References

[1] H. Li, F. Z. Peng, and J. S. Lawler, "A natural ZVS medium-power bidirectional DC-DC converter with minimum number of devices," *IEEE Transactions on Industry Applications*, vol. 39, no. 2, pp. 525–535, 2003.

[2] H.-J. Chiu and L.-W. Lin, "A bidirectional dc–dc converter for fuel cell electric vehicle driving system," *IEEE Transactions on Power Electronics*, vol. 21, no. 4, pp. 950–958, 2006.

[3] T. Wu, Y. Chen, J. Yang, and C. Kuo, "Isolated Bidirectional Full-Bridge DC–DC Converter With a Flyback Snubber," *IEEE Transactions on Power Electronics*, vol. 25, no. 7, pp. 1915–1922, 2010.

[4] B. Zhao, Q. Yu, Z. Leng, and X. Chen, "Switched z-source isolated bidirectional dc–dc converter and its phase-shifting shoot-through bivariate coordinated control strategy," *IEEE Transactions on Industrial Electronics*, vol. 59, no. 12, pp. 4657–4670, 2012.

[5] T.-J. Liang, H.-H. Liang, S.-M. Chen, J.-F. Chen, and L.-S. Yang, "Analysis, design, and implementation of a bidirectional double-boost dc–dc converter," *IEEE Transactions on Industry Applications*, vol. 50, no. 6, pp. 3955–3962, 2014.

[6] K.-C. Tseng, S.-Y. Chang, and C.-A. Cheng, "Novel isolated bidirectional interleaved converter for renewable energy applications," *IEEE Transactions on Industrial Electronics*, vol. 66, no. 12, pp. 9278–9287, 2019.

[7] Y. E. Wu and Y. T. Ke, "A Novel Bidirectional Isolated DC-DC Converter With High Voltage Gain and Wide Input Voltage," *IEEE Transactions on Power Electronics*, vol. 36, no. 7, pp. 7973–7985, 2021.

[8] G. Wester and R. Middlebrook, "Low-frequency characterization of switched dc-dc converters," *IEEE Transactions on Aerospace and Electronic Systems*, vol. AES-9, no. 3, pp. 376–385, 1973.

[9] C. C. Lin, L. S. Yang, and G. W. Wu, "Study of a non-isolated bidirectional DC–DC converter," *IET Power Electronics*, vol. 6, no. 1, pp. 30–37, 2013.

[10] S. Xiong and S.-C. Tan, "Cascaded high-voltage-gain bidirectional switched-capacitor dc–dc converters for distributed energy resources applications," *IEEE Transactions on Power Electronics*, vol. 32, no. 2, pp. 1220–1231, 2017.

[11] Y. Zhang, Y. Gao, J. Li, and M. Sumner, "Interleaved switched-capacitor bidirectional dc-dc converter with wide voltage-gain range for energy storage systems," *IEEE Transactions on Power Electronics*, vol. 33, no. 5, pp. 3852–3869, 2018.

[12] H. Bahrami, S. Farhangi, H. Iman-Eini, and E. Adib, "A New Interleaved Coupled-Inductor Nonisolated Soft-Switching Bidirectional DC-DC Converter with High Voltage Gain Ratio," *IEEE Transactions on Industrial Electronics*, vol. 65, no. 7, pp. 5529–5538, 2018.

[13] S. M. P., M. Das, and V. Agarwal, "Design and development of a novel high voltage gain, high-efficiency bidirectional dc–dc converter for storage interface," *IEEE Transactions on Industrial Electronics*, vol. 66, no. 6, pp. 4490–4501, 2019.

[14] H.-S. Lee and J.-J. Yun, "High-efficiency bidirectional buck–boost converter for photovoltaic and energy storage systems in a smart grid," *IEEE Transactions on Power Electronics*, vol. 34, no. 5, pp. 4316–4328, 2019.

[15] Z. Yan, J. Zeng, W. Lin, and J. Liu, "A novel interleaved nonisolated bidirectional dc–dc converter with high voltage-gain and full-range zvs," *IEEE Transactions on Power Electronics*, vol. 35, no. 7, pp. 7191–7203, 2020.

[16] R. Faraji, L. Ding, T. Rahimi, H. Farzanehfard, H. Hafezi, and M. Maghsoudi, "Efficient multi-port bidirectional converter with soft-switching capability for electric vehicle applications," *IEEE Access*, vol. 9, pp. 107 079–107 094, 2021.

[17] G. Walker and P. Sernia, "Cascaded dc-dc converter connection of photovoltaic modules," *IEEE Transactions on Power Electronics*, vol. 19, no. 4, pp. 1130–1139, 2004.

