

## DAFTAR PUSTAKA

- Adams, T.N., Frederick, J.P., (1997). Kraft Recovery Boilers. New York : American Forest & Paper Association.
- Akbari, M., Oyedun, A. O., & Kumar, A. (2018). Ammonia production from black liquor gasification and co-gasification with pulp and waste sludges: A techno-economic assessment. *Energy*, 151, 133–143. <https://doi.org/10.1016/j.energy.2018.03.056>
- Al-Ghawas, H. A., Hagewlesche, D. P., Rulz-Ibanez, G., & Sandall, O. C. (1989). Physicochemical Properties Important for Carbon Dioxide Absorption in Aqueous Methyldiethanolamine. In *J. Chem. Eng. Data* (Vol. 34).
- American Society for Testing and Materials (ASTM). 1994. Standard test method for microscopical determination of the reflectance of vitrinite in a polished specimen of coal: Annual book of ASTM standards: gaseous fuels; coal and coke, sec. 5, V.5.05, D 2798-91, p. 280-283.
- Aries, R. S. & Newton, R. D. 1955. “Chemical Engineering Cost Estimation”. McGraw-Hill Book Company, Inc., New York.
- Badan Pusat Statistik Kabupaten Pelalawan. (2022). Jumlah Penduduk Menurut Jenis Kelamin (Jiwa). Diakses dari <https://pelalawankab.bps.go.id/indicator/12/61/1/jumlah-penduduk-menurut-jenis-kelamin.html>.
- Badan Pusat Statistik Kabupaten Pelalawan. (2022). Tingkat Pengangguran Terbuka. Diakses dari <https://pelalawankab.bps.go.id/indicator/6/88/1/tingkat-pengangguran-terbuka.html>.
- Badan Pusat Statistik Kabupaten Pelalawan. (2021). Angka Partisipasi Sekolah (APS). Diakses dari <https://pelalawankab.bps.go.id/indicator/28/393/1/angka-partisipasi-sekolah-aps-.html>.
- Badan Pusat Statistik Kabupaten Pelalawan. (2022). Jumlah Curah Hujan dan Hari Hujan Menurut Bulan di Kabupaten Pelalawan. Diakses dari <https://pelalawankab.bps.go.id/indicator/151/140/1/jumlah-curah-hujan-dan-hari-hujan-menurut-bulan-di-kabupaten-pelalawan.html>.
- Badan Pusat Statistik Kabupaten Pelalawan. (2019). Jumlah Desa/Kelurahan yang Mengalami Bencana Alam. Diakses dari <https://pelalawankab.bps.go.id/statistictable/2019/11/21/43/-jumlah-desa-kelurahan-yang-mengalami-bencana-alam-menurut-kecamatan-di-kabupaten-pelalawan-2011-2014-dan-2018.html>.

- Badan Pusat Statistik Kabupaten Pelalawan. (2017). Persentase Tenaga Kerja Menurut Lapangan Usaha Kabupaten Pelalawan. Diakses dari <https://pelawankab.bps.go.id/indicator/6/48/1/persentase-tenaga-kerja-menurut-lapangan-usaha-kabupaten-pelalawan.html>.
- Badan Pusat Statistik Kabupaten Pelalawan. (2022). PDRB Kabupaten Pelalawan Atas Dasar Harga Berlaku Menurut Lapangan Usaha. Diakses dari <https://pelawankab.bps.go.id/indicator/52/8/1/pdrb-kabupaten-pelalawan-atas-dasar-harga-berlaku-menurut-lapangan-usaha.html>.
- Bajpai, P. (2014). Black Liquor Gasification. In *Black Liquor Gasification* (pp. 25–72). Elsevier. <https://doi.org/10.1016/b978-0-08-100009-0.00002-5>.
- Bhajpal, P. 2014. “Black Liquor Gasification”. Elsevier, New York.
- Bhargava, R., Khanam, S., Mohanty, B., & Ray, A. K. (2008). Simulation of flat falling film evaporator system for concentration of black liquor. *Computers and Chemical Engineering*, 32(12), 3213–3223. <https://doi.org/10.1016/j.compchemeng.2008.05.012>.
- Brown, G. G., Katz, D., Foust, A. S., and Schneidewind, C. 1950. “Unit Operation”, John Wiley and Sons, Inc., New York.
- Brownell, L. E., & Young, E. H. 1959. “Process Equipment Design”, John Wiley and Sons, Inc., New York.
- Catalanotti, E., Porter, R. T. J. and Mahgerefteh, H. (2022) “An Aspen Plus Kinetic Model for the Gasification of Biomass in a Downdraft Gasifier”, *Chemical Engineering Transactions*, 92(March), pp. 679–684. doi: 10.3303/CET2292114.
- Clay, D. T. (n.d.). *Evaporation Principles & Evaporation Principles & Black Liquor Properties*.
- Coulson, J. M. and Richardson, J.F. 2005. *An Introduction to Chemical Engineering Design*, Pergamon Press, LTD, Oxford
- Darmawan, A., Hardi, F., Yoshikawa, K., Aziz, M., & Tokimatsu, K. (2017). *Enhanced Process Integration of Entrained Flow Gasification and Combined Cycle: Modeling and Simulation Using Aspen Plus*. *Energy Procedia*, 105, 303–308. <https://doi.org/10.1016/j.egypro.2017.03.318>
- Dow Chemical Company. 2019. “Methyl Diethanol Amine (MDEA)”. Midland, Michigan.
- ETC, 2011. *Gasification of black liquor*. Popular Science Report from the BLG II Program 2007 – 2010.

