

DAFTAR PUSTAKA

- [1] Humas EBTKE, “Menteri Arifin: Transisi Energi Mutlak Diperlukan,” ebtke.esdm.go.id. Accessed: Dec. 22, 2023. [Online]. Available: <https://ebtke.esdm.go.id/post/2020/10/22/2667/menteri.arifin.transisi.energi.mutlak.diperlukan?lang=en>
- [2] M. Yordan Kusumawardana, “Saatnya Beralih ke Panel Surya, Mengapa?,” ftmm.unair.ac.id. Accessed: Dec. 22, 2023. [Online]. Available: <https://ftmm.unair.ac.id/saatnya-beralih-ke-panel-surya-mengapa/>
- [3] E. E. Prasetyo, R. R. D. Rahmiullah, and G. Marausna, “Analisis Perbandingan Hasil Daya Listrik Panel Surya dengan Solar Tracker dan Tanpa Solar Tracker,” *Jurnal Teknologi Terpadu*, vol. 10, no. 2, p. 1, Oct. 2022.
- [4] V. Gupta, M. Sharma, R. K. Pachauri, and K. N. D. B. Babu, “Comprehensive Review on Effect of Dust on Solar Photovoltaic System and Mitigation Techniques,” *Solar Energy*, vol. 191, pp. 596–622, Oct. 2019.
- [5] I. B. Ramadhani, *Instalasi Pembangkit Listrik Tenaga Surya*. Jakarta: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH Energising Development (EnDev) Indonesia, 2018.
- [6] W. Purnomo, S. B. Mulia, and M. Fikri, “Rancang Bangun Prototype Pembersih Solar Panel Otomatis pada Rooftop Berbasis Mikrokontroler,” *Journal of Energy and Electrical Engineering*, vol. 5, no. 1, pp. 55–64, Oct. 2023.
- [7] Direktorat Jenderal Energi Baru Terbarukan dan Konservasi Energi (EBTKE), *Panduan Pengoperasian dan Pemeliharaan PLTS Off-Grid*. Jakarta, 2017.
- [8] S. V.S and D. S.K, “Solar Photovoltaic Panels Cleaning Methods A Review,” *International Journal of Pure and Applied Mathematics*, vol. 118, no. 24, pp. 1–12, May 2018.
- [9] O. Akyazi, E. Sahin, T. Oszoy, and M. Algul, “A Solar Panel Cleaning Robot Design and Application,” *European Journal of Science and Technology*, pp. 343–349, Aug. 2019.
- [10] Y. Mustaqim, “Rancang Bangun Prototipe Pembersih Debu Otomatis pada Panel Surya menggunakan Outseal PLC,” Universitas Islam Negeri Sunan Gunung Djati Bandung, Bandung, 2023.