[18] H. Zhou, S. Xiao, G. Yang, and H. Geng, "Modeling and control for a bidirectional buck–boost cascade inverter," *IEEE Transactions on Power Electronics*, vol. 27, no. 3, pp. 1401–1413, 2012.

[19] S. Weearsinghe, D. J. Thrimawithana, and U. K. Madawala, "Modeling bidirectional contactless grid interfaces with a soft dc-link," *IEEE Transactions on Power Electronics*, vol. 30, no. 7, pp. 3528–3541, 2015.

[20] Mehrdad, Y. Ehsani, S. Gao, A. E. Gay, and Emadi, "Modern electric,hybrid electric, and fuel cell vehicles:fundamentals, theory, and design," *CRC Press*, 2004.

[21] W. E.H, "History of the electric automobile battery-only powered cars," *Society of Automotive Engineers (SAE)*, 1993.

[22] "Anderson electric car company," 1907-1939. [Online]. Available: https://en.wikipedia.org/wiki/Detroit_Electric

[23] E. H. Wakefield, "An ac drive electric vehicle," *IEEE Transactions on Industry Applications*, vol. IA-10, no. 5, pp. 544–552, 1974.

[24] K. Rahman, B. Fahimi, G. Suresh, A. Rajarathnam, and M. Ehsani, "Advantages of switched reluctance motor applications to ev and hev: design and control issues," *IEEE Transactions on Industry Applications*, vol. 36, no. 1, pp. 111–121, 2000.

[25] N. Bianchi, S. Bolognani, E. Carraro, M. Castiello, and E. Fornasiero, "Electric vehicle traction based on synchronous reluctance motors," *IEEE Transactions on Industry Applications*, vol. 52, no. 6, pp. 4762–4769, 2016.

[26] S. Wang, Q. Zhan, Z. Ma, and L. Zhou, "Implementation of a 50-kw four-phase switched reluctance motor drive system for hybrid electric vehicle," *IEEE Transactions on Magnetics*, vol. 41, no. 1, pp. 501–504, 2005.

[27] J. W. Jiang, B. Bilgin, and A. Emadi, "Three-phase 24/16 switched reluctance machine for a hybrid electric powertrain," *IEEE Transactions on Transportation Electrification*, vol. 3, no. 1, pp. 76–85, 2017.

[28] P. Pillay and R. Krishnan, "Modeling, simulation, and analysis of permanent-magnet motor drives. i. the permanent-magnet synchronous motor drive," *IEEE Transactions on Industry Applications*, vol. 25, no. 2, pp. 265–273, 1989.

[29] R. Krishnan and P. Pillay, "Modeling, simulation, and analysis of permanent-magnet motor drives. ii. the brushless dc motor drive," *IEEE Transactions on Industry Applications*, vol. 25, no. 2, pp. 274–279, 1989.

[30] E. Cornell, R. Guess, and F. Turnbull, "Advanced motor developments for electric vehicles," *IEEE Transactions on Vehicular Technology*, vol. 26, no. 2, pp. 128–134, 1977.

[31] R. Kolano, K. Krykowski, A. Kolano-Burian, M. Polak, J. Szynowski, and P. Zackiewicz, "Amorphous soft magnetic materials for the stator of a novel high-speed pmbldc motor," *IEEE Transactions on Magnetics*, vol. 49, no. 4, pp. 1367–1371, 2013.

[32] C. Chan, K. Chau, J. Jiang, W. Xia, M. Zhu, and R. Zhang, "Novel permanent magnet motor drives for electric vehicles," *IEEE Transactions on Industrial Electronics*, vol. 43, no. 2, pp. 331–339, 1996.

[33] M. Rahman and R. Qin, "A permanent magnet hysteresis hybrid synchronous motor for electric vehicles," *IEEE Transactions on Industrial Electronics*, vol. 44, no. 1, pp. 46–53, 1997.

[34] R. E. Hellmund, "Regenerative braking of electric vehicles," *Transactions of the American Institute of Electrical Engineers*, vol. XXXVI, pp. 1–78, 1917.

[35] M.-J. Yang, H.-L. Jhou, B.-Y. Ma, and K.-K. Shyu, "A cost-effective method of electric brake with energy regeneration for electric vehicles," *IEEE Transactions on Industrial Electronics*, vol. 56, no. 6, pp. 2203–2212, 2009.

