Pumps Seed Grant-1	2016	1,70,593
10.	Inverters of 1 KVA for each system to connect the battery output to AC loads DC-DC converters for connecting SPV output to batteries (12/24 V) Digital Voltmeter and Ammeter to measure the voltage and current in each unit. Existing system specification: 6 Hybrid Systems with following components. Wind generator: 400 W Solar PV panel: 75x2=150 W	2013	75,960
11.	Devices Supplied under KREDL Energy Park Scheme: • Solar Still • Solar Water Heater • Solar Box Cooker • Solar Street Lighting Systems • Solar Garden Lighting Systems • Solar Drier • Wind-Solar Hybrid Systems • Solar Parabolic Cooker	2007	6,29,050



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Number of UG Projects and Details:

Academic Year 2013-14

- Design and performance study of standalone SPV systems
- Microcontroller based automatic solar power tracking systems for concentric dish cooker

Academic Year 2014-15

- Design and development of data logger for standalone SPV systems

Academic Year 2015-16

- Development and testing of gym bicycle for water pumping for small scale drip irrigation systems
- Design and development of data logger for standalone SPV system with wireless communication facility

Academic Year 2016-17

- Implementation of SPV powered AC irrigation system in small scale agriculture
- Solar powered auto irrigation system for horticulture crops

Academic Year 2018-19

- Design Development and Testing of Shelter Type SPV based Fruit Juicer for Outdoor Juice Vendors

Academic Year 2019-20

- Design and Implementation of SPV Powered Novel Type Water Pump
- Development of an android application for optimal sizing of Irrigation systems

Academic Year 2020-21

- Design and Development of DC-DC Converter Employed for DC Distribution System for Domestic and Commercial Loads
- Development of Smart SPV Tracker-An Approach towards Self Governed Tracking Mechanism



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Number of PG Projects and Details:

Academic Year 2013-14

- Performance analysis of solar PV powered irrigation pumps; Performance analysis of solar PV water pumps with varying heads

Academic Year 2014-15

- Optimization of wind-solar-diesel generator hybrid power system using HOMER software

Academic Year 2015-16

- Mathematical modeling of SPV powered DC irrigation system
- Optimization of solar, wind, biomass, diesel generator hybrid power system using Homer-Pro software

Academic Year 2016-17

- Performance analysis of 0.5, 1 and 2 HP solar irrigation pumps; Development and testing of SPV powered 0.5HP AC water pumping system
- Development of Look-up Table for Optimal sizing of SPV Powered DC Irrigation Pumps
- Design and Implementation of MPPT for 1HP SPV Powered DC Irrigation Pump
- Critical Design of SPV based Lighting Systems- A Case Study at Energy Park, BEC [A],BGK

Academic Year 2017-18

- Development and Testing of SPV Powered 1HP AC water pumping system
- Mathematical Model for Performance Prediction of SPV Powered DC Irrigation System

Academic Year 2017-18

- Feasibility Study of SPV Powered Water Pumping System-A Case Study of BEC Campus
- Design of SPV based Electric Energy System for Farmhouse using HOMER



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Number of Ph.D's and Details: 06

1. D. R. Joshi
Optimum Site Selection for Wind Power Plant based on Financial Assessment – 2010
(DoViva: 13.02.2010 USN 2BA03PEM01)
2. Smt. G. Suchitra
Reliability and Economic Viability of Wind-SPV Hybrid Systems for Electricity Generation – 2016
(DoViva: 14.03.2016 USN 2BA07PEM05)
3. Basanagouda F. Ronad
Optimum Sizing of SPV Powered Irrigation Systems based on Field Conditions – A Case Study of Riverbed Pumpsets – 2018
(DoViva: 29.01.2018 USN PHD201120)
4. Muttakka Annigeri
Optimal hybrid energy system for electrification of a farm house in North Karnataka – 2019
(AYoR: 2006-07, DoR: 30.11.2006, DoViva: 19.07.2019 USN 2BA06PEN02)
5. Shivappa Sobarad
Short term wind forecasting model for planning of wind plants and scheduling of power – 2020
(AYoR: 2010-11, DoR: 20.11.2010, DoViva: 29.05.2020 USN 2BA10PEN01)
6. Sangamesh Goudappanavar
Modeling and performance analysis of small wind turbine generators in Microgrid — Thesis submitted
(AYoR: 2014-15, DoR: 12.12.2014, USN 2BA15PEJ04)

Number of Products Developed and Details:

