

DAFTAR PUSTAKA

- [1] D. A. Effendy, “Rancang Bangun Boiler untuk Proses Pemanasan Sistem Uap pada Industri Tahu dengan Menggunakan CATIA V5,” Universitas Semarang, Semarang, 2013. Accessed: May 20, 2024. [Online]. Available: <https://lib.unnes.ac.id/18842/1/5201409010.pdf>
- [2] M. S. Putra, “RANCANG BANGUN DAN UJI UNJUK KERJA FIRETUBE BOILER BERKAPASITAS 60 KG/JAM UNTUK SKALA PROTOTIPE TEKANAN 3 BAR DENGAN EKONOMIZER,” Universitas Diponegoro, Semarang, 2024. Accessed: Apr. 30, 2024. [Online]. Available: <https://eprints2.undip.ac.id/id/eprint/21289/>
- [3] E. Oktaviani and A. Gafur, “Rancang Bangun Boiler Vertikal Destilasi Minyak Serai Wangi dengan Kapasitas Uap 100 Kg/Jam,” *Jurnal InovtekSeri Mesin*, vol. 1, no. 2, pp. 7–13, Jul. 2021, Accessed: May 20, 2024. [Online]. Available: <http://ejournal.polbeng.ac.id/index.php/ISM/article/download/2029/952>
- [4] Y. A. Cengel and M. A. Boles, *Thermodynamics: An Engineering Approach*, 5th ed. New York: McGraw-Hill Higher Education, 2006. Accessed: Mar. 26, 2024. [Online]. Available: https://edisciplinas.usp.br/pluginfile.php/5464110/mod_book/chapter/23393/Thermodynamics%20an%20Engineering%20Approach.pdf
- [5] Menteri Lingkungan Hidup dan Kehutanan Republik Indonesia, “Peraturan Menteri Lingkungan Hidup dan Kehutanan Republik Indonesia No. 15 Tahun 2019 Tentang Baku Mutu Emisi Pembangkit Listrik Tenaga Termal.” Accessed: Mar. 25, 2024. [Online]. Available: https://ditppu.menlhk.go.id/portal/uploads/laporan/1593657762_PERMENLHK%20NO%2015%20TH%202019%20ttg%20BM%20Emisi%20Pembangkit%20Listrik%20Termal.pdf
- [6] Badan Pusat Statistik, “Kapasitas Terpasang PLN menurut Jenis Pembangkit Listrik (MW), 2020-2022.” Accessed: Mar. 25, 2024. [Online]. Available: <https://www.bps.go.id/id/statistics-table/2/MzIxIzI=/kapasitas-terpasang-pln-menurut-jenis-pembangkit-listrik.html>
- [7] J. Balbus and K. Tunnell Handel, “The bottom of the barrel,” 2009. [Online]. Available: www.edf.org/dirtybuildings.
- [8] E. B. Woodruff, H. B. Lammers, and Lammers. Thomas F., *Steam Plant Operation*, 10th ed. New York: McGraw Hill Education, 2017. Accessed: Mar. 24, 2024. [Online]. Available: <https://www.accessengineeringlibrary.com/binary/mheaeworks/ef77e7968d7c60be/d15ccd70c575ba0ae219a6c4bf31d58f84197f8b8f7571ffca98ed76fa166a36/book-summary.pdf>
- [9] Direktorat Jenderal Peraturan Perundang-undangan, “Undang Undang No.20 Tahun 2003 Tentang Sistem Pendidikan Nasional.” Accessed: Mar. 10, 2024. [Online]. Available: <https://peraturan.go.id/id/uu-no-20-tahun-2003>
- [10] Anonim, “Pemanfaatan Bahan Bakar LPG Lebih Efisien, Bersih dan Sehat.” Accessed: May 24, 2024. [Online]. Available: <https://www.esdm.go.id/id/media-center/arsip-berita/pemanfaatan-bahan-bakar-lpg-lebih-efisien-bersih-dan-sehat>
- [11] LTD. ZHENGZHOU BOILER(GROUP) CO., “Different Types Of Boiler Capacity.”