[36] G. Xu, W. Li, K. Xu, and Z. Song, "An intelligent regenerative braking strategy for electric vehicles," *Energies*, vol. 4, no. 9, pp. 1461–1477, 2011. [Online]. Available: https://www.mdpi.com/1996-1073/4/9/1461

[37] B. Long, S. T. Lim, J. H. Ryu, and K. T. Chong, "Energy-regenerative braking control of electric vehicles using three-phase brushless direct-current motors," *Energies*, vol. 7, no. 1, pp. 99–114, 2014. [Online]. Available: https://www.mdpi.com/1996-1073/7/1/99

[38] X. Nian, F. Peng, and H. Zhang, "Regenerative Braking System of Electric Vehicle Driven by Brushless DC Motor," *IEEE Transactions on Industrial Electronics*, vol. 61, no. 10, pp. 5798–5808, 2014.

[39] Y. Wang, X. Zhang, X. Yuan, and G. Liu, "Position-Sensorless Hybrid Sliding-Mode Control of Electric Vehicles With Brushless DC Motor," *IEEE Transactions on Vehicular Technology*, vol. 60, no. 2, pp. 421–432, 2011.

[40] F. Naseri, E. Farjah, and T. Ghanbari, "An Efficient Regenerative Braking System Based on Battery/Supercapacitor for Electric, Hybrid, and Plug-In Hybrid Electric Vehicles With BLDC Motor," *IEEE Transactions on Vehicular Technology*, vol. 66, no. 5, pp. 3724–3738, 2017.

[41] W.-C. Chi, M.-Y. Cheng, and C.-H. Chen, "Position-sensorless method for electric braking commutation of brushless dc machines," *IET Electric Power Applications*, vol. 7, no. 9, pp. 701–713, 2013. [Online]. Available: https://ietresearch.onlinelibrary.wiley.com/doi/abs/10.1049/iet-epa.2013.0095

[42] J. Zhang, Y. Yang, D. Qin, C. Fu, and Z. Cong, "Regenerative braking control method based on predictive optimization for four-wheel drive pure electric vehicle," *IEEE Access*, vol. 9, pp. 1394–1406, 2021.

[43] M. Jain, M. Daniele, and P. Jain, "A bidirectional dc-dc converter topology for low power application," *IEEE Transactions on Power Electronics*, vol. 15, no. 4, pp. 595–606, 2000.

[44] P. U R and A. K. Rathore, "Extended range zvs active-clamped current-fed full-bridge isolated dc/dc converter for fuel cell applications: Analysis, design, and

experimental results," *IEEE Transactions on Industrial Electronics*, vol. 60, no. 7, pp. 2661–2672, 2013.

[45] M. M. Savrun and A. Atay, "Multiport bidirectional dc–dc converter for pv powered electric vehicle equipped with battery and supercapacitor," *IET Power Electronics*, vol. 13, no. 17, pp. 3931–3939, 2020. [Online]. Available: https://ietresearch.onlinelibrary.wiley.com/doi/abs/10.1049/iet-pel.2020.0759

[46] W. Xu, K. W. Chan, S. W. Or, S. L. Ho, and M. Liu, "A Low-Harmonic Control Method of Bidirectional Three-Phase Z-Source Converters for Vehicle-to-Grid Applications," *IEEE Transactions on Transportation Electrification*, vol. 6, no. 2, pp. 464–477, 2020.

[47] A. Kumar, X. Xiong, X. Pan, M. Reza, A. R. Beig, and K. A. Jaafari, "A wide voltage gain bidirectional dc–dc converter based on quasi z-source and switched capacitor network," *IEEE Transactions on Circuits and Systems II: Express Briefs*, vol. 68, no. 4, pp. 1353–1357, 2021.

[48] H.-H. Chung, W.-L. Cheung, and K. Tang, "A ZCS bidirectional flyback DC/DC converter," *IEEE Transactions on Power Electronics*, vol. 19, no. 6, pp. 1426–1434, 2004.

[49] F. Zhang and Y. Yan, "Novel Forward–Flyback Hybrid Bidirectional DC–DC Converter," *IEEE Transactions on Industrial Electronics*, vol. 56, no. 5, pp. 1578–1584, 2009.

[50] T. Bhattacharya, V. S. Giri, K. Mathew, and L. Umanand, "Multiphase Bidirectional Flyback Converter Topology for Hybrid Electric Vehicles," *IEEE Transactions on Industrial Electronics*, vol. 56, no. 1, pp. 78–84, 2009.

[51] P. Thummala, D. Maksimovic, Z. Zhang, and M. A. E. Andersen, "Digital Control of a High-Voltage (2.5 kV) Bidirectional DC–DC Flyback Converter for Driving a Capacitive Incremental Actuator," *IEEE Transactions on Power Electronics*, vol. 31, no. 12, pp. 8500–8516, 2016.

[52] G. Chen, Y. S. Lee, S. Y. Hui, D. Xu, and Y. Wang, "Actively clamped bidirectional flyback converter," *IEEE Transactions on Industrial Electronics*, vol. 47, no. 4, pp. 770–779, 2000.