A Multidirectional Conical Collector Solar Water Heater



Standardization and Modification of Solar Box Cooker



SPV based Sugar Cane Cutter for Agriculture Applications





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SPV based Sugar Cane Cutter for Agriculture Applications





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Number of Publications and Details:

Technical Papers published in International Journals:

1. G Pooja, Manjula Gaddi, Rakesh, Sachin Karant, Basanagouda F. Ronad, "Development of Android Application for Optimization of Irrigation System Capacity", Turkish Online Journal of Qualitative Inquiry (TOJQI), ISSN: 1309-6591, Volume 12, Issue 7, July 2021, pp.- 1034 – 1039.
2. Joshi Sourabha, Basanagouda F. Ronad, Suresh H. Jangamshetti, "Mathematical Model for Performance Prediction of SPV Powered DC Irrigation System", TEST Engineering and Management, ISSN: 0193 – 4120, January - February 2020, pp.- 9000 – 9006.
3. Basanagouda F Ronad, Suresh H Jangamshetti, "A Critical Approach for Energy Conservation in Irrigation Systems by Optimal Sizing of Pumps", International Journal of Innovative Technology and Exploring Engineering, ISSN: 2278-3075, Volume-8, Issue-6S3, April 2019, pp.-155-159.
4. Vani Nadoni, Basanagouda F Ronad, Suresh H Jangamshetti, "Critical Design of SPV AC Lighting Systems—A Case Study at Energy Park, BEC[A], BGK", International Journal of Scientific & Engineering Research, ISSN 2229-5518, Vol 9, Issue 7, July 2018, pp.-2050-2052.
5. Raichal Rani, Basanagouda F Ronad, Suresh H Jangamshetti, "Development and Testing of SPV Powered 1HP AC Water Pumping System", International Journal of Scientific & Engineering Research, ISSN 2229-5518, Vol 9, Issue 7, July 2018, pp.-2045-2049.
6. Basanagouda F Ronad, Suresh H Jangamshetti, "Optimum Sizing of SPV Powered DC Irrigation Pumps based on Field Conditions", International Journal of Scientific and Engineering Research, ISSN- 2229-5518, Vol 7, Issue 10, October 2016, pp.-1738-1742.
7. Basanagouda F Ronad, Suresh H Jangamshetti, "Identification of Suitable Method for Crop Water Assessment by Estimating Evapotranspiration-A Case Study", International Journal of Agriculture Sciences, ISSN: 0975-3710, Volume 8, Issue 48, Dec 2016, pp.- 2020-2023.
8. Girishkumar Malagond, Basanagouda F. Ronad, Suresh H. Jangamshetti, "Design and Development of Data Logger for Standalone SPV Systems", International Journal of Emerging Technology and Advanced Engineering", ISSN: 2250-2459, Volume 5, Issue 5, May 2015, pp.-162-166.

Technical Papers published in International Conferences:

1. Basanagouda F Ronad, "Optimal Sizing and Cost Analysis of Hybrid Electric Renewable Energy Systems using HOMER", 5th International Conference on Intelligent Sustainable Systems (ICISS 2022), SCAD College of Engineering and Technology Tirunelveli, Tamilnadu, India during 17th-18th, February 2022.
2. Aditya Bhuti, Jyoti K, Basanagouda F Ronad, "Development of Smart SPV Tracker-An Approach towards Self Governed Tracking Mechanism", 5th IEEE International Conference on Electronics, Communication and Aerospace Technology - ICECA 2021, ISBN: 978-1-6654-3524-6, RVS Technical Campus, Coimbatore, 2nd-4th, December 2021.



