REFERENCES

[1] P.S. Georgilakis and N.D. Hatziargyriou, "Optimal distributed generation placement in power distribution networks: Models, methods, and future research," *IEEE Transactions on Power Systems,* vol. 28, no. 3, pp. 3420–3428, 2013.

[2] K.B.J. Anuradha, U. Jayatunga, and H.Y.R. Perera, "Voltage-Loss Sensitivity Based Approach for Optimal DG Placement in Distribution Networks," *2019 IEEE International Conference on Industrial and Information Systems (ICIIS),* 2019.

[3] L. F. Ochoa, C. J. Dent, and G. P. Harrison, "Distribution network capacity assessment: Variable DG and active networks," *IEEE Transactions on Power Systems*, vol. 25, no. 1, pp. 87–95, Feb. 2010.

[4] C. Wang and M. Nehrir, "Analytical Approaches for Optimal Placement of Distributed Generation Sources in Power Systems," *IEEE Transactions on Power Systems,* vol. 19, no. 4, pp. 2068-2076, 2004.

[5] G. Celli, E. Ghiani, S. Mocci, and F. Pilo, "A multiobjective evolutionary algorithm for the sizing and siting of distributed generation," *IEEE Transactions on Power Systems,* vol. 20, no. 2, pp. 750–757, 2005.

[6] S.H. Lee and J.W. Park, "Selection of optimal location and size of multiple distributed generations by using kalman filter algorithm," *IEEE Transactions on Power Systems,* vol. 24, no. 3, pp. 1393–1400, 2009.

[7] G.P. Harrison, A. Piccolo, P. Siano and A.R. Wallace "Hybrid GA and OPF evaluation of network capacity for distributed generation connections," *Electric Power Systems Research,* vol. 78, no. 3, pp. 392– 398, 2008.

[8] L. Wang and C. Singh "Reliability-Constrained Optimum Placement of Reclosers and Distributed Generators in Distribution Networks Using an Ant Colony System Algorithm," *IEEE Transactions on Systems, Man, and Cybernetics, Part C (Applications and Reviews),* vol. 38, no. 6, pp. 757-764, 2008.

[9] D. Singh, D. Singh, and K.S. Verma, " Multiobjective Optimization for DG Planning With Load Models," *IEEE Transactions on Power Systems,* vol. 24, no. 1, pp. 427-436, 2009.

[10] P. Prakash and D. K. Khatod, "Optimal sizing and siting techniques for distributed generation in distribution systems: A review," *Renewable and Sustainable Energy Reviews*, vol. 57, pp. 111–130, 2016.

[11] D.H. Popovic, J. Greatbanks, M. Begovic, and A. Pregelj, "Placement of distributed generators and reclosers for distribution network security and reliability," *International Journal of Electrical Power Energy Systems,* vol. 27, no. 5-6, pp. 398-408, 2005.

[12] G. Carpinelli, G. Celli, F. Pilo, and A. Russo, "Embedded generation planning under uncertainty including power quality issues," *European Transactions on Electrical Power*, vol. 13, no. 6, pp. 381–389, 2003.

[13] S. Kotamarty, S. Khushalani, and N. Schulz, " Impact of distributed generation on distribution contingency analysis," Electric Power Systems Research, vol. 78, no. 9, pp. 1537-1545, 2008.

[14] A. Keane and M. O'Malley, "Optimal allocation of embedded generation on distribution networks," *IEEE Transactions on Power Systems*, vol. 20, no.3, pp. 1640–1646, Aug. 2005.

[15] A. Keane and M. O'Malley, "Optimal utilization of distribution networks for energy harvesting," *IEEE Transactions on Power Systems*, vol. 22, no. 1, pp. 467–475, Feb. 2007.

[16] B. Singh, V. Mukherjee, and P. Tiwari, "A survey on impact assessment of DG and FACTS controllers in power systems," *Renewable and Sustainable Energy Reviews*, vol. 42, pp. 846–882, 2015.

[17] Y. M. Atwa and E. F. El-Saadany, "Probabilistic approach for optimal allocation of wind-based distributed generation in distribution systems," *IET Renewable Power Generation.*, vol. 5, no. 1, pp. 79–88, Jan. 2011.

[18] S. Porkar, P. Poure, A. Abbaspour-Tehrani-Fard, and S. Saadate, "Optimal allocation of distributed generation using a two-stage multi-objective mixed-integer-nonlinear programming," *European Transactions on Electrical Power*, vol. 21, no. 1, pp. 1072–1087, Jan. 2011.

