DAFTAR PUSTAKA

[1] M. Cavus, “Advancing Power Systems with Renewable Energy and Intelligent Technologies: A Comprehensive Review on Grid Transformation and Integration,” *Electronics (Basel).*, vol. 14, no. 6, p. 1159, Mar. 2025, doi: 10.3390/electronics14061159.

[2] D. F. Silalahi, A. Blakers, and C. Cheng, “100% Renewable Electricity in Indonesia,” *Energies (Basel).*, vol. 17, no. 1, p. 3, Dec. 2023, doi: 10.3390/en17010003.

[3] N. Reyseliani and W. W. Purwanto, “Pathway towards 100% renewable energy in Indonesia power system by 2050,” *Renew. Energy*, vol. 176, pp. 305–321, Oct. 2021, doi: 10.1016/j.renene.2021.05.118.

[4] A. Ciocia *et al.*, “Self-Consumption and Self-Sufficiency in Photovoltaic Systems: Effect of Grid Limitation and Storage Installation,” *Energies (Basel).*, vol. 14, no. 6, p. 1591, Mar. 2021, doi: 10.3390/en14061591.

[5] S. Branchetti, C. Petrovich, R. Naldi, I. M. Paponetti, F. Paolucci, and G. Nigliaccio, “PV Self-Consumption and Self-Sufficiency for Household and Office Users: The Lockdown Effects During the COVID-19 Pandemic,” *International Journal of Sustainable Development and Planning*, vol. 17, no. 2, pp. 659–667, Apr. 2022, doi: 10.18280/ijsdp.170231.

[6] J. Varela-Aldás, S. Silva, and G. Palacios-Navarro, “IoT-Based Alternating Current Electrical Parameters Monitoring System,” *Energies (Basel).*, vol. 15, no. 18, p. 6637, Sep. 2022, doi: 10.3390/en15186637.

[7] S. Muralidhara, N. Hegde, and R. PM, “An internet of things-based smart energy meter for monitoring device-level consumption of energy,” *Computers & Electrical Engineering*, vol. 87, p. 106772, Oct. 2020, doi: 10.1016/j.compeleceng.2020.106772.

[8] F. A. Pramadya and K. N. Kim, “Promoting residential rooftop solar photovoltaics in Indonesia: Net-metering or installation incentives?,” *Renew. Energy*, vol. 222, p. 119901, Feb. 2024, doi: 10.1016/j.renene.2023.119901.

[9] B. S. England and A. T. Alouani, “Internet-based advanced metering and control infrastructure of smart grid,” *Electrical Engineering*, vol.

103, no. 6, pp. 2989–2996, Dec. 2021, doi: 10.1007/s00202-021-01287-5.

[10] W. Cui, X. Peng, J. Yang, H. Yuan, and L. L. Lai, “Evaluation of Rooftop Photovoltaic Power Generation Potential Based on Deep Learning and High-Definition Map Image,” *Energies (Basel).*, vol. 16, no. 18, p. 6563, Sep. 2023, doi: 10.3390/en16186563.

[11] Z. Zhang, Y. Pu, Z. Sun, Z. Qian, and M. Chen, “Assessment of Rooftop Photovoltaic Potential Considering Building Functions,” *Remote Sens. (Basel).*, vol. 16, no. 16, p. 2993, Aug. 2024, doi: 10.3390/rs16162993.

[12] T. Hai *et al.*, “Techno-economic and environmental analysis of a grid-connected rooftop solar photovoltaic system in three climate zones,” *International Journal of Low-Carbon Technologies*, vol. 19, pp. 1725–1739, Jan. 2024, doi: 10.1093/ijlct/ctae123.

[13] H. Satria and S. Syafii, “Sistem Monitoring Online dan Analisa Performansi PLTS Rooftop Terhubung ke Grid PLN,” *Jurnal Rekayasa Elektrika*, vol. 14, no. 2, Aug. 2018, doi: 10.17529/jre.v14i2.11141.

[14] J. C. León Gómez, S. E. De León Aldaco, and J. Aguayo Alquicira, “A Review of Hybrid Renewable Energy Systems: Architectures, Battery Systems, and Optimization Techniques,” *Eng*, vol. 4, no. 2, pp. 1446–1467, May 2023, doi: 10.3390/eng4020084.

