

## FACULTY PROFILE



**Name** Dr. Sasmita Behera

**Designation** Asst. Professor, (Grade-III)

**Phone No.** 9437367106

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**Date of Birth** 05.05.1979

**Date of Joining** 10.8.2011

### Qualification

B.E., UCE, Burla, SU (2000), M. E., BPUT (2003), Ph. D., VSSUT (2017)

### Specialisation

Power System Engineering

### Experience

#### Academia:

VSSUT, Burla since August 2021 as Assistant Professor (Level III)

VSSUT, Burla August 2016- July 2021 as Assistant Professor (Level II)

VSSUT, Burla August 2011-July 2016-as Assistant Professor (Level I)

UCE, Burla July 2000 to Aug 2021

#### Industry:

Western Electricity Supply Company of Odisha (WESCO), Burla May 2011 to July 2011 as Manager

Western Electricity Supply Company of Odisha (WESCO), Burla April 2007 to April 2011 as Deputy Manager

Western Electricity Supply Company of Odisha (WESCO), Burla February 2002 to March 2007 as Asst. Manager

### Subject Teaching

#### Graduate level

Basic Electrical Engg., Digital Electronics, electrical Measurements and Instrumentation, Computer Programming, Elements of Electrical Machines, Power Electronics, Control System, Soft Computing, Energy Management, Smart Power Grid, Artificial Intelligence and Machine Learning, Switch Gear and Protective Devices, Non-Conventional Energy Sources, Alternative Energy Sources

### **Postgraduate level**

Nonlinear Control

### **Research Area**

Power System, Renewable Energy, Soft Computing, Control

### **Research Guidance**

#### **Ph.D. guidance: 2 no. awarded**

- 1 Study on Dynamic Economic Emission Dispatch of Hybrid Power Systems using Soft Computing Techniques, Mrs. Soudamini Behera, 07-02-2022 (Co: Prof. A.K. Barisal, OUTR, Bhubaneswar)
- 2 Advanced control approaches for wind energy conversion system under normal and abnormal conditions, Mrs. Shrabani Sahu, 07-10-2023

#### **Ph.D. guidance: 1 no. continuing**

1. Study on maximized generated power utilization in photovoltaic integrated system by application of AI techniques, Mrs. Baijayanti Panda, Jan 2023

#### **M. Tech. guidance: 13**

- 1 Sudeep Ku. Behera, PSE, VSSUT, Burla, May 13
- 2 Subhrajit Sahoo, PSE, VSSUT, Burla, May 14
- 3 Rajashree Sahu, PECD, VSSUT, Burla, May 14
- 4 Somanath Meher, PECD, VSSUT, Burla May 15
- 5 Amit Ku Satapathy, PECD, VSSUT, Burla, June 16
- 6 Matruprasad Jyotiranjana, PECD, VSSUT, Burla, June16
- 7 Jyoti Ranjan Rout, PECD, VSSUT, Burla, June 17
- 8 Shrabani Sahu, C&I, VSSUT, Burla. June17
- 9 Brajanath P. Mishra, PECD, VSSUT, Burla June 18
- 10 Farzana Akram, C&I, VSSUT, Burla, June 18
- 11 Raturaj Pattanayak, PSE, VSSUT, Burla June 19
- 12 E. Rajlaxmi, PECD, VSSUT, Burla, August 2020
- 13 Prayash Panda, PSE (Dual Degree), VSSUT, Burla, 19.8.2020

### **Awards & Honours**

- 1 Best Faculty Award for Academic session 2022-23 under the Assistant Professor category by VSSUT, Burla declared on dt. 13.11.2023, awarded on dt. 16.02.2024.
- 2 Best Paper Award in IEEE ICCESS-2023 for the paper “Wide band antenna for 5G NR FR2 bands and performance analysis for onbody application”.
- 3 Best Paper Award in IEEE International Symposium of Asian Control Association on Intelligent Robotic for the paper “Voltage Control Optimization by EO for UPF Operation of Grid-Connected Three-Phase PV Inverter”.

### Members of Professional Bodies

Member Institution of Engineers, India (M-147164-8)

Life Member ISTE: 109023

Life Member Odisha Bigyan Academy: 659

### Sponsored Projects & Consultancy Projects:

#### Completed 02

- 1 Reactive power control of isolated wind-diesel hybrid system with FACTS devices 15-07- 2016 14-07- 2017 TEQIP- II (World Bank) VSSUT/TEQIP/88/2016 Dt. 15.7.2016, ₹75000.00.
- 2 Energy management by improvement of PV generation dispatchability in isolated system and DC microgrid 16-01- 2020 15-01- 2021 TEQIP- III (World Bank) VSSUT/TEQIP/35/2020 ₹45000.00.