[19] A. Kumar and W. Gao, "Optimal distributed generation location using mixed integer non-linear programming in hybrid electricity markets," *IET Generation, Transmission and Distribution*, vol. 4, no. 2, pp. 281–298, Feb. 2010.

[20] W. El-Khattam, Y. G. Hegazy, and M. M. A. Salama, "An integrated distributed generation optimization model for distribution system planning," *IEEE Transactions on Power Systems,* vol. 20, no. 2, pp. 1158–1165, May 2005.

[21] R.S.A. Abri, E.F. El-Saadany, and Y.M. Atwa,"Optimal Placement and Sizing Method to Improve the Voltage Stability Margin in a Distribution System Using Distributed Generation," *IEEE Transactions on Power Systems,* vol. 28, no. 1, pp. 326-334, 2013.

[22] S. Kaur, G. Kumbhar, and J. Sharma, "A MINLP technique for optimal placement of multiple DG units in distribution systems," *International Journal of Electrical Power & Energy Systems*, vol. 63, pp. 609–617, 2014.

[23] Y. M. Atwa, E. F. El-Saadany, M. M. A. Salama, and R. Seethapathy, "Optimal renewable resources mix for distribution system energy loss minimization," *IEEE Transactions on Power Systems*, vol. 25, no. 1, pp. 360–370, Feb. 2010.

[24] C. J. Dent, L. F. Ochoa, and G. P. Harrison, "Network distributed generation capacity analysis using OPF with voltage step constraints," *IEEE Trans. Power Syst.*, vol. 25, no. 1, pp. 296–304, Feb. 2010.

[25] L. F. Ochoa and G. P. Harrison, "Minimizing energy losses: Optimal accommodation and smart operation of renewable distributed generation," *IEEE Trans. Power Syst.*, vol. 26, no. 1, pp. 198–205, Feb. 2011.

[26] P. N. Vovos, G. P. Harrison, A. R.Wallace, and J.W. Bialek, "Optimal power flow as a tool for fault level-constrained network capacity analysis," *IEEE Trans. Power Syst.*, vol. 20, no. 2, pp. 734–741, May 2005.

[27] M. F. AlHajri, M. R. AlRashidi, and M. E. El-Hawary, "Improved sequential quadratic programming approach for optimal distribution generation deployments via stability and sensitivity analyses," *Electrical Power Component Systems*, vol. 38, no. 14, pp. 1595–1614, Dec. 2010.

[28] R. Wang, P. Wang, and G. Xiao, "A robust optimization approach for energy generation scheduling in microgrids," *Energy Conversion and Management*, vol. 106, pp. 597–607, 2015.

[29] N. Khalesi, N. Rezaei, and M.-R. Haghifam, "DG allocation with application of dynamic programming for loss reduction and reliability improvement," *International Journal of Electrical Power & Energy Systems*, vol. 33, no. 2, pp. 288–295, Feb. 2011.

[30] O. Gandhi, C.D. Rodriguez-Gallegos, and D. Srinivasan, " Review of optimization of power dispatch in renewable energy system," *2016 IEEE Innovative Smart Grid Technologies - Asia (ISGT-Asia),* 2016.

[31] R. A. Jabr and B. C. Pal, "Ordinal optimization approach for locating and sizing of distributed generation," *IET Generation, Transmission &, Distribution*, vol. 3, no. 8, pp. 713–723, Aug. 2009.

[32] S. Kansal, B. Sai, B. Tyagi, and V. Kumar, "Optimal placement of wind-based generation in distribution networks," *IET Conference on Renewable Power Generation (RPG 2011)*, 2011.

[33] R. Jabr and B. Pal, "Ordinal optimization approach for locating and sizing of distributed generation," *IET Generation, Transmission & Distribution*, vol. 3, no. 8, pp. 713–723, Jan. 2009.

[34] P. Vovos and J. Bialek, "Direct incorporation of fault level constraints in optimal power flow as a tool for network capacity analysis," *IEEE Trans. Power Syst.*, vol. 20, no. 4, pp. 2125–2134, Nov. 2005.

[35] N. S. Rau and Y.-H. Wan, "Optimum location of resources in distributed planning," *IEEE Transactions on Power Systems*, vol. 9, no. 4, pp. 2014–2020, Nov. 1994.