[15] H. Satria, S. Syafii, R. Salam, M. Mungkin, and W. Yandi, “Design visual studio based GUI applications on-grid connected rooftop photovoltaic measurement,” *TELKOMNIKA (Telecommunication Computing Electronics and Control)*, vol. 20, no. 4, p. 914, Aug. 2022, doi: 10.12928/telkomnika.v20i4.23302.

[16] A. Y. Rosyad, C. A. D. Wahyudi, and C. J. Noakes, “Profitability assessment of PV rooftop implementation for prosumer under net metering scheme in Indonesia,” *CIRED - Open Access Proceedings Journal*, vol. 2020, no. 1, pp. 714–716, Jan. 2020, doi: 10.1049/oap-cired.2021.0201.

[17] A. F. Nariyana, I. Widihastuti, and D. Nugroho, “PERENCANAAN PEMBANGKIT LISTRIK TENAGA SURYA ROOFTOP PENSUPLAI KANDANG AYAM PEDAGING DENGAN SISTEM ON GRID DI DESA TEGALHARJO TRANGKIL PATI,” *Elektrika*, vol. 16, no. 1, p. 52, Apr. 2024, doi: 10.26623/elektrika.v16i1.8818.

[18] M. A. Green, E. D. Dunlop, J. Hohl-Ebinger, M. Yoshita, N. Kopidakis, and X. Hao, “Solar cell efficiency tables (version 56),”

Progress in Photovoltaics: Research and Applications, vol. 28, no. 7, pp. 629–638, Jul. 2020, doi: 10.1002/pip.3303.

[19] E. Skoplaki and J. A. Palyvos, "Operating temperature of photovoltaic modules: A survey of pertinent correlations," *Renew. Energy*, vol. 34, no. 1, pp. 23–29, Jan. 2009, doi: 10.1016/j.renene.2008.04.009.

[20] G. R. Walker and P. C. Sernia, "Cascaded DC–DC Converter Connection of Photovoltaic Modules," *IEEE Trans. Power Electron.*, vol. 19, no. 4, pp. 1130–1139, Jul. 2004, doi: 10.1109/TPEL.2004.830090.

[21] J. A. Ramos-Hernanz *et al.*, "Two Photovoltaic Cell Simulation Models In Matlab/Simulink," *International Journal on "Technical and Physical Problems of Engineering" (IJTPE) Issue*, vol. 10, pp. 45–51, 2012, [Online]. Available: www.iotpe.com

[22] K. L. Teong, R. H. G. Tan, and L. Y. H. Hoo, "An Improved Mathematical Model Derivation Based on Circuitry Approach for Crystalline Silicon Photovoltaic Module," *IOP Conf. Ser. Mater. Sci. Eng.*, vol. 1127, no. 1, p. 012020, Mar. 2021, doi: 10.1088/1757-899X/1127/1/012020.

[23] K. Kananda and R. Nazir, "Konsep Pengaturan Aliran Daya Untuk PLTS Tersambung Ke Sistem Grid Pada Rumah Tinggal," vol. 2, no. 2, 2013.

[24] V. Stornelli, M. Muttillo, T. de Rubeis, and I. Nardi, "A New Simplified Five-Parameter Estimation Method for Single-Diode Model of Photovoltaic Panels," *Energies (Basel).*, vol. 12, no. 22, p. 4271, Nov. 2019, doi: 10.3390/en12224271.

[25] J. Li, C. Qin, C. Yang, B. Ai, and Y. Zhou, "Extraction of Single Diode Model Parameters of Solar Cells and PV Modules by Combining an Intelligent Optimization Algorithm with Simplified Explicit Equation Based on Lambert W Function," *Energies (Basel).*, vol. 16, no. 14, p. 5425, Jul. 2023, doi: 10.3390/en16145425.

[26] Sh. S. Ali, W. S. Mohamed, and H. A. Mohamed, "Effect of series and shunt resistance on the performance of CZTSe thin film solar cell," *Sohag Journal of Sciences*, vol. 10, no. 1, pp. 75–79, Mar. 2025, doi: 10.21608/sjsci.2024.335014.1232.

[27] S. Dubey, J. N. Sarvaiya, and B. Seshadri, "Temperature Dependent Photovoltaic (PV) Efficiency and Its Effect on PV Production in the World – A Review," *Energy Procedia*, vol. 33, pp. 311–321, 2013, doi: 10.1016/j.egypro.2013.05.072.

