



DAFTAR PUSTAKA

- Badan Pusat Statistik. 2021. *Luas Panen dan Produksi Padi di Indonesia 2020*. Badan Pusat Statistik. no. 05100.2105. Jakarta.
- Basu, P., 2010, *Biomass Gasification and Pyrolysis: Practical Design and Theory*, Elsevier Inc.
- Calì, G., et al. 2020. Syngas Production, Clean-Up and Wastewater Management in a Demo-Scale Fixed-Bed Updraft Biomass Gasification Unit. *Energies*. vol 13, pages 1-15. doi:10.3390/en13102594.
- Hartono, B. 2019. *Pengaruh Laju Alir Udara dan Kadar Air Biomassa Terhadap Proses Gasifikasi Menggunakan Downdraft Gasifier*. Skripsi. Fakultas Teknik, Teknik Mesin, Universitas Negeri Semarang.
- Hermawati. et al. 2014. *Konversi Biomassa untuk Energi Alternatif di Indonesia: Tinjauan Sumber Daya, Teknologi, Manajemen, dan Kebijakan*. Jakarta: LIPI Press.
- Hernández, J.J., Aranda-Almansa, G., & Bula, A. 2010. Gasification of Biomass Wastes in an Entrained Flow Gasifier: Effect of The Particle Size and The Residence time. *Fuel Processing Technology*. vol. 91, no. 6, pagess 681–692.
- Idriss, H. et al. 2015. Introduction to hydrogen and its properties. *Compendium of Hydrogen Energy*. vol. 2, pagess 3-19
- J.M. Bermudez., and B. Fidalgo. 2016. *Handbook of Biofuels Production (Second Edition)*. vol. 15, pages 431-494
- Joseph. G.T. and Beachler, D.S. 1984. *Wet scrubber Plan Review-Self Instructional Guidebook*. APTI Course S1:412C, EPA 450/ 2-82-020.
- Lin, K.S. et al. 1998. A process development for gasification of rice husk. *Fuel Processing Technology*. vol 55, no 3, pagess 185–192.
- Lloyd L., Ridler D.E., Twigg M.V. 1996. The water-gas shift reaction. In: Catalyst Handbook. 2nd ed. Manson Publishing, UK.
- Ma, Z., Ye, J., Zhao, C., & Zhang, Q. 2015. Gasification of Rice Husk in a Downdraft Gasifier: The Effect of Equivalence Ratio on the Gasification Performance, Properties, and Utilization Analysis of Byproducts of Char and Tar. *BioResources*. vol. 10, no. 2, pagess 2888-2902.
- Madav, V., et al. 2019. Studies for Removal of Tar from Producer Gas in Small Scale Biomass Gasifiers Using Biodiesel. *Biomass and Bioenergy*. vol 123, pagess 123-133.
- McKendry, P. 2001. Energy Production from Biomass (Part 1): Overview of Biomass. *Bioresource Technology*. vol. 83, no. 1, pagess 37-46.



- Milne, T.A., Evans, R.J., & Abatzoglou, N. 1998. *Biomass Gasifier Tars: Their Nature, Formation, and Conversion*. National Renewable Energy Laboratory. Golden.
- Nakamura, S., et al. 2016. Biomass Gasification Process with the Tar Removal Technologies Utilizing Bio-Oil Scrubber and Char Bed. *Applied Energy*. vol 170, pages 186-192.
- Phupuakrat, T., et al. 2011. Absorptive removal of biomass tar using water and oily materials. *Bioresource Technology*. vol 102, pages 543-549.
- Pranolo, S.H., et al. 2019. Application of a Recycle System to Cocoa Pod Husk Gasification in a Fixed-Bed Downdraft Gasifier to Produce Low Tar Fuel Gas. *Jurnal Rekayasa Kimia dan Lingkungan*. vol. 14, no. 2, pages 120-129.
- Reed, T. & Das, a. 1988. Handbook of Biomass Downdraft Gasifier Engine Systems. March. pages 148.
- Rinovianto, G. 2012. *Karakteristik Gasifikasi pada Updraft Double Gas Outlet Gasifier Menggunakan Bahan Bakar Kayu Karet*. Skripsi. Fakultas Teknik, Departemen Teknik Mesin, Universitas Indonesia, Depok.
- Salisu, J., et al. 2019. Theoretical and Experimental Studies of Rice Husk Gasification Using Air as Gasifying Agent in a Downdraft Gasifier. *Nigerian Research Journal of Engineering and Environmental Sciences*. vol. 4, no. 2, pages 645-657.
- Sidqi, F.W., and Andarini, H.T. 2020. *Pengaruh Equivalence Ratio dan Ukuran Biomassa pada Gisifikasi Limbah Bambu dengan Downdraft Gasifier*. Skripsi. Fakultas Teknologi Indusri, Teknik Kimia, Institut Teknologi Nasional Bandung.
- Son, Y. et al. 2011. Gasification and Power Generation Characteristics of Woody Biomass Utilizing a Downdraft Gasifier. *Biomass and Bioenergy*. pages 4215–4220.
- Sujud, A. 2013. *Karakteristik Pengeringan Jamur Tiram Putih (Pleurotus Asteatus) Menggunakan Mesin Pengering Tipe Fluidized Bed*. Skripsi. Fakultas Teknologi Pertanian, Teknik Pertanian, Universitas Negeri Jember.
- Surjosatyo, A and Vidian, F. 2012. Tar Content Evaluation of Produced Gas in Downdraft Biomass Gasifier. *Iranica Journal of Energy & Environment*. vol 3, no. 3, pages 210-212.
- Susastriawan, A.A.P., and Saptoadi, H. Purnomo. 2018. Comparison of The Gasification Performance in The Downdraft Fixed-Bedgasifier Fed By Different Feedstocks: Rice Husk, Sawdust, And Their Mixture. *Sustainable Energy Technologies and Assessments*. vol. 34, pages 27–34.
- Tinaut, F., et al. 2008. Effect of Biomass Particle Size and Air Superficial Velocity on The Gasification Process in a Downdraft Fixed Bed Gasifier : An Experimental and Modelling Study. *Fuel Processing Technology*. vol. 89, no. 11, pages 1076-1089.



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Universitas Gadjah Mada, 2022 | Diunduh dari <http://etd.repository.ugm.ac.id/>

Wardani, P.K. 2014. *Prototype Gasifikasi Biomassa (Tempurung Kelapa) Sistem Updraft Single Gas Outlet (Pengaruh Laju Alir Air pada Venturi Wet scrubber Terhadap Produk Syngas)*. Thesis. Fakultas Teknik, Teknik Kimia, Politeknik Negeri Sriwijaya.