- [12] D. A. Damanik *et al.*, “PURWARUPA MINIATUR WATER TUBE BOILER MENGGUNAKAN BAHAN BAKAR GAS KAPASITAS UAP 20 KG/JAM,” *JURNAL ILMIAH TEKNIK MESIN*, vol. 3, no. 2, 2022, Accessed: May 31, 2024. [Online]. Available: <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&ua>

- ct=8&ved=2ahUKEwjuiNDK8bmGAxU6xTgGHdRKEJsQFnoECA4QAQ&url=https%3A%2F%2Ffojs.polmed.ac.id%2Findex.php%2FSinergi%2Farticle%2Fview%2F743&usg=AOvVaw2015F7FMV9a20sfggV-4YP&opi=89978449
- [13] K. Rahmawati, “Perancangan Desain Boiler Pada Mini Plant Steam Engine Untuk Pembangkit Listrik Tenaga Uap,” Institut Teknologi Sepuluh Nopember Fakultas Vokasi, Surabaya, 2018. Accessed: Mar. 18, 2024. [Online]. Available: https://repository.its.ac.id/58220/1/10511500000054-Non_Degree.pdf
- [14] T. N. B. Pertiwi, “Penyusunan Laporan Keuangan Berdasarkan Sak Emkm Pada Umkm Bakso Bontet Palembang,” Politeknik Negeri Sriwijaya, Palembang, 2022. Accessed: Apr. 05, 2024. [Online]. Available: <http://eprints.polsri.ac.id/12667/>
- [15] Firmansyah, “PEMBUATAN BOILER PIPA AIR SEDERHANA PADA MAKET PEMBANGKIT LISTRIK TENAGA UAP,” Feb. 2017, Accessed: May 24, 2024. [Online]. Available: <http://repository.unj.ac.id/30412/1/SKRIPSI%20FIRMANSYAH%205115122616.pdf>
- [16] Y. A. Cengel, *Heat Transfer*.
- [17] R. Anggrani, Maymuchar, C. S. Wibowo, and I. M. K. Dhiputra, “Beban Pembakaran Dimethyl Ether (DME) dan Liquefied Petroleum Gas (LPG),” Universitas Indonesia, Depok, 2019. Accessed: May 18, 2024. [Online]. Available: <https://jurnal.tau.ac.id/index.php/snartek/article/download/121/88#:~:text=Sebagai%20pembanding%20yaitu%20LPG%20diperoleh,dan%20HHV%2050.15%20MJ%2Fkg>.
- [18] S. Azzahra, H. Azis, M. T. B. Sitorus, and P. Pawenary, “Uji Performa Kompor Induksi dan Kompor Gas Terhadap Pemakaian Energi dan Aspek Ekonomisnya,” *Energi & Kelistrikan*, vol. 12, no. 2, pp. 149–155, Dec. 2020, doi: 10.33322/energi.v12i2.1009.
- [19] MAJESTRONICZ, “MAX6675 K-Type Thermocouple.” Accessed: Feb. 13, 2025. [Online]. Available: <https://majestronicz.in/products/max6675-k-type-thermocouple>
- [20] A. M. A. Jiwatami, “Aplikasi Termokopel untuk Pengukuran Suhu Autoklaf,” *Aplikasi Termokopel untuk Pengukuran Suhu Autoklaf*, vol. 1, no. 1, pp. 38–44, Jan. 2022, doi: 10.26877/lpt.v1i1.10695.
- [21] J. Teknologi and M. Uda, “PERANCANGAN ECONOMIZER SEBAGAI PEMANAS AWAL AIR UMPAN PADA KETEL TYPE FIRE TUBE DALAM PROSES PENGOLAHAN GETAH PINUS di PT. NASCO INDOPINE,” 2022. Accessed: May 19, 2024. [Online]. Available: <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwig4Z3Iz6aGAxW2zzgGHan7CD0QFnoECBEQAQ&url=https%3A%2F%2Fjurnal.darmaagung.ac.id%2Findex.php%2Fteknologimesin%2Farticle%2Fview%2F2657&usg=AOvVaw2yxJIPSPaXUuTBGtHkfeMZ&opi=89978449>
- [22] Industrial Boiler & Mechanical, “Industrial firetube boilers,” <https://industrialboiler.com/boilers/firetube-boilers>.
- [23] E. Tawil and L. Ap, “Boiler Classification and Application Credit: 2 PDH.”
- [24] P. Menteri, E. Dan, and S. Daya Mineral, “MENTERI ENERGI DAN SUMBER DAYA MINERAL REPUBLIK INDONESIA.”