#### Ongoing 01

Short-term Forecast of Photovoltaic Power and Islanding Detection by Intelligent Techniques. 30-04- 2022 Continuing OSHEC, Odisha (Seed Fund) 473/135/OSHEC Dt.30.4.22 ₹487000.00.

### Publications

International Journals – 22 no. National Journals – 01

1. **S. Behera**, S. Sahoo and B.B. Pati, “A review on optimization algorithms and application to wind energy integration to grid,” in Renewable & Sustainable Energy Reviews (Elsevier), vol. 48, pp. 214–227 2015. (SCi). Doi: <https://doi.org/10.1016/j.rser.2015.03.066> ISSN: 1364-0321 IF 16.799
2. **S. Behera**, B. Subudhi and B.B. Pati, “Design of PI Controller in Pitch Control of Wind Turbine: A Comparison of PSO and PS Algorithm,” International Journal of Renewable Energy Research (IJRER) vol. 6, no. 1, pp. 271-281, 2016, (ESCI/Scopus). <https://doi.org/10.20508/ijrer.v6i1.3137.g6783> ISSN: 1309-0127
3. **S. Behera**, C. P. Sahoo, B. Subudhi and B.B. Pati, “Reactive power control of isolated wind-diesel hybrid power system using grey wolf optimization technique,” Procedia Computer Science (Elsevier) vol. 92, pp. 345 – 354, 2016. (UGC/Scopus) <https://doi.org/10.1016/j.procs.2016.07.389> ISSN: 1877-0509
4. **S. Behera** and S. Nandkeolyar, “Analysis of isolated hybrid system for power supply to a remote island,” Procedia Energy (Elsevier), vol. 117, pp. 1040-1046, 2017. (UGC/Scopus) Doi: <https://doi.org/10.1016/j.egypro.2017.05.226> ISSN: 1876-6102
5. **S. Behera** and B. B. Pati, “Protection System of a Grid-connected PV System,” Electrical India, vol. 57, no. 4, pp. 71-76, 2017. <https://www.electricalindia.in/protection-system-of-a-grid-connected-pv-system/>
6. **S. Behera** and P. K. Muduli, “Remote Control of BLDC Motor,” International Journal of System and Software Engineering (IJSSE), vol. 5, no. 1, pp.1-7, 2017. ISSN: 2321-6107