[53] C.-w. Roh, S.-h. Han, S.-s. Hong, S.-c. Sakong, and M.-j. Youn, "Dual-Coupled Inductor-Fed DC / DC Converter for," *Power*, vol. 51, no. 3, pp. 577–584, 2004.

[54] D. Liu and H. Li, "A zvs bi-directional dc–dc converter for multiple energy storage elements," *IEEE Transactions on Power Electronics*, vol. 21, no. 5, pp. 1513–1517, 2006.

[55] S. Inoue and H. Akagi, "A Bidirectional DC–DC Converter for an Energy Storage System With Galvanic Isolation," *IEEE Transactions on Power Electronics*, vol. 22, no. 6, pp. 2299–2306, 2007.

[56] F. Zhang and Y. Yan, "Novel forward–flyback hybrid bidirectional dc–dc converter," *IEEE Transactions on Industrial Electronics*, vol. 56, no. 5, pp. 1578–1584, 2009.

[57] Y. Xie, J. Sun, and J. S. Freudenberg, "Power Flow Characterization of a Bidirectional Galvanically Isolated High-Power DC/DC Converter Over a Wide Operating Range," *IEEE Transactions on Power Electronics*, vol. 25, no. 1, pp. 54–66, 2010.

[58] W. Li, H. Wu, H. Yu, and X. He, "Isolated winding-coupled bidirectional ZVS converter with PWM plus phase-shift (PPS) control strategy," *IEEE Transactions on Power Electronics*, vol. 26, no. 12, pp. 3560–3570, 2011.

[59] C. Yao, X. Ruan, X. Wang, and C. K. Tse, "Isolated buck-boost dc/dc converters suitable for wide input-voltage range," *IEEE Transactions on Power Electronics*, vol. 26, no. 9, pp. 2599–2613, 2011.

[60] H. L. Do, "Nonisolated bidirectional zero-voltage-switching dc-dc converter," *IEEE Transactions on Power Electronics*, vol. 26, no. 9, pp. 2563–2569, 2011.

[61] Z. Zhang, Z. Ouyang, O. C. Thomsen, and M. A. Andersen, "Analysis and design of a bidirectional isolated DC-DC converter for fuel cells and supercapacitors hybrid system," *IEEE Transactions on Power Electronics*, vol. 27, no. 2, pp. 848–859, 2012.

[62] R. T. Naayagi, A. J. Forsyth, and R. Shuttleworth, "High-power bidirectional dc–dc converter for aerospace applications," *IEEE Transactions on Power Electronics*, vol. 27, no. 11, pp. 4366–4379, 2012.

[63] Z. Ding, C. Yang, Z. Zhang, C. Wang, and S. Xie, "A Novel Soft-Switching Multiport Bidirectional DC–DC Converter for Hybrid Energy Storage System," *IEEE Transactions on Power Electronics*, vol. 29, no. 4, pp. 1595–1609, 2014.

[64] R.-J. Wai and Z.-F. Zhang, "Design of high-efficiency isolated bidirectional dc/dc converter with single-input multiple-outputs," *IEEE Access*, vol. 7, pp. 87 543–87 560, 2019.

[65] T.-J. Liang and J.-H. Lee, "Novel high-conversion-ratio high-efficiency isolated bidirectional dc–dc converter," *IEEE Transactions on Industrial Electronics*, vol. 62, no. 7, pp. 4492–4503, 2015.

[66] C. L. Shen, H. Liou, T. C. Liang, and H. Z. Gong, "An Isolated Bidirectional Interleaved Converter with Minimum Active Switches and High Conversion Ratio," *IEEE Transactions on Industrial Electronics*, vol. 65, no. 3, pp. 2313–2321, 2018.

[67] J. Lu, Y. Wang, X. Li, and C. Du, "High-Conversion-Ratio Isolated Bidirectional DC-DC Converter for Distributed Energy Storage Systems," *IEEE Transactions on Power Electronics*, vol. 34, no. 8, pp. 7256–7277, 2019.

[68] Y. E. Wu and Y. T. Ke, "A Novel Bidirectional Isolated DC-DC Converter With High Voltage Gain and Wide Input Voltage," *IEEE Transactions on Power Electronics*, vol. 36, no. 7, pp. 7973–7985, 2021.

[69] P. S. Tomar, M. Srivastava, and A. K. Verma, "An Improved Current-Fed Bidirectional DC–DC Converter for Reconfigurable Split Battery in EVs," *IEEE Transactions on Industry Applications*, vol. 56, no. 6, pp. 6957–6967, 2020.