- [25] E. Y. Setyawan, A. Lomi, and C. Saleh, “Penggunaan Wood Pellet untuk Bahan Bakar Produksi Tahu di UKM KAB. KEDIRI,” vol. 2, Oct. 2021, Accessed: May 24, 2024. [Online]. Available: [google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwi2qrOaya aGAxXrzjgGHfmtAFYQFnoECBsQAQ&url=https%3A%2F%2Fjournal.itn.ac.id%2Findex.php%2Fjasten%2Farticle%2Fdownload%2F4306%2F2958&usg=AOvVaw30XB1zJdQODPT8G_tPE0Hk&opi=89978449](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwi2qrOaya aGAxXrzjgGHfmtAFYQFnoECBsQAQ&url=https%3A%2F%2Fjournal.itn.ac.id%2Findex.php%2Fjasten%2Farticle%2Fdownload%2F4306%2F2958&usg=AOvVaw30XB1zJdQODPT8G_tPE0Hk&opi=89978449)
- [26] A. A. Khan, “Discover Water Tube Boilers 5 Types, Pros, Cons, and Uses.” Accessed: May 25, 2024. [Online]. Available: <https://dizz.com/water-tube-boiler/>

- [27] Johnston Boiler Company, "Firetube / Watertube Boilers: A Comparison," Chicago.
- [28] A. A. Khan, "Fire Tube Boilers 5 Types, Advantages, Disadvantages & Applications." Accessed: May 19, 2024. [Online]. Available: https://dizz.com/fire-tube-boiler/#google_vignette
- [29] Atsna Himmatul Aliyah, "Water Tube Boiler: Definisi, Cara Kerja, & Kelebihannya," PT Jejaring Solusi Energi. Accessed: May 24, 2024. [Online]. Available: <https://solarindustri.com/blog/water-tube-boiler/>
- [30] Forest Research, "Typical calorific values of fuels." Accessed: Jun. 01, 2024. [Online]. Available: <https://www.forestresearch.gov.uk/tools-and-resources/fthr/biomass-energy-resources/reference-biomass/facts-figures/typical-calorific-values-of-fuels/>
- [31] Atsna Himmatul Aliyah, "Fire Tube Boiler: Arti, Fungsi, Komponen, & Prinsip Kerjanya," PT Jejaring Solusi Energi. Accessed: May 24, 2024. [Online]. Available: <https://solarindustri.com/blog/fire-tube-boiler/>
- [32] R. A. U. Abdulgani, "Analisis Water Boiler Test Untuk Tungku Gasifikasi Jenis Updraft Berbahan Semen," Telkom University, Bandung, 2023.
- [33] Kementrian Energi dan Sumber DAYA Mineral Direktorat Jendral Minyak dan Gas Bumi, "Konversi Mitan ke Gas." Accessed: May 17, 2024. [Online]. Available: www.migas.esdm.co.id
- [34] American Society of Mechanical Engineers, *ASME Boiler and Pressure Vessel Code. IV*, 2007th ed. New York, 2007.
- [35] ltd Henan BEBON international international international international co., "SS400," Zhengzhou. Accessed: Jun. 08, 2024. [Online]. Available: <https://www.steel-plate-sheet.com/pdf/SS400.pdf>
- [36] Engineers Edge LLC, "Maximum Allowable Stress Values ASME Pressure Vessel Code." Accessed: Jun. 08, 2024. [Online]. Available: https://www.engineersedge.com/pressure,045vessel/maximum_allowable_stress_values_13906.htm
- [37] M. F. Nugraha, "Perancangan dan Pembuatan tabung boiler untuk Setrika Uap Kapasitas 15 Liter dengan Tekanan Kerja 3 Bar," Politeknik Negeri Cilacap, Cilacap, 2022. Accessed: May 15, 2024. [Online]. Available: <https://elib.pnc.ac.id/585/1/PERANCANGAN%20DAN%20PEMBUATAN%20TABUNG%20BOILER%20UNTUK%20SETRIKA%20UAP%20KAPASITAS.pdf>
- [38] Anonymous, "Pompa." Accessed: May 21, 2024. [Online]. Available: <https://cf.shopee.co.id/file/3a0b78ed504b5e3910e9f8173191ace6>