7. **S. Behera**, “Estimation of PV fed emergency message display system mounted on LED street light pole,” International Journal for Science and Advance Research in Technology (IJSART), vol. 3, no.10, pp. 684-690, 2017. (UGC) <https://ijsart.com/Home/IssueDetail/17695> ISSN: **2395-1052**
8. **S. Behera** and M.C.P. Sahoo, “Stability Improvement of Isolated Wind-Diesel System with Optimized STATCOM Controller,” International Journal of Control and Automation, SERSC publisher, vol. 11, no. 10, pp.71-84, 2018. (Scopus) Doi: <http://dx.doi.org/10.14257/ijca.2018.11.10.07> ISSN: **2005-4297**
9. **S. Behera** and M. Jyotiranjana, “Comparative study of different converter with its controller for grid connected WECS with PMSG,” International Journal of Energy Optimization and Engineering, vol.8, no. 2, pp.1-24,2018. (ESCI/ UGC CARE) DOI: 10.4018/IJEOE.2019040101 ISSN: **2160-9543**
10. **S. Behera**, D. Mahanta, O. Anshuman and D. Oram, “Fingerprint Based Vehicle Security and Control,” International Journal of Current Advanced Research (IJCAR), vol.7, no. 10, pp. 10916-10918, 2018. (UGC CARE) DOI: <http://dx.doi.org/10.24327/ijcar.2018.10918.1874> ISSN: **2319-6475**
11. **S. Behera**, P. K. Muduli, “Remote Speed Control of BLDC Motor with Display,” International Journal of Automation and Smart Technology (AUSMT), vol.8, no. 2, pp.65-71, 2018, (Scopus) Doi: 10.5875/ausmt.v8i2.1458 ISSN: **2223-9766**
12. S. Sahu and **S. Behera**, “Improved pole-placement for adaptive pitch control,” International Journal of Swarm Intelligence (Inderscience), 4(2), pp.111-126, 2019. Doi: <https://doi.org/10.1504/IJSI.2019.104087> ISSN: **2049-405X**
13. **S. Behera**, S.K. Behera and B.B. Pati, “Control of DFIG for WECS under disturbances from grid,” Proceedings of Engineering and Technology Innovation (PETI), vol.13, pp.10-19, 2019. (Scopus) DOI: <https://core.ac.uk/download/pdf/228834148.pdf> ISSN: **2413-7416**
14. **S. Behera**, “A Case Study on Safe Operating Protocol in Two Different Topologies of a Grid-tied PV Plant,” Alternative Energy and Distributed Generation Journal, vol. 1, no. 3—2020, pp.22-29 ISSN: **2643-6981**
15. **S. Behera**, I. Pattnaik and A. Meher, “MPP Tracking of Grid-Integrated PV System Under Partial Shading Using MSCA,” Journal of The Institution of Engineers (India): Series B. vol. 101, no. 4, pp. 389-395, 2020, (Scopus/UGCCare) DOI: <https://doi.org/10.1007/s40031-020-00465-6> ISSN: **2250-2114**
16. **S. Behera**, S. Behera, A.K Barisal and P. Sahu, “Dynamic economic emission dispatch of thermal-wind-solar system with constriction factor-based particle swarm optimization algorithm,” World Journal of Engineering, Vol. 18 No. 2, pp. 217-227, 2020. (ESCI/Scopus) Doi: <https://doi.org/10.1108/WJE-07-2020-0327> ISSN: **1708-5284**
17. S. Behera, **S. Behera** and A.K. Barisal, “Dynamic Combined Economic Emission Dispatch integrating Plug-in Electric Vehicles and Renewable Energy Sources,” International Journal of Ambient Energy, pp.1-18, 2021. (Scopus) DOI: <https://doi.org/10.1080/01430750.2021.1918243> ISSN: **2162-8246**
18. S. Sahu and **S. Behera**, “A review on modern control applications in wind energy conversion system,” Energy & Environment, vol.33, issue 2, pp.1-40, 2022, (SSCI/Scopus) doi: <https://doi.org/10.1177/0958305X21995929> ISSN: **2048-4070 IF 4.2**
19. S. Sahu, **S. Behera**, “Comparison of adaptive pitch control strategies for a wind turbine benchmark model,” World Journal of Engineering. 2022 Apr 1. (ESCI/Scopus) Doi: <https://doi.org/10.1108/WJE-07-2021-0450> ISSN: **1708-5284**
20. **S. Behera**, S.S. Bhoi, A. Mishra, S.S. Nayak, S.K. Panda, S.S. Patnaik, “Comparative Study of Convolutional Neural Network and Long Short-Term Memory Network for Solar Irradiance Forecasting,” Journal of Engineering Science and Technology, vol. 17, no. 3, pp.1845-56, 2022. (ESCI/Scopus) [https://jestec.taylors.edu.my/Vol%2017%20Issue%203%20June%202022/17\\_3\\_17.pdf](https://jestec.taylors.edu.my/Vol%2017%20Issue%203%20June%202022/17_3_17.pdf) ISSN: **1823-4690**

21. **S. Behera** and S. Sahoo, "Design of a Pitch Controller for a Wind Turbine Using Hybrid Mean-Variance Mapping Optimization," ECTI Transactions on Electrical Engineering, Electronics, and Communications, vol.19, no.3, pp. 298-311, 2021. (Scopus) DOI: <https://doi.org/10.37936/ecti-eec.2021193.222600>  
**ISSN: 1685-9545**
22. S. Sahu and **S. Behera**, "Self-tuning proportional-derivative pitch control for internal fault-tolerance in wind turbine benchmark," Australian Journal of Electrical and Electronics Engineering, pp. 1-15, 2022. (Scopus) DOI: <https://doi.org/10.1080/1448837X.2022.2125974>.  
**ISSN: 2205-362X**
23. S. Behera, **S. Behera**, A.K. Barisal, "Dynamic economic emission dispatch including electric vehicles' demand management and vehicle to grid support considering physical constraints," Journal of Ambient Intelligence and Humanized Computing. 2023 Jan 30:1-9. (Scopus) DOI: <https://doi.org/10.1007/s12652-023-04518-8>. **ISSN: 1868-5145**  
Conferences- 43 nos., 30 nos. (International), 13 nos. (National)