- Ferreira, E. T. D. F., & Balestieri, J. A. P. (2015). *Black liquor gasification combined cycle with CO<sub>2</sub> capture - Technical and economic analysis*. *Applied Thermal Engineering*, 75, 371–383. <https://doi.org/10.1016/j.applthermaleng.2014.09.026>
- Gao, Y. *et al.* (2023) ‘Syngas Production from Biomass Gasification: Influences of Feedstock Properties, Reactor Type, and Reaction Parameters’, *ACS Omega*, 8(35), pp. 31620–31631. doi: 10.1021/acsomega.3c03050.
- Geankoplis, C. J. 1993. *Transport Processes and Unit Operations*. Publisher. P T R Prentice Hall, Inc. A Simon & Schuster Company Englewood Cliffs, New Jersey.
- Gil, C. and Sebastián, F. (2016) ‘Downdraft gasifier modeling’, pp. 1–63.
- Grigoray, O., 2009. *Gasification of Black Liquor as a Way to Increase Power Production at Kraft Pulp Mills* (Master thesis). Lappeenranta University of Technology Faculty of Technology Degree Program of Chemical Technology.
- Higman, C. and Van der Burgt, M. (2003) *Gasification*. Gulf Professional Publishing. Elsevier, New York.
- Holman, J.P. 2010. *Heat transfer* (10th ed.). New York : McGraw-Hill, a business unit of the McGraw-Hill Companies, Inc., 1221 Avenue of the Americas, New York.
- Hruška, M., Variny, M., Haydary, J., & Janošovský, J. (2020). Sulfur recovery from syngas in pulp mills with integrated black liquor gasification. *Forests*, 11(11), 1–21. <https://doi.org/10.3390/f11111173>.
- Jafri, Y., Furusjö, E., Kirtania, K., & Gebart, R. (2016). Performance of a Pilot-Scale Entrained-Flow Black Liquor Gasifier. *Energy and Fuels*, 30(4), 3175–3185. <https://doi.org/10.1021/acs.energyfuels.6b00349>.
- Kaya, D., & Ibrahim Sarac, H. (2007). Mathematical modeling of multiple-effect evaporators and energy economy. *Energy*, 32(8), 1536–1542. <https://doi.org/10.1016/j.energy.2006.09.002>.
- Kementrian ESDM. (2022). *Cadangan Batu Bara Terverifikasi Tahun 2022*.
- Kementrian ESDM. (2022). <https://migas.esdm.go.id/>
- Kern, D. Q. 1965. “Process Heat Transfer”, Int.ed., p. 102-160, New York, McGraw-Hill Book Company.
- Khanam, S. (n.d.). *Modeling and Simulation of Multiple Effect Evaporator System*.
- Kumar, G. S., Gupta, A. and Viswanadham, M. (2018) ‘Design of lab-scale downdraft gasifier for biomass gasification’, *IOP Conference Series: Materials Science and Engineering*, 455(1). doi: 10.1088/1757-899X/455/1/012051.