[36] S. Sivanandam and S. Deepa, *Introduction to Genetic Algorithms*. Springer, 2008.

[37] J.-H. Teng, S.-W. Luan, D.-J. Lee, and Y.-Q. Huang, "Optimal Charging/Discharging Scheduling of Battery Storage Systems for Distribution Systems Interconnected With Sizeable PV Generation Systems," *IEEE Transactions on Power Systems*, vol. 28, no. 2, pp. 1425–1433, 2013.

[38] D. Singh, D. Singh, and K.-S. Verma, "Multiobjective optimization for DG planning with load models," *IEEE Transactions on Power Systems,* vol. 24, no. 1, pp. 427–436, Feb. 2009.

[39] R. K. Singh and S. K. Goswami, "Optimum siting and sizing of distributed generations in radial and networked systems," *Electrical Power Component Systems,* vol. 37, no. 2, pp. 127–145, Jan. 2009.

[40] C. L. T. Borges and D. M. Falcão, "Optimal distributed generation allocation for reliability, losses, and voltage improvement," *International Journal of Electrical Power & Energy Systems,* vol. 28, no. 6, pp. 413–420, Jul. 2006.

[41] J.-H. Teng, Y.-H. Liu, C.-Y. Chen, and C.-F. Chen, "Value-based distributed generator placements for service quality improvements," *International Journal of Electrical Power & Energy Systems,* vol. 29, no. 3, pp. 268–274, Mar. 2007.

[42] J. M. López-Lezama, J. Contreras, and A. Padilha-Feltrin, "Location and contract pricing of distributed generation using a genetic algorithm," *International Journal of Electrical Power & Energy Systems,* vol. 36, no. 1, pp. 117–126, Mar. 2012.

[43] K.-H. Kim, Y.-J. Lee, S.-B. Rhee, S.-K. Lee, and S.-K. You, "Dispersed generator placement using fuzzy-GA in distribution systems," *IEEE Power Engineering Society Summer Meeting*, Jul. 2002, pp. 1148–1153.

[44] L. F. Ochoa, A. Padilha-Feltrin, and G. P.Harrison, "Time-series-based maximization of distributed wind power generation integration," *IEEE Transactions on Energy Conversion,* vol. 23, no. 3, pp. 968–974, Sep. 2008.

[45] B. Yuce, Y. Rezgui, and M. Mourshed, "ANN-GA smart appliance scheduling for optimized energy management in the domestic sector," *Energy and Buildings*, vol. 111, pp. 311–325, 2016.

[46] R.-H. Liang and J.-H. Liao, "A Fuzzy-Optimization Approach for Generation Scheduling with Wind and Solar Energy Systems," *IEEE Transactions on Power Systems*, vol. 22, no. 4, pp. 1665–1674, 2007.

[47] R. Mehta, D. Srinivasan, A. M. Khambadkone, J. Yang, and A. Trivedi, "Smart Charging Strategies for Optimal Integration of Plug-in Electric Vehicles within Existing Distribution System Infrastructure," *IEEE Transactions on Smart Grid*, vol. 3053, no. c, pp. 1–1, 2016.

[48] J. Kennedy and R. Eberhart, "Particle swarm optimization," *Neural Networks, 1995. Proceedings., IEEE International Conference on*, vol. 4, pp. 1942–1948 vol.4, 1995.

[49] C. D. Rodriguez-Gallegos, K. Rahbar, M. Bieri, O. Gandhi, T. Reindl, and S. K. Panda, "Optimal PV and storage sizing for PV-battery-diesel hybrid systems," *IECON 2016 - 42nd Annual Conference of the IEEE Industrial Electronics Society*, 2016.

[50] A. M. El-Zonkoly, "Optimal placement of multi-distributed generation units including different load models using particle swarm optimization," *IET Generation, Transmission & Distribution*, vol. 5, no. 7, pp. 760–771, Jul. 2011.

[51] V.R. Pandi, H.H. Zeineldin, and W. Xiao, " Determining Optimal Location and Size of Distributed Generation Resources Considering Harmonic and Protection Coordination Limits," *IEEE Transactions on Power Systems,* vol. 28, no. 2, pp. 1245-1254, 2013.

[52] M. Gomez-Gonzalez, A. López, and F. Jurado, "Optimization of distributed generation systems using a new discrete PSO and OPF," *Electrical Power Systems Resources*, vol. 84, no. 1, pp. 174–180, Mar. 2012.