[28] A. Th. Mohammad and W. A. M. Al-Shohani, “Numerical and experimental investigation for analyzing the temperature influence on the performance of photovoltaic module,” *AIMS Energy*, vol. 10, no. 5, pp. 1026–1045, 2022, doi: 10.3934/energy.2022047.

[29] A. Pengaruh *et al.*, “Analisa Pengaruh Intensitas Sinar Matahari Terhadap Daya Keluaran Pada Sel Surya Jenis Monokristal,” vol. 1, no. 2, pp. 99–106, 2020.

[30] - Suwarti and - Wahyono, “Analisis Pengaruh Intensitas Matahari, Suhu Permukaan & Sudut Pengarah Terhadap Kinerja Panel Surya,” *Eksergi*, vol. 14, no. 2, Feb. 2019, doi: 10.32497/eksergi.v14i2.1325.

[31] S. Nurhabibah Hutagalung, “Pembelajaran Fisika Dasar dan Elektronika Dasar (Arus,Hambatan< dan Tegangan Listrik) Menggunakan Aplikasi Matlan Metode Simulink”.

[32] P. K. B. Sutawan, I. N. S. Kumara, and W. G. Ariastina, “Simulasi Sistem Kontrol Operasi On Grid Serta Islanding Pembangkit Listrik Tenaga Surya Di Jurusan Teknik Elektro Universitas Udayana,” *Majalah Ilmiah Teknologi Elektro*, vol. 14, no. 2, p. 57, Dec. 2015, doi: 10.24843/mite.2015.v14i02p11.

[33] A. Indah Almira and T. Tohir, “Analisa Pengaruh Kapasitor Bank Terhadap Faktor Daya dan Penghematan Biaya Listrik Berbasis Simulasi Software ETAP 20,” 2024.

[34] salahuddin, “Perbandingan Energi Listrik KWH Prabayar Dengan Pascabayar,” *Jurnal Energi Elektrik*, vol. 5, no. 2, 2016.

[35] O. M. Longe and F. N. Sibelo, “Bidirectional DC Energy Meter for Peer-to-Peer Energy Trading and Smart Metering,” in *Lecture Notes in Networks and Systems*, Springer Science and Business Media Deutschland GmbH, 2024, pp. 346–357. doi: 10.1007/978-3-031-53963-3_24.

[36] S. Syafii, M. I. Rusydi, L. Son, and I. Zikri, “Web-based Net Energy Meter for Grid Connected PV System,” *TEM Journal*, pp. 37–41, Feb. 2020, doi: 10.18421/TEM91-06.

[37] A. Dobos, “PVWatts Version 5 Manual,” Golden, CO (United States), Sep. 2014. doi: 10.2172/1158421.

[38] J. Heusinger, A. M. Broadbent, E. S. Krayenhoff, and S. Weber, “Adaptation of a photovoltaic energy balance model for rooftop applications,” *Build. Environ.*, vol. 192, p. 107628, Apr. 2021, doi: 10.1016/j.buildenv.2021.107628.

[39] E. P. Aji, P. Wibowo, and J. Windarta, “Kinerja Pembangkit Listrik Tenaga Surya (PLTS) dengan Sistem On Grid di BPR BKK Mandiraja Cabang Wanayasa Kabupaten Banjarnegara,” *Jurnal Energi Baru dan Terbarukan*, vol. 3, no. 1, pp. 15–27, Mar. 2022, doi: 10.14710/jebt.2022.13158.

[40] C. Ziras, L. Calearo, and M. Marinelli, “The effect of net metering methods on prosumer energy settlements,” *Sustainable Energy, Grids and Networks*, vol. 27, p. 100519, Sep. 2021, doi: 10.1016/j.segan.2021.100519.

[41] J.-W. Kim, J. Kim, and J. Lee, “An Adaptive Network Design for Advanced Metering Infrastructure in a Smart Grid,” *Sensors*, vol. 22, no. 22, p. 8625, Nov. 2022, doi: 10.3390/s22228625.

[42] A. Hassan, H. N. Afrouzi, C. H. Siang, J. Ahmed, K. Mehranzamir, and C.-L. Wooi, “A survey and bibliometric analysis of different communication technologies available for smart meters,” *Clean. Eng. Technol.*, vol. 7, p. 100424, Apr. 2022, doi: 10.1016/j.clet.2022.100424.

