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Design A Simulation An Asymmetrical 11-level Inverter for Photovoltaic Applications

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Abstract: *Multilevel converters are becoming more popular as a way to get around the power rating restrictions in traditional power conversion techniques as a result of rising needs for power conversion technology. Although the focus of this work is on a novel asymmetrical construction of an 11-level inverter, a few comparisons with the traditional topological structure will be made. Limitations in the topologies of conventional types frequently relate to their complexity and volume. Further discussion will focus on how the 11-level inverter's asymmetrical topology deals with these constraints, gets around them, and reduces harmonic distortions for grid-tied PV systems. MATLAB software is used to design and simulate the suggested build. A THD value is produced through real-time simulation analysis of the proposed design.*

Keywords: 11-level Inverter, Photovoltaic Application, Electric Current, Power Electronics Circuits

REFERENCES

[1] Design and Simulation of an Asymmetrical 11-Level Inverter for Photovoltaic Applications", C. Tjokro and L. H. Pratomo, 2018 5th International Conference on Information Technology, Computer, and Electrical Engineering (ICITACEE), 2018, pp. 93-98, doi: 10.1109/ICITACEE.2018.8576943.
[2] J. M. Carrasco, L. G. Franquelo, J. T. Bialasiewicz, E. Galvan, R. C. P. Guisado, Ma. A. M. Prats, J. I. Leon, N. Moreno-Alfonso, "Power- Electronic Systems for the Grid Integration of Renewable Energy Sources: A Survey," IEEETransactions on Industrial Electronics, vol. 53, no. 4, pp. 1002-1016, June 2006.
[3] A. J. Morrison, "Global Demand Projections for Renewable Energy Resources," IEEE Canada Electrical Power Conference, 25-26 Oct. 2007, pp 537-542.
[4]J. Rodriguez, S. Bernet, Bin Wu, J. O. Pontt, S. Kouro, "Multilevel Voltage Source Converter Topologies for Industrial Medium-Voltage Drives, "IEEE Transactions on Industrial Electronics, vol. 54, no. 6, pp. 2930-2945, Dec. 2007.
[5] Rodrguez, J., Lai, J. S., & Peng, F. Z. (2002). Multilevel inverters: A survey of topologies, controls, and applications. IEEE Transactions on Industrial Electronics, 49(4), 724738.
[6] Sochor, P., & Akagi, H. (2016). Theoretical comparison in energy-balancing capability between star- and deltaconfigured modular multilevel cascade inverters for utilityscale photovoltaic systems. IEEE Transactions on Power Electronics, 31(3), 19801992.
[7] Rashid, M. H. (2016). Alternative Energy in Power Electronics.
[8] Sixing, D., Dekka, A., Wu, B., & Zargari, N. (2018). Modular Multilevel Converters. IEEE Press.
[9] Franquelo, L. G., Leon, J. I., & Vazquez, S. (2014). Power Electronics for Renewable Energy Systems, Transportation and Industrial Applications. Power Electronics for Renewable Energy Systems, Transportation and Industrial Applications.
[10] Mazzucchelli, M. (2014). Multilevel Converters For Industrial Applications.
[11] Duffey, C. K., & Stratford, R. P. (1989). Update of Harmonic Standard Ieee-519: IEEE Recommended Practices and Requirements for Harmonic Control in Electric Power Systems. IEEE Transactions on Industry Applications, 25(6), 10251034.
[12] Kahwa, A., Obara, H., & Fujimoto, Y. (2018). Design of 5- level Reduced Switches Count H-bridge Multilevel Inverter.

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[13] Pratomo, L. H., Wijaya, F. D., &Firmansyah, E. (2015). Impedance matching method in two-stage converters for single phase PV-grid system. Ijece, 5(August), 626635.
[14] Pratomo, L. H., Wijaya, F. D., &Firmansyah, E. (2015). Capacitor Bank Voltage Equilibrium for MPPT in Single-Phase Single-Stage Five-Level Inverter for PV-Grid Application. TELKOMNIKA Indonesian Journal of Electrical Engineering, 14(1), 6271. https://doi.org/10.11591/telkomnika.v14i1.7646
[15] HeruPratomo, L., Danang Wijaya, F. D., &Firmansyah, E. (2015). A simple strategy of controlling a balanced voltage capacitor in single phase five-level inverter. International Journal of Power Electronics and Drive Systems, 6(1), 160167. https://doi.org/10.11591/ijpeds.v6i1.7285
[16] Bhaskar, M. S., Padmanaban, S., Fedk, V., Blaabjerg, F., & Wheeler, P. (2017). Transistor clamped five-level inverter using non-inverting double reference single carrier PWM technique for photovoltaic applications. Proceedings - 2017 International Conference on Optimization of Electrical and Electronic Equipment, OPTIM 2017 and 2017 Intl Aegean Conference on Electrical Machines and Power Electronics, ACEMP 2017, (c), 777782. https://doi.org/10.1109/OPTIM.2017.7975063
[17] Nagar, S., Khan, S., & Singh, B. (n.d.). Performance of Cascaded Diode Bridge Integrated H- Bridge 13 Level Multilevel Inverter, 3, 37.

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