



**Dr. Biswanath Dekaraja**

Designation: Professor

Qualification: Ph.D.

Email: [biswanath.ele@aec.ac.in](mailto:biswanath.ele@aec.ac.in) , [biswaju10@gmail.com](mailto:biswaju10@gmail.com)

Phone No.: +919401320341

Area of Interest: Power System Control and Operation, Soft computing application in power system, Modelling of Energy Storage Device and Renewable Source, Microgrids.

**Publication:**

**International Journals:**

- [1] Dekaraja, B., & Saikia, L. C. (2022b). Impact of RFB and PLL Dynamic on combined ALFC-AVR regulation of Multiarea multisource system under deregulated environment with AC/accurate HVDC link. *IETE Journal of Research*, 69(12), 9040–9064. doi:10.1080/03772063.2022.2081626
- [2] Dekaraja, B., & Saikia, L. C. (2022a). Impact of electric vehicles and realistic dish-stirling solar thermal system on combined voltage and frequency regulation of multiarea hydrothermal system. *Energy Storage*, 4(6). doi:10.1002/est2.370
- [3] Dekaraja, B., & Saikia, L. C. (2022b). Impact of energy storage and flexible alternating current transmission devices in combined voltage and frequency regulation of multiarea Multisource Interconnected Power System. *Energy Storage*, 4(3). <https://doi.org/10.1002/est2.317>
- [4] Dekaraja, B., & Saikia, L. C. (2021). Combined voltage and frequency control of Multiarea multisource system using CPDN-PIDN controller. *IETE Journal of Research*, vol. 69, no. 9, pp. 6457–6472. doi:10.1080/03772063.2021.2004456
- [5] Dekaraja, B., & Saikia, L. C. (2022a). Coordinated control of ALFC-AVR in Multiarea multisource systems integrated with VRFB and TCPS using CFPDN-PIDN controller. *IETE Journal of Research*, vol. 69, no. 12, pp. 8999–9015. doi:10.1080/03772063.2022.2073276
- [6] Dekaraja, B., & Saikia, L. C. (2021b). Performance of redox flow battery in combined frequency and voltage control of multi-area multi-source system using CFOPDN-FOPIDN controller. *International Transactions on Electrical Energy Systems*, vol. 31, no. 3. doi:10.1002/2050-7038.12782
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- [8] Dekaraja, B., Saikia, L. C., & Ramoji, S. K. (2023b). Performance amelioration of concerted voltage-frequency regulation of multiarea hybrid power systems under restructured pattern using electric vehicles and Interline Power Flow Controller. *Energy Storage*, vol. 5, no. 7. doi:10.1002/est2.457
- [9] Dekaraja, B., Saikia, L. C., Ramoji, S. K., Behera, M. K., & Bhagat, S. K. (2022). Performance analysis of diverse energy storage on combined ALFC and AVR control of

Multiarea multiunit system with AC/HVDC interconnection. *IFAC-PapersOnLine*, vol. 55, no.1, pp. 479–485. doi:10.1016/j.ifacol.2022.04.079

- [10] Bhagat, S. K., Saikia, L. C., Babu, N. R., Ramoji, S. K., Raja, D., & Behera, M. K. (2022). The application of various PID controllers and the effect of AHVDC and DSTS on dynamics responses in a multi-area AGC. *IFAC-PapersOnLine*, vol. 55, no. 1, pp. 473–478. doi:10.1016/j.ifacol.2022.04.078
- [11] Behera, M.K., Saikia, L. C., Ramoji, S. K., Dekaraja, B., & Bhagat, S. K. (2022). A novel decentralized FO voltage and current control scheme for voltage and frequency regulation in inverter dominated islanded Microgrids Using Improved Droop Control. *IFAC-PapersOnLine*, vol. 55, no. 1, pp. 679–684. doi:10.1016/j.ifacol.2022.04.111

## International Conferences

- [1] Dekaraja, B., Saikia, L. C., Ramoji, S. K., Behera, M. K., & Bhagat, S. K. (2022a). Impact of RFB and HVDC link on combined ALFC-AVR studies of a GTPP integrated hydro-thermal systems using a cascade fuzzy PD-tid controller. *2022 4th International Conference on Energy, Power and Environment (ICEPE)*, 1–6. doi:10.1109/icepe55035.2022.9798067
- [2] Dekaraja, B., Baruah, M., & Saikia, L. C. (2022). Impact of RFB and HVDC link on AGC of multiarea diverse source system under restructured environment. *2022 IEEE Delhi Section Conference (DELCON)*, 1–8. doi:10.1109/delcon54057.2022.9753491
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- [5] B. Dekaraja, L. C. Saikia, S. K. Ramoji, S. Bhagawt, M. Behra, G. Mesfin, “AGC of hybrid multiarea power systems using AC-AHVDC links,” *2023 IEEE Guwahati Subsection Conference (GCON)*, 2023. doi:10.1109/gcon58516.2023.10183539
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- [9] Dekaraja, B., & Saikia, L. C. (2023a). AGC performance improvement of two-area hybrid power systems using PIDD<sup>F</sup> controller. *2023 IEEE Silchar Subsection Conference (SILCON)*, 1–7. doi:10.1109/silcon59133.2023.10404749
- [10] Dekaraja, B., & Saikia, L. C. (2023a). AGC of two-area deregulated power systems using PSO optimized MFOPIDD controller. *2023 IEEE Silchar Subsection Conference (SILCON)*, 1–6. doi:10.1109/silcon59133.2023.10404956