[43] X.-Y. Zhang, P. Guo, S. Kuenzel, and C. Yin, “Ethical considerations in advanced metering infrastructure integration: A systematic review,” *Energy Strategy Reviews*, vol. 56, p. 101571, Nov. 2024, doi: 10.1016/j.esr.2024.101571.

[44] P. O. Ajiboye, K. O.-B. O. Agyekum, and E. A. Frimpong, “Privacy and security of advanced metering infrastructure (AMI) data and network: a comprehensive review,” *Journal of Engineering and Applied Science*, vol. 71, no. 1, p. 91, Dec. 2024, doi: 10.1186/s44147-024-00422-w.

[45] J. L. Michellod, A. Nyandwi, A. Syla, F. Sasso, M. K. Patel, and S. Yilmaz, “Self-consumption and self-sufficiency of the Swiss residential stock: Building archetypes for simulation of positive energy districts,” *Sustain. Cities Soc.*, vol. 129, p. 106486, Jul. 2025, doi: 10.1016/j.scs.2025.106486.

[46] M. T. Miranda, F. J. Sepúlveda, A. Fernández, J. I. Arranz, and I. Montero, “Analysis of photovoltaic self-consumption as a function of the demand profile in detached houses,” *Energy Build.*, vol. 316, p. 114375, Aug. 2024, doi: 10.1016/j.enbuild.2024.114375.

[47] Q. Hassan, “Evaluate the adequacy of self-consumption for sizing photovoltaic system,” *Energy Reports*, vol. 8, pp. 239–254, Nov. 2022, doi: 10.1016/j.egyr.2021.11.205.

[48] Y. Bengio, P. Simard, and P. Frasconi, “Learning long-term dependencies with gradient descent is difficult,” *IEEE Trans. Neural Netw.*, vol. 5, no. 2, pp. 157–166, Mar. 1994, doi: 10.1109/72.279181.

[49] S. Hochreiter and J. Schmidhuber, “Long Short-Term Memory,” *Neural Comput.*, vol. 9, no. 8, pp. 1735–1780, Nov. 1997, doi: 10.1162/neco.1997.9.8.1735.

[50] V. Esen, B. Coban, B. Y. Kavus, T. K. Karaca, T. Dindar, and A. S. Sarkin, “An interpretable statistical approach to photovoltaic power forecasting using factor analysis and ridge regression,” *Sci. Rep.*, vol. 15, no. 1, p. 38947, Nov. 2025, doi: 10.1038/s41598-025-22838-x.

[51] A. Afzal, S. Alshahrani, A. Alrobaian, A. Buradi, and S. A. Khan, “Power Plant Energy Predictions Based on Thermal Factors Using Ridge and Support Vector Regressor Algorithms,” *Energies (Basel).*, vol. 14, no. 21, p. 7254, Nov. 2021, doi: 10.3390/en14217254.

[52] K. Greff, R. K. Srivastava, J. Koutnik, B. R. Steunebrink, and J. Schmidhuber, “LSTM: A Search Space Odyssey,” *IEEE Trans. Neural Netw. Learn. Syst.*, vol. 28, no. 10, pp. 2222–2232, Oct. 2017, doi: 10.1109/TNNLS.2016.2582924.

[53] R. C. Staudemeyer and E. R. Morris, “Understanding LSTM – a tutorial into Long Short-Term Memory Recurrent Neural Networks,” *ArXiv*, pp. 1–42, Sep. 2019, doi: DOI:10.48550/arXiv.1909.09586.

[54] F. Fauzy, I. S. Areni, and I. C. Gunadin, “Rancang Bangun Alat Telemetri Parameter Pembangkit Listrik Tenaga Surya Berbasis IoT.” [Online]. Available: www.edukasielektronika.com

[55] M. J. Espinosa-Gavira, A. Agüera-Pérez, J. C. Palomares-Salas, J. M. Sierra-Fernandez, P. Remigio-Carmona, and J. J. González de-la-Rosa, “Characterization and Performance Evaluation of ESP32 for Real-time Synchronized Sensor Networks,” *Procedia Comput. Sci.*, vol. 237, pp. 261–268, 2024, doi: 10.1016/j.procs.2024.05.104.

[56] H. J. El-Khozondar *et al.*, “A smart energy monitoring system using ESP32 microcontroller,” *e-Prime - Advances in Electrical Engineering, Electronics and Energy*, vol. 9, p. 100666, Sep. 2024, doi: 10.1016/j.prime.2024.100666.