- [39] T. H. Ningsih, A. Fiveriati, and A. Ghoni, "Proses Produksi Superheater Tube Yoshimin Boiler H-3500 Tipe Cap120 T/H Superheater Tube Yoshimin Boiler H-3500 Process Production Type Cap120 T/H," *Otopro*, vol. 14, no. 1, 2018, Accessed: Apr. 04, 2024. [Online]. Available: <https://journal.unesa.ac.id/index.php/jo/article/view/4964/2716>
- [40] R. Nanda, "Pengaruh Variasi Temperatur Feedwater Boiler Terhadap Performance Boiler Type N-600 SA Dengan Kapasitas 20 Ton Uap/Jam Di PT Perkebunan Nusantara V Sei Pagai," Universitas Islam Riau Fakultas Teknik, Pekanbaru, 2017. Accessed: May 24, 2024. [Online]. Available: <https://repository.uir.ac.id/4869/>
- [41] Y. Simbolon, "Pengaruh Ukuran Diameter terhadap Tegangan Kritis pada Silinder Melingkar Bahan Tembaga yang Ditekan Statik," Universitas Muhammadiyah Sumatera Utara, Medan, 2018. Accessed: May 18, 2024. [Online]. Available: <http://repository.umsu.ac.id/bitstream/handle/123456789/501/skripsi%20fix-dikonversi.pdf?sequence=1&isAllowed=y>
- [42] A. D. T. K. Putra, "Studi Eksperimental Pengukuran Head Loss Mayor (Pipa PVC Diameter 1/2") dengan Variasi Debit Aliran untuk Kondisi Rejim Aliran Transisi Fluida Fasa Cair," Universitas Muhammadiyah Yogyakarta, Yogyakarta, 2018. Accessed: Jun.

- 21, 2024. [Online]. Available: <https://repository.umy.ac.id/bitstream/handle/123456789/18789/HALAMAN%20JUDUL.pdf?sequence=2&isAllowed=y>
- [43] Arduino, "Arduino Nano V3." Accessed: May 18, 2024. [Online]. Available: https://content.arduino.cc/assets/Pinout-NANO_latest.png
- [44] E. Nurazizah, M. Ramdhani, and A. Rizal, "RANCANG BANGUN TERMOMETER DIGITAL BERBASIS SENSOR DS18B20 UNTUK PENYANDANG TUNANETRA (DESIGN DIGITAL THERMOMETER BASED ON SENSOR DS18B20 FOR BLIND PEOPLE)".
- [45] R. Septiana, I. Roihan, and J. A. Karnadi dan Raldi Koestoer, "Calibration of K-Type Thermocouple and MAX6675 Module With Reference DS18B20 Thermistor Based on Arduino DAQ," Universitas Indonesia, Jakarta, 2019. Accessed: May 19, 2024. [Online]. Available: <http://prosiding.bkstm.org/prosiding/2019/PTM01.pdf>
- [46] anonymous, "MAX6675 Temperature Thermocouple Type K ." Accessed: May 22, 2024. [Online]. Available: <https://www.majju.pk/assets/uploads/2020/08/MAX6675-K-type-thermocouple-temperature-sensor-module-1200x805.png>
- [47] anonymous, "Water float switch ." Accessed: May 18, 2024. [Online]. Available: https://i5.walmartimages.com/asr/1bb27d80-7797-4e4c-ad63-24dbdcdeb39f_1.e2bbe5987ace7214b23adc10d704b191.jpeg
- [48] I. I. Parts, "Float Level Switch : Pengertian dan Cara Kerja." Accessed: May 20, 2024. [Online]. Available: <https://inaparts.com/measurement/level-%20measurement/float-level-switch/>
- [49] anonymous, "Ultrasonik water level." Accessed: May 28, 2024. [Online]. Available: <https://osoyoo.com/wp-content/uploads/2018/09/hc-sr04.png>
- [50] A. Alawiah and A. R. Al Tahtawi, "Sistem Kendali dan Pemantauan Ketinggian Air pada Tangki Berbasis Sensor Ultrasonik," *Politeknik Sukabumi, Jl. Babakan Sirna*, vol. 01, no. 01, pp. 25–30, 2017, Accessed: May 18, 2024. [Online]. Available: <http://www.jurnal.kopertipindonesia.or.id/index.php/kopertip/article/view/7/5>
- [51] T. Gatkal, P. Shingne, A. Raut, P. Kamle, and M. Tibdewal, "Design and Implementation of Smart Water Level Indicator and Valve Controller," *Journal of Science and Engineering*, vol. 1, no. 1, Jun. 2003, Accessed: May 16, 2024. [Online]. Available: <https://ssgmjournal.in/index.php/ssgm/article/view/54/31>