- [11] J. Purba, A. S. Uyun, D. Sugianto, and M. I. Ramdan, "Perancangan Prototipe Alat Pembersih Panel Surya dengan Sistem Gerak Otomasi," *Journal Kajian Teknik Mesin*, vol. 7, no. 1, 2022.
- [12] S. R. Bhandari, A. Chhetri, A. Rai, M. Rawal, and R. Deuba, "Performance Analysis of Semi-Automatic Solar Panel Cleaning System," *The OCEM Journal of Management, Technology & Social Sciences*, vol. 3, no. 1, pp. 110–116, Aug. 2023.
- [13] N. Sari, Y. Away, and Suriadi, "Desain Perangkat Monitoring Faktor Daya pada Sistem PV On-Grid Berbasis IOT," vol. 5, no. 3, pp. 25–31, 2020.
- [14] A. Mansur, "Analisa Dampak Bayangan Modul terhadap Output PLTS ," *Jurnal Ilmiah Energi dan Kelistrikan*, vol. 11, no. 2, pp. 160–170, Dec. 2019.
- [15] B. H. Purwoto, M. A. F, and I. F. Huda, "Efisiensi Penggunaan Panel Surya sebagai Sumber Energi Alternatif," *Emitor: Jurnal Teknik Elektro*, vol. 18, no. 01, p. 10, 2018.
- [16] Y. D. Goswami, *Principles of Solar Engineering*, Third. New York : CRC Press (Taylor & Francis Group), 2015.
- [17] M. Mufti, I. M. Kastiawan, and D. Eryanto, "Rancang Bangun Cleaning Fotovoltaik Portable Untuk Pembangkit Listrik Tenaga Surya (PLTS)," *Mekanika: Jurnal Teknik Mesin*, vol. 8, no. 2, pp. 87–99, 2022.
- [18] N. Safitri, T. Rihayat, and S. Riskina, "Teknologi Photovoltaic," 1st ed., K. Y. Putri, Ed., Medan : Yayasan Puga Aceh Riset, 2019, pp. 24–44.
- [19] D. A. Wicaksono, F. Fitriana, R. Nurwahyudin, and F. A. Ajie, "Peningkatan Efisiensi Panel Surya pada Instalasi Rooftop berbasis Internet Of Things (IoT)," *Jurnal Teknik Elektro dan Komputasi (ELKOM)*, vol. 3, no. 2, 2021.
- [20] P. A. Sujana, I. N. S. Kumara, and I. A. D. Giriantara, "Pengaruh Kebersihan Modul Panel terhadap Unjuk Kerja PLTS," *E-Journal SPEKTRUM* , vol. 2, no. 3, pp. 49–54, Sep. 2015.
- [21] M. M. AlFalah, N. S. Komara, and W. G. Ariastina, "Perkembangan Riset dan Produk Komersial Sistem Pembersih Panel Surya," *Jurnal Spektrum*, vol. 8, no. 4, pp. 29–39, 2021.
- [22] M. Nurdiansyah, E. C. Sinurat, M. Bakri, I. Ahmad, and A. B. Prasetyo, "Sistem Kendali Rotasi Matahari pada Panel Surya Berbasis Arduino UNO," *JTIKOM*, vol. 1, no. 2, pp. 40–45, Dec. 2020.
- [23] N. S. Nise, *Control System Engineering* , 7th ed. wiley, 2015.

- [24] T. N. Nizar, D. A. Jatmiko, R. Hartono, and A. I. G. Pratama, "Implementasi dan Uji Kinerja Kontrol PID untuk kestabilan Pesawat Tanpa Awak Tail-sitter pada Keadaan Mengambang," *Komputika: Jurnal Sistem Komputer*, vol. 9, no. 2, pp. 53–59, Oct. 2020.
- [25] Katsuhiko. Ogata, *Modern Control Engineering*. Prentice-Hall, 2010.
- [26] L. A. Zadeh, "Fuzzy Sets As A Basis for A Theory Of Possibility," in *Fuzzy Set and Systems*, 1st ed., vol. 100, North-Holland Publishing Company, 1999, pp. 9–34.
- [27] A. R. Cahyantara, "Rancang Bangun Sistem Pengendali Kadar Oksigen terlaryt dengan Algoritma Fuzzy Logic Controller pada Budidaya Akuaponik," Institut Teknologi Sepuluh Nopember, Surabaya, 2017.
- [28] Sudradjat, "Dasar-dasar *Fuzzy Logic*," Bandung, 2008.
- [29] M. Abrori and A. H. Primahayu, "Aplikasi Logika *Fuzzy* Metode Mamdani dalam Pengambilan Keputusan Penentuan Jumlah Produksi," *Kaunia*, vol. 11, no. 2, pp. 91–99, Dec. 2015.
- [30] A. A. Zaki, E. Mulyana, R. Mardiaty, and Ulfiah, "*Modeling Wall Tracer Robot Motion Based on Fuzzy Logic Control*," Yogyakarta: IEEE, Sep. 2020. doi: 10.1109/ICWT50448.2020.9243624.
- [31] Wahyudi, "Rancang Bangun Deteksi Warna Berbasis *Machine Learning* Arduino Mega Pro Mini Atmega2560-16AU," *Jurnal MikronikTeknik Listrik dan Elektronika Multidisplin*, vol. 3, no. 1, pp. 42–54, Sep. 2023.
- [32] A. Adriansyah and O. Hidayatama, "Rancang Bangun Prototipe Elevator menggunakan Microcontroller Atmega Arduino 384P," *Jurnal Teknik Elektro, Universitas Mercuru*, vol. 4, no. 3, 2013.
- [33] "Arduino Mega 2560 Rev3." Accessed: May 10, 2024. [Online]. Available: <https://store.arduino.cc/products/arduino-mega-2560-rev3>
- [34] M. Saleh and M. Haryanti, "Rancang Bangun Sistem Keamanan Rumah menggunakan Relay," *Jurnal Teknik Elektro*, vol. 8, no. 2, pp. 87–94, May 2017.
- [35] Y. Widiawati and P. H. Islam, "Pemanfaatan RTC (Real Time Clock) DS3231 Untuk Menghemat Daya," *Prosiding Seminar Nasional Teknik Elektro*, vol. 3, pp. 287–289, 2018.
- [36] N. Nugroho and S. Agustina, "Analisa Motor DC (Direct Current) sebagai Penggerak Mobil Listrik," *Mikrotiga*, vol. 2, no. 1, pp. 28–34, Jan. 2015.