[70] Y. Raj Kafle, M. J. Hossain, and M. Kashif, "Quasi-Z-source-based bidirectional DC-DC converters for renewable energy applications," *International Transactions on Electrical Energy Systems*, vol. 31, no. 4, pp. 1–16, 2021.

[71] D. Maksimovic and S. Cuk, "Switching converters with wide dc conversion range," *IEEE Transactions on Power Electronics*, vol. 6, no. 1, pp. 151–157, 1991.

[72] C.-W. Roh, S.-H. Han, S.-S. Hong, S.-C. Sakong, and M.-J. Youn, "Dual-coupled inductor-fed dc/dc converter for battery drive applications," *IEEE Transactions on Industrial Electronics*, vol. 51, no. 3, pp. 577–584, 2004.

[73] J. Zhang, J.-S. Lai, R.-Y. Kim, and W. Yu, "High-power density design of a soft-switching high-power bidirectional dc–dc converter," *IEEE Transactions on Power Electronics*, vol. 22, no. 4, pp. 1145–1153, 2007.

[74] P. Das, B. Laan, S. A. Mousavi, and G. Moschopoulos, "A nonisolated bidirectional zvs-pwm active clamped dc–dc converter," *IEEE Transactions on Power Electronics*, vol. 24, no. 2, pp. 553–558, 2009.

[75] P. Das, S. A. Mousavi, and G. Moschopoulos, "Analysis and design of a nonisolated bidirectional zvs-pwm dc–dc converter with coupled inductors," *IEEE Transactions on Power Electronics*, vol. 25, no. 10, pp. 2630–2641, 2010.

[76] C.-M. Hong, L.-S. Yang, T.-J. Liang, and J.-F. Chen, "Novel bidirectional dc-dc converter with high step-up/down voltage gain," in *2009 IEEE Energy Conversion Congress and Exposition*, 2009, pp. 60–66.

[77] F. L. Tofoli, D. De Souza Oliveira, R. P. Torrico-Bascopé, and Y. J. A. Alcazar, "Novel nonisolated high-voltage gain DC-DC converters based on 3SSC and VMC," *IEEE Transactions on Power Electronics*, vol. 27, no. 9, pp. 3897–3907, 2012.

[78] L. S. Yang and T. J. Liang, "Analysis and implementation of a novel bidirectional DC-DC converter," *IEEE Transactions on Industrial Electronics*, vol. 59, no. 1, pp. 422–434, 2012.

[79] Y.-P. Hsieh, J.-F. Chen, L.-S. Yang, C.-Y. Wu, and W.-S. Liu, "High-conversion-ratio bidirectional dc–dc converter with coupled inductor," *IEEE Transactions on Industrial Electronics*, vol. 61, no. 1, pp. 210–222, 2014.

[80] J.-W. Yang and H.-L. Do, "Soft-switching bidirectional dc-dc converter using a lossless active snubber," *IEEE Transactions on Circuits and Systems I: Regular Papers*, vol. 61, no. 5, pp. 1588–1596, 2014.

[81] M. Kwon, S. Oh, and S. Choi, "High gain soft-switching bidirectional dc–dc converter for eco-friendly vehicles," *IEEE Transactions on Power Electronics*, vol. 29, no. 4, pp. 1659–1666, 2014.

[82] M. Aamir, S. Mekhilef, and H. J. Kim, "High-Gain Zero-Voltage Switching Bidirectional Converter With a Reduced Number of Switches," *IEEE Transactions on Circuits and Systems II: Express Briefs*, vol. 62, no. 8, pp. 816–820, 2015.

[83] Y. Yang, J. Ma, C. N. M. Ho, and Y. Zou, "A New Coupled-Inductor Structure for Interleaving Bidirectional DC-DC Converters," *IEEE Journal of Emerging and Selected Topics in Power Electronics*, vol. 3, no. 3, pp. 841–849, 2015.

[84] Y. Mei, Q. Jiang, H. Yang, W. Li, X. He, and S. Li, "Non-isolated stacked bidirectional soft-switching DC-DC converter with PWM plus phase-shift control scheme," *Journal of Modern Power Systems and Clean Energy*, vol. 5, no. 4, pp. 631–641, 2017.

[85] S. Dusmez, A. Khaligh, and A. Hasanzadeh, "A zero-voltage-transition bidirectional dc/dc converter," *IEEE Transactions on Industrial Electronics*, vol. 62, no. 5, pp. 3152–3162, 2015.

[86] Y.-F. Wang, L.-K. Xue, C.-S. Wang, P. Wang, and W. Li, "Interleaved high-conversion-ratio bidirectional dc–dc converter for distributed energy-storage systems—circuit generation, analysis, and design," *IEEE Transactions on Power Electronics*, vol. 31, no. 8, pp. 5547–5561, 2016.