- [52] anonymous, " Busi ." Accessed: May 17, 2024. [Online]. Available: https://3.bp.blogspot.com/-2r036QWRWHw/WQCibeHY0jI/AAAAAAAAAV8/isiFQrk8rSo_-YJO_KV941o0QT12aJA2QCLcB/s1600/bagian-busi.jpg
- [53] anonymous, "Relay." Accessed: May 19, 2024. [Online]. Available: <https://digitalelectronics.lk/wp-content/uploads/2022/02/Channel-5V-Relay-Module.jpg>
- [54] anonymous, "LCD 16X2 I2C." Accessed: May 19, 2024. [Online]. Available: <https://www.tdegypt.com/wp-content/uploads/2016/07/sku166911-1.jpg>
- [55] F. R. Ramadhan, M. D. Ramadhan, D. Muhammad, and Y. Indradewa, "Pengamatan dan Pengendalian Volume Air pada Tangki menggunakan Sensor Ultrasonik HC-SR04 dan Modul Arduino UNO," Jakarta, 2019. [Online]. Available: https://www.academia.edu/39723976/Pengamatan_dan_Pengendalian_Volume_Air_pada_Tangki_menggunakan_Sensor_Ultrasonik_HC_SR04_dan_Modul_Arduino_UNO
- [56] Y. Juliardi, "ANALISA KETEBALAN PLAT TERHADAP DAYA ROLLING PADA PROSES ELECTRIC SLIP ROLL ANALYSIS OF PLATE THICKNESS ON ROLLING POWER IN ELECTRIC SLIP ROLL PROCESS," *DIMENSI*, vol. 6, no. 3, pp. 601–611, 2017.

- [57] A. Riantono, “Kalibrasi Sensor Temperatur Termokopel Tipe K dan DS18B20 Pada Temperatur Es Mencair dan Air Mendidih Sistem Dengan Akuisisi Data (DAQ) Berbasis Arduino,” 2019, [Online]. Available: <https://www.researchgate.net/publication/363053101>
- [58] Huazheng, “Berapa titik didih dan titik beku minyak dalam derajat celcius?” Accessed: Jan. 12, 2025. [Online]. Available: <https://id.electric-test.com/info/what-are-the-boiling-and-freezing-points-of-oi-95146248.html>
- [59] Aixun, “What is that average temperature of a heated electric electric soldering iron?” Accessed: Jan. 09, 2025. [Online]. Available: <https://www.aixuntech.com/newsinfo/what-is-that-average-temperature-of-a-heated-electric-electric-soldering-iron/>
- [60] Anonymous, “Tinjauan Pustaka,” Universitas Atma Jaya Yogyakarta. Accessed: Jan. 01, 2025. [Online]. Available: <https://e-journal.uajy.ac.id/10240/3/2BL01223.pdf>
- [61] Tokopedia, “Mini Cutter Pipe.” Accessed: Jan. 30, 2025. [Online]. Available: <https://images.tokopedia.net/img/cache/700/VqbcmM/2022/7/25/1ba0c225-42ac-4348-bae4-48f19dc37581.jpg>
- [62] A. G. Bachtiar, “Pembuatan welding cart untuk perangkat pengelasan oxygen acetylene welding (oaw),” Universitas Pendidikan Indonesia, 2019. Accessed: Jan. 30, 2025. [Online]. Available: https://repository.upi.edu/44776/2/TA_TM_1606000_Chapter1.pdf
- [63] S. P. Wicaksana, A. Rahmatulloh, and R. Subandi, “ANALISIS EFISIENSI BOILER FIRE-TUBE PADA PRODUKSI STPP DI PT PETROCENTRAL GRESIK MENGGUNAKAN METODE LANGSUNG DAN TIDAK LANGSUNG,” *DISTILAT: Jurnal Teknologi Separasi*, vol. 9, no. 3, pp. 258–265, Sep. 2023, doi: 10.33795/distilat.v9i3.3777.
- [64] dan Panji Ramadhan and J. Teknik Mesin STT-PLN Menara PLN JI Lingkar Luar Barat, “ANALISA EFISIENSI BOILER DENGAN METODE HEAT LOSS SEBELUM DAN SESUDAH OVERHAUL PT. INDONESIA POWER UBP PLTU LONTAR UNIT 3,” *Jurnal Power Plant*, vol. 4, no. 4, May 2017, Accessed: Feb. 01, 2025. [Online]. Available: <https://media.neliti.com/media/publications/521732-none-4d2918ae.pdf>