- [37] M. Jimmy and Y. Y. Christianto, "Pembuatan pengendali manual nirkabel untuk automated guided vehicle (agv) menggunakan modul radio zig-bee di pt. astra otoparts divisi winteq," *Technologic*, vol. 2, no. 1, 2011.
- [38] Y. Novriandry, D. Triyanto, and Suhardi, "Prorotype Sistem Monitoring dan Pengisian Token Listrik Prabayar menggunakan Arduino UNO Berbasis Website," *Jurnal Komputer dan Aplikasi*, vol. 08, no. 03, pp. 61–72, 2020.
- [39] B. Triyono, R. Fadilah, T. Tohir, and Supriyanto, "Implementasi Sistem Kendali Kecepatan Motor DC Berbasis PID Ziegler-Nichols pada Alat Pengaduk Cairan Viskos," in *Prosiding The 14th Industrial Research Workshop and National Seminar*, Bandung: IRWNS, Jul. 2023, pp. 586–592.
- [40] D. Hartanto and Dewanto Joni, "Perancangan Spion Elektrik Tipe Tanduk pada Bus Pariwisata Berukuran Besar," *Jurnal Teknik Mesin*, vol. 16, no. 1, pp. 9–16, Apr. 2016.
- [41] R. Y. Demaniqga, "Rancang Bangun Sistem Deteksi Kerusakan Pola Batik menggunakan Metode First Order," STIKOM Surabaya, 2019.
- [42] E. Yulsilviana and H. Ekawati, "Penerapan Metode Finite State Machine (FSM) pada Game Agent Legenda Anak Borneo," *SEBATIK*, pp. 116–123, 2019.
- [43] M. F. Rahadian, A. Suyatno, and S. Maharani, "Penerapan Metode Finite State Machine (FSM) pada Game The Relationship," *Jurnal Informatika Mulawarman*, vol. 11, no. 1, pp. 14–22, Feb. 2016.
- [44] Haldianto, N. Alim, A. A. H. Lateko, and Adriani, "Analisis Pengaruh Suhu Kerja pada Panel Surya terhadap Daya Keluaran dari Panel," *Jurnal Teknik Elektro UNISMUH*, vol. 15, no. 1, pp. 32–39, Feb. 2023.
- [45] L. Rodriguez, "How to Clean Solar Panels: 5 Tried and Tested ways," *ratedpower.com*. Accessed: Jul. 10, 2024. [Online]. Available: <https://ratedpower.com/blog/clean-solar-panels/>
- [46] L. David, "How to Clean Solar Panels (2024 Guide)," *marketwatch.com*. Accessed: Jul. 10, 2024. [Online]. Available: <https://www.marketwatch.com/guides/solar/how-to-clean-solar-panels/>
- [47] E. Glover, "How to Clean Solar Panels: DIY and Professional Option," *forbes.com*. Accessed: Jul. 10, 2024. [Online]. Available: <https://www.forbes.com/home-improvement/solar/how-to-clean-solar-panels/>