- [11] S. K. Ramoji, L. Chandra Saikia, B. Dekaraja, M. K. Behera, S. Kumar Bhagat and N. R. Babu, "Optimal Unified Frequency and Voltage Control of Multi-area Multi-source Power System using the Cascaded PIDN-TIDF Controller," *2020 IEEE 17th India Council International Conference (INDICON)*, 2020, pp. 1-6, doi: 10.1109/INDICON49873.2020.9342228.
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- [20] S. K. Bhagat et al., "Effect of various FACTS Devices and HVDC link on Multi-Area Power System Utilizing 2DOF-TIDN Controller," *2022 4th International Conference on Energy, Power and Environment (ICEPE)*, 2022, pp. 1-6, doi: 10.1109/ICEPE55035.2022.9798097.
- [21] N. R. Babu, L. Chandra Saikia, S. K. Bhagat, S. Kumar Ramoji, B. Dekaraja and M. K. Behera, "Optimal Location of AC-HVDC Tie-line in a Multi-Area LFC System Incorporated with Renewable and ESD Considering CA Optimized PI-TID Cascade Controller," *2020 IEEE 17th India Council International Conference (INDICON)*, 2020, pp. 1-6, doi: 10.1109/INDICON49873.2020.9342506.
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- [24] M. K. Behera, L. C. Saikia, S. K. Ramoji, B. Dekaraja, S. K. Bhagat and N. R. Babu, "A Modified Droop Control for AC Microgrids to Improve Dynamic Performance with Linear and Unbalanced Loads," *2021 International Conference on Computational Performance Evaluation (ComPE)*, 2021, pp. 773-779, doi: 10.1109/ComPE53109.2021.9752275.
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- [29] Bhagat, S. K., Saikia, L. C., Behera, M. K., Ramoji, S. K., Dekaraja, B., & Meseret, G. M. (2023). Effect of several mayfly optimized tilt controllers in AGC of Res Integrated System. *2023 IEEE International Conference on Energy Technologies for Future Grids (ETFG)*, 1–6. doi:10.1109/etfg55873.2023.10407314

### **Book Chapters:**

- [1] Dekaraja, B., Saikia, L. C., & Babu, N. R. (2022). Redox flow battery support for combined ALFC-AVR control of multiarea thermal system incorporating renewable energy sources. *Algorithms for Intelligent Systems*, 97–110. doi:10.1007/978-981-16-6893-7\_10
- [2] Dekaraja, B., Saikia, L. C., Ramoji, S. K., Babu, N. R., Bhagat, S. K., & Behera, M. K. (2021). Modeling and simulation of a multi-area hydro-thermal interconnected system using fopiu controller for integrated voltage and Frequency Control. *Smart Innovation, Systems and Technologies*, 275–285. doi:10.1007/978-981-15-9829-6\_21
- [3] Dekaraja, B., Saikia, L. C., Ramoji, S. K., Behera, M. K., Bhagat, S. K., Saha, A., & Babu, N. R. (2022c). Impact of electric vehicles and wind turbine in combined ALFC and AVR studies using AFA-optimized CFPD-PIDN controller. *Smart Innovation, Systems and Technologies*, 233–253. doi:10.1007/978-981-19-2412-5\_14
- [4] Babu, N. R., Saikia, L. C., Bhagat, S. K., & Dekaraja, B. (2022). Optimal location of IPFC on LFC studies considering Pi-TIDN controller and RT-Lab. *Algorithms for Intelligent Systems*, 81–95. doi:10.1007/978-981-16-6893-7\_9
- [5] Ramoji, S. K., Saikia, L. C., Dekaraja, B., Babu, N. R., Bhagat, S. K., & Behera, M. K. (2021). Modeling and simulation of an isolated CCGT and dsts plant using BWO optimized piIdmu controller for amalgamated control of voltage and frequency. *Smart Innovation, Systems and Technologies*, 297–309. doi:10.1007/978-981-15-9829-6\_23

- [6] Ramoji, S. K., Saikia, L. C., Dekaraja, B., Behera, M. K., Bhagat, S. K., Babu, N. R., & Saha, A. (2022a). Conflated voltage–frequency control of Multi-area Multi-source system using fuzzy tid controller and its real-time validation. *Smart Innovation, Systems and Technologies*, 277–294. doi:10.1007/978-981-19-2412-5\_16
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- [9] Bhagat, S. K., Saikia, L. C., Raju, D. K., Babu, N. R., Ramoji, S. K., Dekaraja, B., & Behra, M. K. (2021). Maiden application of hybrid particle swarm optimization with genetic algorithm in AGC studies considering optimized TIDN controller. *Smart Innovation, Systems and Technologies*, 335–346. doi:10.1007/978-981-15-9829-6\_26
- [10] Behera, Manoj Kumar, Saikia, L. C., Ramoji, S. K., Dekaraja, B., Saha, A., Bhagat, S. K., & Babu, N. R. (2022a). A QSSA optimized fractional-order controller for improving transient response in AC autonomous microgrid VSC System. *Smart Innovation, Systems and Technologies*, 255–275. doi:10.1007/978-981-19-2412-5\_15
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