[53] M. H. Moradi and M. Abedini, "A combination of genetic algorithm and particle swarm optimization for optimal DG location and sizing in distribution systems," *International Journal of Electrical Power & Energy Systems*, vol. 34, no. 1, pp. 66–74, Jan. 2012.

[54] W. Prommee and W. Ongsakul, "Optimal multiple distributed generation placement in microgrid system by improved reinitialized social structures particle swarm optimization," *European Transactions on Electrical Power*, vol. 21, no. 1, pp. 489–504, Jan. 2011.

[55] B. Zhao, C. Guo, and Y. Cao, "A Multiagent-Based Particle Swarm Optimization Approach for Optimal Reactive Power Dispatch," *IEEE Transactions on Power Systems*, vol. 20, no. 2, pp. 1070–1078, 2005.

[56] Z. Ziadi, S. Taira, M. Oshiro, and T. Funabashi, "Optimal power scheduling for smart grids considering controllable loads and high penetration of photovoltaic generation," *IEEE Transactions on Smart Grid*, vol. 5, no. 5, pp. 2350–2359, 2014.

[57] C. D. Rodriguez-Gallegos, M. S. Alvarez-Alvarado, O. Gandhi, D. Yang, W. Zhang, T. Reindl, and S. K. Panda, "Placement and sizing optimization for PV-battery-diesel hybrid systems," *2016 IEEE International Conference on Sustainable Energy Technologies (ICSET)*, 2016.

[58] L. Wang and C. Singh, "Reliability-Constrained Optimum Placement of Reclosers and Distributed Generators in Distribution Networks Using an Ant Colony System Algorithm," *IEEE Transactions on Systems, Man, and Cybernetics, Part C (Applications and Reviews)*, vol. 38, no. 6, pp. 757–764, 2008.

[59] F. S. Abu-Mouti and M. E. El-Hawary, "Optimal distributed generation allocation and sizing in distribution systems via artificial bee colony algorithm," *IEEE Transactions on Power Delivery,* vol. 26, no. 4, pp. 2090–2101, Oct. 2011.

[60] J. A. Martinez and G. Guerra, "A Parallel Monte Carlo Method for Optimum Allocation of Distributed Generation," *IEEE Transactions on Power Systems*, vol. 29, no. 6, pp. 2926–2933, 2014.

[61] Z. Liu, F. Wen, and G. Ledwich, "Optimal Siting and Sizing of Distributed Generators in Distribution Systems Considering Uncertainties," *IEEE Transactions on Power Delivery*, vol. 26, no. 4, pp. 2541–2551, 2011.

[62] F. Glover and M. Laguna, *Tabu Search*. Boston, MA: Springer US, 1997.

[63] K. Nara, Y. Hayashi, K. Ikeda, and T. Ashizawa, "Application of tabu search to optimal placement of distributed generators," *2001 IEEE Power Engineering Society Winter Meeting. Conference Proceedings (Cat. No.01CH37194).*

[64] M.E.H. Golshan and S.A. Arefifar "Optimal allocation of distributed generation and reactive sources considering tap positions of voltage regulators as control variables," *European Transactions on Electrical Power,* vol. 17, no. 3, pp. 219–239, 2007.

[65] C. Novoa and T. Jin, "Reliability centered planning for distributed generation considering wind power volatility," *Electrical Power Systems Resources*, vol. 81, no. 8, pp. 1654–1661, Aug. 2011.

[66] A. Takeuchi, T. Hayashi, Y. Nozaki, and T. Shimakage, "Optimal scheduling using metaheuristics for energy networks," *IEEE Transactions on Smart Grid*, vol. 3, no. 2, pp. 968–974, 2012.

[67] T. Sousa, H. Morais, Z. Vale, P. Faria, and J. Soares, "Considering Vehicle-to-Grid: A Simulated Annealing Approach," *IEEE Transactions on Smart Grid*, vol. 3, no. 1, pp. 535–542, 2012.

[68] L.D.Arya, A. Koshti, and S. C. Choube, "Distributed generation planning using differential evolution accounting voltage stability consideration," *International Journal of Electrical Power & Energy Systems,* vol. 42, no. 1, pp. 196–207, Nov. 2012.

[69] H.L. Willis, "Analytical methods and rules of thumb for modeling DG-distribution interaction," *IEEE Power Engineering Society Summer Meeting,* vol. 3, 2000, pp.1643–1644.