[87] M. Abbasi, E. Abbasi, and L. Li, "New transformer-less dc–dc converter topologies with reduced voltage stress on capacitors and increased voltage conversion ratio," *IET Power Electronics*, vol. 14, no. 6, pp. 1173–1192, 2021. [Online]. Available: https://ietresearch.onlinelibrary.wiley.com/doi/abs/10.1049/pel2.12105

[88] Z. Yan, J. Zeng, Z. Guo, R. Hu, and J. Liu, "A Soft-Switching Bidirectional DC-DC Converter with High Voltage Gain and Low Voltage Stress for Energy Storage Systems," *IEEE Transactions on Industrial Electronics*, vol. 68, no. 8, pp. 6871–6880, 2021.

[89] S. M. Fardahar and M. Sabahi, "High step-down/high step-up interleaved bidirectional DC-DC converter with low voltage stress on switches," *IET Power Electronics*, vol. 13, no. 1, pp. 104–115, 2020.

[90] T. Jalilzadeh, N. Rostami, E. Babaei, and S. H. Hosseini, "Design, analysis and implementation of a new three-port dc-dc converter with bidirectional capability," *IET Power Electronics*, vol. 14, no. 15, pp. 2490–2506, 2021. [Online]. Available: https://ietresearch.onlinelibrary.wiley.com/doi/abs/10.1049/pel2.12196

[91] Y. Zhang, W. Zhang, F. Gao, S. Gao, and D. J. Rogers, "A Switched-Capacitor Interleaved Bidirectional Converter with Wide Voltage-Gain Range for Super Capacitors in EVs," *IEEE Transactions on Power Electronics*, vol. 35, no. 2, pp. 1536–1547, 2020.

[92] A. Rodríguez-lorente, A. Barrado, C. Calderón, C. Fernández, and A. Lázaro, "Non-inverting and Non-isolated Magnetically Coupled Buck – Boost Bidirectional," *IEEE Transactions on Power Electronics*, vol. 35, no. 11, pp. 11 942–11 954, 2020.

[93] W. Hassan, J. L. Soon, D. Dah-Chuan Lu, and W. Xiao, "A High Conversion Ratio and High-Efficiency Bidirectional DC–DC Converter With Reduced Voltage Stress," *IEEE Transactions on Power Electronics*, vol. 35, no. 11, pp. 11 827–11 842, 2020.

[94] R. Hu, J. Zeng, J. Liu, and K. W. Eric Cheng, "A Nonisolated Bidirectional DC-DC Converter with High Voltage Conversion Ratio Based on Coupled Inductor and Switched Capacitor," *IEEE Transactions on Industrial Electronics*, vol. 68, no. 2, pp. 1155–1165, 2021.

[95] B. Zhu, H. Hu, H. Wang, and Y. Li, "A multi-input-port bidirectional dc/dc converter for dc microgrid energy storage system applications," *Energies*, vol. 13, no. 11, 2020. [Online]. Available: https://www.mdpi.com/1996-1073/13/11/2810

[96] T. Chaudhury and D. Kastha, "A high gain multiport dc–dc converter for integrating energy storage devices to dc microgrid," *IEEE Transactions on Power Electronics*, vol. 35, no. 10, pp. 10 501–10 514, 2020.

[97] H. Shayeghi, S. Pourjafar, and S. M. Hashemzadeh, "A switching capacitor based multi-port bidirectional dc–dc converter," *IET Power Electronics*, vol. 14, no. 9,

pp. 1622–1636, 2021. [Online]. Available: https://ietresearch.onlinelibrary.wiley.com/doi/abs/10.1049/pel2.12137

[98] K. Suresh, C. Bharatiraja, N. Chellammal, M. Tariq, R. K. Chakrabortty, M. J. Ryan, and B. Alamri, "A multifunctional non-isolated dual input-dual output converter for electric vehicle applications," *IEEE Access*, vol. 9, pp. 64 445–64 460, 2021.

[99] Y. Zhang, G. Spiazzi, S. Buso, and T. Caldognetto, "Mimo control of a high-step-up isolated bidirectional dc–dc converter," *IEEE Transactions on Industrial Electronics*, vol. 69, no. 5, pp. 4687–4696, 2022.

[100] H. Moradisizkoohi, N. Elsayad, and O. A. Mohammed, "A voltage-quadrupler interleaved bidirectional dc–dc converter with intrinsic equal current sharing characteristic for electric vehicles," *IEEE Transactions on Industrial Electronics*, vol. 68, no. 2, pp. 1803–1813, 2021.