[57] J. Varela-Aldás, S. Silva, and G. Palacios-Navarro, “IoT-Based Alternating Current Electrical Parameters Monitoring System,” *Energies (Basel).*, vol. 15, no. 18, p. 6637, Sep. 2022, doi: 10.3390/en15186637.

[58] Damar Romansdani, A. Pudin, and W. Budi Mursanto, “Monitoring Arus dan Temperature Discharge Kompresor Berbasis IoT (Internet

of Things) untuk Kebutuhan Preventive Maintenance di PT. Mekar Armada Jaya," *Jurnal Surya Teknika*, vol. 11, no. 1, pp. 449–454, Jun. 2024, doi: 10.37859/jst.v11i1.7416.

[59] W. Arsa, S. Politeknik, N. Denpasar, A. Surya, and A. Politeknik, "Analisis Sensor Arus Invasive ACS712 dan Sensor Arus Non Invasive SCT013 Berbasis Arduino," 2021.

[60] M. McRoberts, "Liquid Crystal Displays," in *Beginning Arduino*, Berkeley, CA: Apress, 2010, pp. 171–189. doi: 10.1007/978-1-4302-3241-4_8.

[61] L. M. Easterline, A. A.-Z. R. Putri, P. S. Atmaja, A. L. Dewi, and A. Prasetyo, "Smart Air Monitoring with IoT-based MQ-2, MQ-7, MQ-8, and MQ-135 Sensors using NodeMCU ESP32," *Procedia Comput. Sci.*, vol. 245, pp. 815–824, 2024, doi: 10.1016/j.procs.2024.10.308.

[62] Y. Apriani and T. Barlian, "Inverter Berbasis Accumulator Sebagai Alternatif Penghemat Daya Listrik Rumah Tangga," *Jurnal Surya Energy*, vol. 3, no. 1, 2018.

[63] S. Purnomo, Y. Z. Arief, A. Jaenul, and S. Wilyanti, "Analisis Pengaruh Cuaca Terhadap Efisiensi Panel Surya Grid Tie Menggunakan Konfigurasi Micro Inverter Dan String Inverter Terhadap Energi Yang Dihasilkan," *Jurnal Media Elektro*, pp. 100–110, Oct. 2023, doi: 10.35508/jme.v12i2.12648.

[64] S. Sungkalang, "Pemodelan Dan Simulasi On-Grid Photovoltaic dengan Grid-Tied Inverter Menggunakan Matlab/Simulink," *Lektrokom: Jurnal Ilmiah Program Studi Teknik Elektro*, vol. 6, no. 2, 2023.

[65] J. Gubbi, R. Buyya, S. Marusic, and M. Palaniswami, "Internet of Things (IoT): A vision, architectural elements, and future directions," *Future Generation Computer Systems*, vol. 29, no. 7, pp. 1645–1660, Sep. 2013, doi: 10.1016/j.future.2013.01.010.

[66] P. A. García-Tudela and J.-A. Marín-Marín, "Use of Arduino in Primary Education: A Systematic Review," *Educ. Sci. (Basel).*, vol. 13, no. 2, p. 134, Jan. 2023, doi: 10.3390/educsci13020134.

[67] N. Yusop, N. A. Moketar, and S. F. N. Sadikan, "Development of Arduino applications for IoT applications in software engineering education: a systematic literature review," *Bulletin of Electrical Engineering and Informatics*, vol. 13, no. 3, pp. 1824–1831, Jun. 2024, doi: 10.11591/eei.v13i3.4506.

[68] J. Molina, M. Yugcha, and W. Montalvo, “Hybrid IIoT & Arduino IoT Cloud Platform for Continuous Industrial Process Analysis,” 2023, pp. 173–181. doi: 10.1007/978-3-031-24327-1_15.

[69] D. Hercog, T. Lerher, M. Truntič, and O. Težak, “Design and Implementation of ESP32-Based IoT Devices,” *Sensors*, vol. 23, no. 15, p. 6739, Jul. 2023, doi: 10.3390/s23156739.

[70] P. Boonmeeruk, P. Palrat, and K. Wongsopanakul, “Cost-Effective IIoT Gateway Development Using ESP32 for Industrial Applications,” *Engineering Journal*, vol. 28, no. 10, pp. 93–108, Oct. 2024, doi: 10.4186/ej.2024.28.10.93.