- Kumar, D., Kumar, V., & Singh, V. P. (2013). Modeling and dynamic simulation of mixed feed multi-effect evaporators in paper industry. *Applied Mathematical Modelling*, 37(1–2), 384–397. <https://doi.org/10.1016/j.apm.2012.02.039>.
- Mindaryani, A., Budhijanto, W., & Ningrum, S. S. (2016). Continuous absorption of CO<sub>2</sub> in packed column using MDEA solution for biomethane preparation. *IOP Conference Series: Materials Science and Engineering*, 162(1). <https://doi.org/10.1088/1757-899X/162/1/012006>.
- Naqvi, M., Yan, J. and Dahlquist, E. (2010) ‘Black liquor gasification integrated in pulp and paper mills: A critical review’, *Bioresource Technology*, 101(21), pp. 8001–8015. doi: 10.1016/j.biortech.2010.05.013.
- Naqvi, M., Yan, J., & Dahlquist, E. (2012). Synthetic gas production from dry black liquor gasification process using direct causticization with CO<sub>2</sub> capture. *Applied Energy*, 97, 49–55. <https://doi.org/10.1016/j.apenergy.2011.11.082>.
- Naqvi, M., Yan, J. and Dahlquist, E. (2013) ‘System analysis of dry black liquor gasification based synthetic gas production comparing oxygen and air blown gasification systems’, *Applied Energy*, 112(2013), pp. 1275–1282. doi: 10.1016/j.apenergy.2012.11.065.
- Patel, J.-C., & Manager, S. (n.d.). *Black Liquor Evaporators: Design and Operation*.
- Perry, R. H. 1999. “Perry’s Chemical Engineer’s Handbook”, 7 ed., New York, McGraw-Hill Book Company.
- Peters, M. S. & Timmerhaus, K. D. 1981. “Plant Design And Economics For Chemical Engineering”. McGraw-Hill Book Company, Inc., Singapore.
- Peter, M. S., Timmerhaus, K. D., and R. E. West. 2003. “Plant Design and Economics for Chemical Engineers,” McGraw- Hill Chemical Engineering Series, New York.
- Powell, S.T. 1954. “Water Conditioning for Industry”, McGraw-Hill Book Company, Tokyo.
- Puig-Gamero, M. *et al.* (2021) ‘Simulation of biomass gasification in bubbling fluidized bed reactor using aspen plus®’, *Energy Conversion and Management*, 235(March). doi: 10.1016/j.enconman.2021.113981.
- Rosengren, E. (2022). Sustainable Swedish Industry by Improved Excess Heat Recovery Low Temperature Evaporation of Black Liquor using Waste Heat. [www.chemeng.lth.se](http://www.chemeng.lth.se).
- Sinnott, R. K. 2005. “Chemical Engineering Design”, 4 ed., Oxford, Elsevier.
- Smith, J. M., Ness, H.C.V., Abbott, M.M. 2018. “Chemical Engineering Thermodynamics”, Volume 8, p.635-636, New York, Mc Graw Hill.
- Swedish Energy Agency, 2008. System Aspects of Black Liquor Gasification—A Review of Existing Reports. ISSN 1403-1892.

- Suresh, P., 2002. Biomass Gasification for Hydrogen Production—Process Description and Research Needs. IEA Thermal Gasification Task Leader Gas Technology Institute, IL.
- Soehartanto, D. T. (n.d.). Design Of Wet Scrubber As H<sub>2</sub>s Content Reductor Unit In Biogas Production At Pt Enero Mojokerto Vincensius Cahya Dwinanda NRP 2412 100 034.
- Treybal, R. E. 1981. “Mass-Transfer Operations”, Singapore, McGraw-Hill Book Company.
- Ulrich, Gael D. 1984. “A Guide to Chemical Engineering Process Design and Economics.” John Wiley & Sons, Inc., New York.
- U.S. Department of Labor. 2023. “State Minimum Wage Laws in USA”. <https://www.dol.gov/agencies/whd/minimum-wage/state> [Accessed: 3 Juni 2023].
- Verma, O. P., Mohammed, T. H., Mangal, S., & Manik, G. (2016). Mathematical modeling of multistage evaporator system in Kraft recovery process. *Advances in Intelligent Systems and Computing*, 437, 1011–1042. [https://doi.org/10.1007/978-981-10-0451-3\\_87](https://doi.org/10.1007/978-981-10-0451-3_87).
- Verma, O. P., Mohammed, T. H., Mangal, S., & Manik, G. (2018). Optimization of steam economy and consumption of heptad's effect evaporator system in Kraft recovery process. *International Journal of System Assurance Engineering and Management*, 9(1), 111–130. <https://doi.org/10.1007/s13198-016-0488-1>.
- Walas, S. M. 1990. “Chemical Process Equipment”, Oxford, Elsevier.
- Yaws, C. L. 1999. “The Yaws Handbook of Vapor Pressure : Antoine Coefficients”, p.80-534. Oxford, Elsevier.
- Zaman, A. A., Tavares, S. A., & Fricke, A. L. (1996). Studies on the Heat Capacity of Slash Pine Kraft Black Liquors: Effects of Temperature and Solids Concentrations.
- Zhang, Y., & Chen, C. C. (2011). Modeling gas solubilities in the aqueous solution of methyldiethanolamine. *Industrial and Engineering Chemistry Research*, 50(10), 6436–6446. <https://doi.org/10.1021/ie102150h>.
- <http://www.alibaba.com/>
- <http://www.matche.com/>