[101] C.-Y. Tang and J.-T. Lin, "Bidirectional Power Flow Control of a Multi Input Converter for Energy Storage System," *Energies*, vol. 12, no. 19, 2019. [Online]. Available: https://www.mdpi.com/1996-1073/12/19/3756

[102] M. Karimi, H. Farzanehfard, M. Packnezhad, and M. Esteki, "Bidirectional zvs buck–boost converter with single auxiliary switch and continuous current at low voltage source," *IEEE Transactions on Industrial Electronics*, vol. 69, no. 3, pp. 2480–2487, 2022.

[103] D. Rong, X. Sun, and N. Wang, "A high step-up interleaved boost-cuk converter with integrated magnetic coupled inductors," *IET Renewable Power Generation*, vol. 16, no. 3, pp. 607–621, 2022. [Online]. Available: https://ietresearch.onlinelibrary.wiley.com/doi/abs/10.1049/rpg2.12364

[104] Z. Wang, P. Wang, B. Li, X. Ma, and P. Wang, "A Bidirectional DC-DC Converter with High Voltage Conversion Ratio and Zero Ripple Current for Battery Energy Storage System," *IEEE Transactions on Power Electronics*, vol. 36, no. 7, pp. 8012–8027, 2021.

[105] F. Davalos Hernandez, R. Samanbakhsh, P. Mohammadi, and F. M. Ibanez, "A dual-input high-gain bidirectional dc/dc converter for hybrid energy storage systems in dc grid applications," *IEEE Access*, vol. 9, pp. 164 006–164 016, 2021.

[106] N.-G. Kim, B. Han, S.-W. Jo, and M. Kim, "High-voltage-gain soft-switching converter employing bidirectional switch for fuel-cell vehicles," *IEEE Transactions on Vehicular Technology*, vol. 70, no. 9, pp. 8731–8743, 2021.

[107] A. Mirzaei, M. Rezvanyvardom, and S. Mekhilef, "High step-up interleaved zero-voltage transition dc–dc converter with coupled inductors," *IET Power Electronics*, vol. 13, no. 19, pp. 4518–4531, 2020. [Online]. Available: https://ietresearch.onlinelibrary.wiley.com/doi/abs/10.1049/iet-pel.2020.0901

[108] H. Heydari-doostabad and T. O'Donnell, "A wide-range high-voltage-gain bidirectional dc–dc converter for v2g and g2v hybrid ev charger," *IEEE Transactions on Industrial Electronics*, vol. 69, no. 5, pp. 4718–4729, 2022.

[109] C. Wang, D. Yang, Z. Pang, X. Pan, and F. Zhao, "High voltage gain bi-directional z-source inverters with dual-loop feed-forward peak dc-link voltage compensation for fuel cell vehicles," *IET Renewable Power Generation*, vol. n/a, no. n/a, 2022. [Online]. Available: https://ietresearch.onlinelibrary.wiley.com/doi/abs/10.1049/rpg2.12374

[110] X. Huang, F. C. Lee, Q. Li, and W. Du, "High-frequency high-efficiency gan-based interleaved crm bidirectional buck/boost converter with inverse coupled inductor," *IEEE Transactions on Power Electronics*, vol. 31, no. 6, pp. 4343–4352, 2016.

[111] G. Chen, Y. Deng, L. Chen, Y. Hu, L. Jiang, X. He, and Y. Wang, "A family of zero-voltage-switching magnetic coupling nonisolated bidirectional dc–dc converters," *IEEE Transactions on Industrial Electronics*, vol. 64, no. 8, pp. 6223–6233, 2017.

[112] H. Liu, L. Wang, Y. Ji, and F. Li, "A Novel Reversal Coupled Inductor High-Conversion-Ratio Bidirectional DC-DC Converter," *IEEE Transactions on Power Electronics*, vol. 33, no. 6, pp. 4968–4979, 2018.

[113] M. Pajnić and P. Pejović, "Zero-voltage switching control of an interleaved bidirectional buck–boost converter with variable coupled inductor," *IEEE Transactions on Power Electronics*, vol. 34, no. 10, pp. 9562–9572, 2019.

[114] Y. Zhang, H. Liu, J. Li, and M. Sumner, "A Low-Current Ripple and Wide Voltage-Gain Range Bidirectional DC-DC Converter with Coupled Inductor," *IEEE Transactions on Power Electronics*, vol. 35, no. 2, pp. 1525–1535, 2020.

[115] A. R. Naderi Akhormeh, K. Abbaszadeh, M. Moradzadeh, and A. Shahirinia, "High Gain Bidirectional Quadratic DC-DC Converter Based on Coupled Inductor with Current Ripple Reduction Capability," *IEEE Transactions on Industrial Electronics*, vol. 68, no. 9, pp. 7826–7837, 2020.