## Patents 03

- 1 An Electric Vehicle Emission, Power and Demand Management system by Multi-objective Mayfly Optimization Approach (MMOA)Germany, A.K. Barisal, **S. Behera**, S. Behera, Granted No. 202023103478: August 24, 2023
- 2 Renewable Energy Powered Poles to Detect Noise Pollution, S.S. Dash, **S. Behera**, S. Mishra, S.P. Mishra, D.K. Sahu, J.P. Giri, P.P. Pradhan, P. Mishra, N. C. Giri, Design Number: 379893-001 Granted: February 22, 2023
- 3 A system for a programmable, timed, wireless, energy-harvesting sensor node utilizing long-range radio access, M. Bajaj, **S. Behera**, N.C. Giri, S. Mehta P. Mishra, R.C. Panda, K. Paul, S.K. Routray, N. Sengar, DE file number: 20 2022 105 972.1, Granted: December 11, 2022

## Technology Transfer NA

## Books / Chapter published

### Chapters: 08

- 1 **S. Behera** and B.B. Pati, Grid-Connected Distributed Wind-Photovoltaic Energy Management: A Review, pp.1-22, Intechopen, ISBN: 978-1-78984-590- 7
- 2 **S. Behera**, and B.B. Pati, Developments in Wide-Area Monitoring for Major Renewables: Wind and Solar Energy, pp. 227- 249, CRC Press, ISBN: 9781032288468
- 3 **S. Behera**, A.K. Barisal, and S., Behera, Dynamic Economic Load Dispatch of Hydrothermal System, pp. 1-14, Intechopen, ISBN: 978-1-83768-088- 7
- 4 **S. Behera**, D. Meher, and S. Poddar, 2019. Comparative study of MPPT control of grid-tied PV generation by intelligent techniques. In: H. Behera, J. Nayak, B. Naik, A. Abraham, (eds) Advances in Intelligent Systems and Computing book series (AISC), volume 711, pp. 213-224, Springer, Singapore. ISBN: 978-981-10-8055-5
- 5 S. Sahu, **S. Behera**, 2019. Optimization of Pole Placement for Adaptive Pitch Control. In: J. Nayak, A. Abraham, B. Krishna, G. Chandra Sekhar, A. Das, (eds) Soft Computing in Data Analytics. Advances in Intelligent Systems and Computing, vol 758, pp. 73-81, Springer, Singapore. ISBN: 978-981-13-0514-6
- 6 S. Behera, N. Naik, **S. Behera**, A.K. Barisal, (2022). Combined Environmental and Economic Dispatch in the Presence of Sustainable Sources Using Particle Swarm Optimization with Adaptive Weighted Delay Velocity. In: G. Panda, R.T. Naayagi, S. Mishra, (eds) Sustainable Energy and Technological Advancements. Advances in Sustainability Science and Technology, pp. 353-367, Springer, Singapore. ISBN: 978-981-16-9033-4

- 7 **S. Behera**, D. Mohapatra, A. Kaushal, S. Sahu, (2022). Very Short-Term Photovoltaic Power Forecast by Multi-input Long Short-Term Memory Network. In: S. Dehuri, B.S. Prasad Mishra, P.K. Mallick, S.B. Cho, (eds) Biologically Inspired Techniques in Many Criteria Decision Making. Smart Innovation, Systems and Technologies, vol 271, pp. 243-252. Springer, Singapore. ISBN: 978-981-16-8739-6
- 8 S.S. Barah, S. Pati, **S. Behera**, (2022). A Sub-multilevel Topology of 7-Level Cascaded H-Bridge Inverter. In: S. Mekhilef, R.N, Shaw, P. Siano, (eds) Innovations in Electrical and Electronic Engineering. ICEEE 2022. Lecture Notes in Electrical Engineering, vol 894, pp. 355-364, Springer, Singapore. ISBN: 978-981-19-1677-9

### **Seminar / Symposia / Short term Course organized**

- 1 National Conference Recent Advances on Renewable Energy & Control (RAREC-2015), 11<sup>th</sup> -12<sup>th</sup> April 2015
- 2 Proposed and worked as session chair for special session: Power & Energy Systems 4th International Conference on Computational Intelligence in Data Mining (ICCIDM-2017) (Springer) from 11<sup>th</sup>-12<sup>th</sup> Nov, 2017.
- 3 AICTE STTP Applications of Soft Computing in Power System (ASCPS) (Coordinator) 2<sup>nd</sup> -7<sup>th</sup> Dec 2019.
- 4 STTP MSES (Coordinator) 28<sup>th</sup> Oct – 02<sup>nd</sup> Nov, 2019 (World bank TEQIP-III).