[70] D.Q. Hung and N. Mithulananthan, "Multiple distributed generator placement in primary distribution networks for loss reduction," *IEEE Transactions on Industrial Electronics,* vol. 60, no. 4, pp. 1700–1708, 2013.

[71] N. Rau and Y.H. Wan, "Optimum location of resources in distributed planning," *IEEE Transactions on Power Systems,* vol. 9, no. 4, pp. 2014– 2020, 1994.

[72] P. Seshadri, and A. Patton "Bus voltage sensitivity: an instrument for pricing voltage control service," *1999 IEEE Power Engineering Society Summer Meeting. Conference Proceedings (Cat. No.99CH36364),* pp. 703–707, 1999.

[73] A. Venkataramana, J. Carr and R.S. Ramshaw "Optimal Reactive Power Allocation," *IEEE Transactions on Power Systems,* vol. 2, no. 1, pp. 138–144, 1987.

[74] J. Sardi, and N. Mithulananthan and D.Q. Hung, "A loss sensitivity factor method for locating ES in a distribution system with PV units,"*2015 IEEE PES Asia-Pacific Power and Energy Engineering Conference (APPEEC),2015.*

[75] H. Saadat "Power Flow Analysis," Power System Analysis, Boston, USA:McGraw Hill, Inc., 2002, pp. 232–234.

[76] N. M. Nor, A. Ali, T. Ibrahim, and M. F. Romlie, "Battery Storage for the Utility-Scale Distributed Photovoltaic Generations," *IEEE Access*, vol. 6, pp. 1137–1154, 2018.

[77] N. Acharya, P. Mahat, and N. Mithulananthan, "An analytical approach for DG allocation in primary distribution network," *International Journal of Electrical Power & Energy Systems*, vol. 28, no. 10, pp. 669–678, 2006.

[78] T.R. Mendonca, M.E. Collins, M.F. Pinto, and T.C. Green, " Decentralisation of power flow solution for facilitating active network management," CIRED - Open Access Proceedings Journal, vol. 2017, no. 1, pp. 1669-1672, 2017.

[79] Y. Yang, S. Bremner, C. Menictas, K. Meng, Z. Y. Dong, and M. Kay, "An economic optimization for BESS sizing in a hybrid PV and wind power plant," *2017 IEEE Innovative Smart Grid Technologies - Asia (ISGT-Asia)*, 2017.

[80] A. Takeuchi, T. Hayashi, Y. Nozaki, and T. Shimakage, "Optimal scheduling using metaheuristics for energy networks," *IEEE Transactions on Smart Grid*, vol. 3, no. 2, pp. 968–974, 2012.

[81] E. Kuznetsova, Y. F. Li, C. Ruiz, and E. Zio, "An integrated framework of agent-based modelling and robust optimization for microgrid energy management," *Applied Energy*, vol. 129, pp. 70–88, 2014.

[82] L. Bitencourt, A. Schetinger, B. Borba, D. Dias, R. Maciel, and B. Dias, "Maximum PV Penetration Under Voltage Constraints Considering Optimal Sizing of BESS on Brazilian Secondary Distribution Network," *IEEE Latin America Transactions*, vol. 14, no. 9, pp. 4063–4069, 2016.

[83] X. Jiang, X. Zheng, G. Chen, and Y. Miao, "Optimization of BESS Locating and Sizing for the Gird under the Market Mechanism," *2018 International Conference on Power System Technology (POWERCON)*, 2018.

[84] E. I. Vrettos and S. A. Papathanassiou, "Operating Policy and Optimal Sizing of a High Penetration RES-BESS System for Small Isolated Grids," *IEEE Transactions on Energy Conversion*, vol. 26, no. 3, pp. 744–756, 2011.

[85] System control report on "Log Data" on 03/08/2018, Ceylon Electricity Board,2018

[86] Z. M. Salameh, B. S. Borowy, and A. R. A. Amin, "Photovoltaic module-site matching based on the capacity factors," *IEEE Transactions on Energy Conversion,* vol. 10, no. 2, pp. 326–332, Jun. 1995.

[87] "Long Term Generation Expansion Plan (2020-2039)", Ceylon Electricity Board,2019.

[88] W. D. A. S. Wijayapala, S. R. K. Gamage, and H. M. S. L. G. Bandara, "Determination of Capitalization Values for No Load Loss and Load Loss in Distribution Transformers," *Engineer: Journal of the Institution of Engineers, Sri Lanka*, vol. 49, no. 3, p. 11, 2016.