[116] Z. Wang, P. Wang, B. Li, X. Ma, and P. Wang, "A Bidirectional DC–DC Converter With High Voltage Conversion Ratio and Zero Ripple Current for Battery Energy Storage System," *IEEE Transactions on Power Electronics*, vol. 36, no. 7, pp. 8012–8027, 2021.

[117] R. Hu, J. Zeng, J. Liu, and K. W. E. Cheng, "A nonisolated bidirectional dc–dc converter with high voltage conversion ratio based on coupled inductor and switched capacitor," *IEEE Transactions on Industrial Electronics*, vol. 68, no. 2, pp. 1155–1165, 2021.

[118] M. Packnezhad and H. Farzanehfard, "Soft-switching high step-up/down converter using coupled inductors with minimum number of components," *IEEE Transactions on Industrial Electronics*, vol. 68, no. 9, pp. 7938–7945, 2021.

[119] R. Hu, Z. Yan, L. Wang, M.-C. Wong, J. Zeng, J. Liu, and B. Hu, "An interleaved bidirectional coupled-inductor based dc–dc converter with high conversion ratio for energy storage system," *IEEE Transactions on Industrial Electronics*, vol. 69, no. 6, pp. 5648–5659, 2022.

[120] Y. E. Wu and Y. T. Ke, "A Novel Bidirectional Isolated DC-DC Converter with High Voltage Gain and Wide Input Voltage," *IEEE Transactions on Power Electronics*, vol. 36, no. 7, pp. 7973–7985, 2021.

[121] A. R. N. Akhormeh, K. Abbaszadeh, M. Moradzadeh, and A. Shahirinia, "High-Gain Bidirectional Quadratic DC-DC Converter Based on Coupled Inductor with Current Ripple Reduction Capability," *IEEE Transactions on Industrial Electronics*, vol. 68, no. 9, pp. 7826–7837, 2021.

[122] E. Babaei and O. Abbasi, "A new topology for bidirectional multi-input multi-output buck direct current–direct current converter," *International Transactions on Electrical Energy Systems*, vol. 27, no. 2, pp. 1–15, 2017.

[123] H. Wu, K. Sun, L. Chen, L. Zhu, and Y. Xing, "High step-up/step-down soft-switching bidirectional dc–dc converter with coupled-inductor and voltage matching control for energy storage systems," *IEEE Transactions on Industrial Electronics*, vol. 63, no. 5, pp. 2892–2903, 2016.

[124] N. Molavi, E. Adib, and H. Farzanehfard, "Soft-switching bidirectional dc–dc converter with high voltage conversion ratio," *IET Power Electronics*, vol. 11, no. 1, pp. 33–42, 2018. [Online]. Available: https://ietresearch.onlinelibrary.wiley.com/doi/abs/10.1049/iet-pel.2016.0771

List of Publication

Journal

- **Mukesh Kumar**, Kumar Abhishek Singh, Kalpana Chaudhary, R. K. Saket, Baseem Khan, "Regenerative Braking in Electric Vehicle Using Quadratic Gain Bidirectional Converter", *International Transactions on Electrical Energy Systems*, vol. 2022, Article ID 4024730, 20 pages, 2022. https://doi.org/10.1155/2022/4024730.

- **Mukesh Kumar**, Kalpana Chaudhary, R. K. Saket, Baseem Khan, "Bidirectional Quadratic Converter-Based PMBLDC Motor Drive for LEV Application", *Journal of Electrical and Computer Engineering*, vol. 2022, Article ID 5984969, 15 pages, 2022. https://doi.org/10.1155/2022/5984969

Conference

- **Mukesh Kumar**, Kunal Kumar, Kalpana Chaudhary "Modified Non-isolated Bidirectional DC–DC Converter for Regenerative Braking for Electric Vehicle Applications" *In: Mohapatro S., Kimball J. (eds) Proceedings of Symposium on Power Electronic and Renewable Energy Systems Control. Lecture Notes in Electrical Engineering*, vol 616. Springer, Singapore, 2021. https://doi.org/10.1007/978-981-16-1978-6-7.

- Kalpana Chaudhary, Kumar Abhishek Singh, Santan Roy Chowdhury and **Mukesh Kumar**, "A Modified Compact Multiple Output Synchronous Buck Converter for Vehicular Application," *2021 4th Biennial International Conference on Nascent Technologies in Engineering (ICNTE)*, 2021, pp. 1-6, doi: 10.1109/ICNTE51185.2021.9487699.

Communicated

- **Mukesh Kumar**, Kaplana Chaudhary "Bidirectional Converter with Coupled Inductor for High Gain and Low Ripple in PMBLDC Motor for Electric Vehicle Application," submitted in *Journal of Electrical Engineering*.