### **Extra Responsibility**

#### **U for University, D for Department**

#### **Current Responsibility**

- 2023-24 PIC, Composting Machine U
- 2023-24 Faculty Advisor, Sustainable Energy, (Team of Sustainability). U
- 2023-24 PIC, Skill Competitions and Nua O Skills
- 2023-24 Coordinator, NEP D
- 2023-24 NBA, Co-Coordinator U
- 2023-24 Professor In-Charge, CADEA Lab D
- 2023-24 PIC, Dept. Seminar Hall D
- 2023-24 AICTE Coordinator in Dept D
- 2023-24 Committee member Space Committee U
- 2023-24 Coordinator, Central Time Table U
- 2023-24 Member, DPC D

#### **Past Responsibility at VSSUT**

##### *University Level:*

Warden, Angira (Feb 2018- Feb 2020) and Vasundhara Hall of Residence (July 2019- Feb 2020)

Member, DRC of Ph.D. Scholar of other dept/ internal, Involved in disciplined organization of Annual Function, Annual Sports, UG admission in different academic years, Member- Anti Ragging Committee (Sep 2012- Sep 2020).

##### *Department Level:*

Member BOS, Time-table Co-coordinator Dept. of EEE (March 2020-July 2022), PIC Electrical Computation Lab (Jan 2016 to Jan 2020), Coordinator for preparation of new syllabus for B. Tech, EEE from AY 19-20

## **Past Responsibility at WESCO**

As Assistant Manager was administrative charge of Subdivision Office for Commercial and revenue collection matters, Sundargarh and worked in Corporate Office for preparation of Cost Data

As Deputy Manager worked as Technical Assistant of Superintending Engineer, Bolangir

As Manager, Bolangir Division administrative head of division

## **Any Other Distinction**

### **Community welfare/Student welfare**

- 2023-24 Initiated Alumni ConnEEEct, an online monthly seminar for networking with alumni and career guidance by Alumni for students under EEE Society
- 2023-24 Mentor for students in Team of Sustainability under Idea and Innovation Club
- 2023-24 Mentor for students from VSSUT for graduate internship AWADH, Chanakya from IIT, Ropar
- 2018-19 Conducted STC MSEM, Coordinator Students Course on Software at VSSUT
- 2021-22 Career Guidance During Radiance, VSSUT, Burla
- 2017-18 Relevance of moral education in present scenario Invited talk in LLGH School, Sambalpur (School Students)
- Continued in different years Helped in getting vaccination available information during CoVID 19 Community/ Student
- Continued in different years Participated in Cleanliness drive, Fit-India Plogging, Trainer for Student Solar Ambassador Community/ Student
- Continued in different years Invited Lecture in Diploma Schools, short term courses Community/ Student
- Study tour/ Industrial visit Student

### **Continued in different years as reviewer of International Journals such as**

- **Elsevier:** Energy Conversion and Management, Energy, Journal of Network and Computer Applications, Computers & Operations Research, International Journal of Numerical Modelling: Electronic Networks, Devices and Fields
- **Taylor & Francis:** Electric Power Components and Systems, International Journal of Control, International Journal of Ambient Energy
- **SAGE:** Transactions of the Institute of Measurement and Control, Sustainable Cities and Society,
- **Emerald:** Circuit World, World Journal of Engineering
- **IGI Global:** International Journal of Applied Metaheuristic Computing
- **De Gruyter:** International Journal of Emerging Electric Power Systems
- **Wiley:** Optimal Control, Applications and Methods, Energy Systems
- **Inderscience:** International Journal of Automation and Control
- **AIP:** Journal of Renewable And Sustainable Energy

**Continued in different years as reviewer of IEEE International Conferences.**

**Besides this, many STP/ FDP/MOOC/ NPTEL courses/ Industrial Training have been successfully attended to upgrade teaching learning and research.**

**At WESCO:**

Prepared a booklet **Cost Data** for easy estimation of cost of lines and substation and bill of materials from LT to 33 KV line and Substations in 2004 for uniformity in following in all units of WESCO.

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**Present Address:**

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Country: India.

**Permanent Address:**

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C/O Dr. N.K. Behera, At. P.O.: Palace Line, Dist: Bolangir, PIN: 767001 State: Odisha, Country:  
India.