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3. Basanagouda F Ronad, "Design, Simulation and Development of DC-DC Converter for SPV Powered DC Distribution System in Domestic Loads", 3rd International conference on Communication, Computing and Electronics Systems (ICCCES 2021) ISBN: 978-981-16-8862-1, PPG Institute of Technology, Coimbatore, 28th-29th, October 2021.
4. Jyothi Kumbhar, Neelaganga Goudar, Sahana Bhavi, Basanagouda F Ronad, "Optimization of Hybrid Renewable Electric Energy System Components for Covid Hospitals", IEEE Mysore Sub Section International Conference (MysuruCon-2021), ISBN: 978-1-6654-3888-9, NAVKIS College of Engg., Hassan, India, 24th -25th October 2021.
5. Basanagouda F Ronad, Santosh B Kumbalavati "Performance Assessment of SPV Powered DC Irrigation Pumps with Solar Tracking Mechanism", IEEE International Conference on Energy, Power and Environment (Towards Clean Energy Technologies), ISBN:978-1-6654-2536-0, National Institute of Technology Meghalaya, Shillong, India, 5th - 7th March, 2021.
6. G Pooja, Manjula Gaddi, Rakesh, Sachin Karant, Basanagouda F. Ronad, "Development of Android Application for Optimization of Irrigation System Capacity", Second International Conference on "Research and Innovations in Science, Engineering & Technology" ICRISSET-2020, BVM EC Gujarat, 4th-5th September 2020.
7. Basanagouda F Ronad, Suresh H Jangamshetti, "A Critical Approach for Energy Conservation in Irrigation Systems by Optimal Sizing of Pumps", International Conference on Renewable Energy and Sustainability (ICRES-19), ISBN: 978-81-940803-3-6, IFERP, Vizag, 5th-6th April 2019, pp.-7-12.
8. Ambika Jotagonda, Basanagouda F Ronad, Suresh H Jangamshetti, "Optimal Sizing of Hybrid Electric Renewable Energy Systems using HOMER-Pro", IEEE Third International Conference on Electrical, Electronics, Communication, Computers and Optimization Techniques (ICEECCOT-2018), ISBN: 978-1-5386-5130-8, GSSS Institute of Engineering and Technology for Women, Mysore, India, 14-15 December 2018, pp.-561-565
9. Maruti Naik, Basanagouda F Ronad, Suresh H Jangamshetti, "Performance Analysis of Directly Coupled Solar Photovoltaic Powered Irrigation Pumps", IEEE International Conference on Recent Innovations in Electrical, Electronics & Communication Engineering, ICRIEECE-2018, ISBN: 978-1-5386-5994-6, School of Electrical Engineering, Kalinga Institute of Industrial Technology (KIIT), Bhubaneswar, India, 27 -28 July 2018.
10. Shivaleela Konnur, Basanagouda F Ronad, Suresh H Jangamshetti, "Design and Implementation of the MPPT for 1 HP SPV Powered DC Irrigation Pump", IEEE International Conference on Recent Innovations in Electrical, Electronics & Communication Engineering, ICRIEECE-2018, ISBN: 978-1-5386-5994-6, School of Electrical Engineering, Kalinga Institute of Industrial Technology (KIIT), Bhubaneswar, India, 27 -28 July 2018.
11. Vidyashree Hulyal, Basanagouda F Ronad, Suresh H Jangamshetti, "An Effective Simulation Model for Performance Prediction of SPV Powered DC Irrigation Systems-A Case Study for Validation", ISBN:978-1-5386-3242-0, IEEE International Conference on Current Trends in Computer, Electrical, Electronics & Communication, ICCTCEEC-2017, 8-9 Sept. 2017 at Mysuru, India, pp.-378-382.



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12. Vaishali Biradar, Basanagouda F Ronad, Suresh H Jangamshetti, "Development, Testing and Performance Analysis of SPV Powered 0.5HP AC Water Pumping System", ISBN:978-1-5386-3242-0, IEEE International Conference on Current Trends in Computer, Electrical, Electronics & Communication, ICCTCEEC-2017, 8-9 September 2017 at Mysuru, India, pp.-353-357.
13. Basanagouda F Ronad, Suresh H Jangamshetti, "Optimal Cost analysis of Wind-Solar Hybrid System Powered AC and DC Irrigation Pumps using HOMER", 4th International Conference on Renewable Energy Research & Applications, ISBN:978-1-4799-9982-8, 22-25 November 2015 at Palermo, Italy, pp.-1038-1042.
14. Basanagouda F Ronad, Suresh H. Jangamshetti, "A Novel Method to Determine Optimum Hp Rating of Irrigation Pump based on Water Requirement of Crops", IASTED's, International Conference on Power and Energy Systems, AsiaPES-2013, ISBN: 978-0-88986-959-2, Phuket, Thailand, April 10-13, 2013, pp.-320-325.

Technical Activities:

Visit of School Children



Awareness to Renewable Energy Source for Students from Basaveshwar International Public School, Bagalkot on 11.01.2018 under BEC REACH



Awareness about Renewable Energy Applications of Rural women from Hungund, Bagalkot on 06.08.2018



Lab Visit and Demonstration of Renewable Energy Devices to Faculty Members and students of UHS- University of Horticulture Sciences, Bagalkot on 20.02.2019





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B.Sc Agriculture students of Dept of Agricultural Engineering, College of Agriculture, Vijayapur, University Of Agricultural Sciences, Dharwad on 25.03.2019



Half Day Workshop to Farmers on SPV Powered Irrigation system on 22.01.2022 (120 farmer's form Mangalagudd Village, Badami taluk)

