UNIVERSITAS
GADJAH MADA
Prarancangan Pabrik Etilen Oksida dari Bioetanol dengan Kapasitas 100.000 Ton/Tahun
Alfian Taufiqur Rohman, Ir. Yuni Kusumastuti. S.T., M.Eng., D.Eng., IPM.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

DAFTAR PUSTAKA

American Petroleum Institute. (2016). *API standard 560: Fired heaters for general refinery service* (5th ed.). API Publishing Services.

Aries, R. S., & Newton, R. D. (1955). *Chemical engineering cost estimation*. McGraw-Hill Companies, Inc. https://doi.org/10.1021/ed033p194.1

Arvidsson, M., & Lundin, B. (2011). *Process optimization and simulation of chemical systems*. Chalmers University of Technology.

Backhurst, J. R. (1983). *Chemical engineering* (3rd ed.). Pergamon Press.

Bank Indonesia. (2024). *Kurs transaksi Bank Indonesia*. https://www.bi.go.id/id/publikasi/ruang-media/news-release/Pages/sp_2811926.aspx

Bird, R. B., Stewart, W. E., & Lightfoot, E. N. (2002). *Transport phenomena* (2nd ed.). John Wiley & Sons, Inc.

BMKG. (2023). *Data iklim wilayah Gresik dan sekitarnya tahun 2023*. BMKG.

BPS. (2025). *Badan Pusat Statistik Provinsi Jawa Timur*. BPS.

Branan, C. R. (2002). *Rules of thumb for chemical engineers: A manual of quick, accurate solutions to everyday process engineering problems* (3rd ed.). Gulf Professional Publishing.

Brown, G. G. (2005). *Unit operations* (Reprint ed.). CBS Publishers & Distributors.

Brown, G. G., Boyaju, D., Lil, M., O, U. E., Brown, G. M., Brownell, L. E., La, D., Katz, V., Martin, J. J., & White, R. R. (1950). *Unit operations*. John Wiley & Sons, Inc.

Brownell, L. E., & Young, E. H. (1959). *Process equipment design: Vessel design*. John Wiley & Sons, Inc.

Buthod, P., & Paul, F. (1983). *Design and specifications of spherical storage tanks*. Oil & Gas Journal Publications.

ChemAnalyst. (2024). *Chemical pricing data*. https://www.chemanalyst.com/Pricing-data

Chu, Y., Li, Z., & Wang, X. (2020). Advanced process control and simulation in petrochemical industries. *Chemical Engineering Research and Design*, *156*, 112–125. https://doi.org/10.1016/j.cherd.2020.01.015

Cohen, P. (Ed.). (1989). *The ASME handbook on water technology for thermal power systems*. American Society of Mechanical Engineers.

UNIVERSITAS
GADJAH MADA
Prarancangan Pabrik Etilen Oksida dari Bioetanol dengan Kapasitas 100.000 Ton/Tahun
Alfian Taufiqur Rohman, Ir. Yuni Kusumastuti. S.T., M.Eng., D.Eng., IPM.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Coker, A. K. (2007). *Ludwig's applied process design for chemical and petrochemical plants* (4th ed., Vol. 1) [Includes Couper, J. R., 2012 references for fired heaters]. Elsevier Inc.

Coulson, J. M., & Richardson, J. F. (1999). *Chemical engineering: Fluid flow, heat transfer and mass transfer* (5th ed., Vol. 1). Butterworth-Heinemann.

Coulson, J. M., Richardson, J. F., Backhurst, J. R., & Harker, J. H. (1999). *Coulson and Richardson's chemical engineering: Particle technology and separation processes* (5th ed.). Butterworth-Heinemann.

Crowl, D. A., & Louvar, J. F. (2011). *Chemical process safety: Fundamentals with applications* (3rd ed.). Prentice Hall.

Cummings, J. (2007). Kirk-Othmer encyclopedia of chemical technology. *Reference Reviews*, *21*(2), 49–50. https://doi.org/10.1108/09504120710728879

Data Internal Kapasitas Produksi Etilen Oksida PT Polychem Indonesia Tbk. (2025). PT Polychem Indonesia Tbk.

Erbar, J. H., & Maddox, R. N. (1961). Latest technique for multicomponent distillation predictions. *Petroleum Refiner*, *40*(5), 183–188.

Evans, F. L. (1980). *Equipment design handbook for refineries and chemical plants* (2nd ed., Vol. 2). Gulf Publishing Company.

Fan, D., Dai, D.-J., & Wu, H.-S. (2012). Ethylene formation by catalytic dehydration of ethanol with industrial considerations. *Materials*, *6*(1), 101–115. https://doi.org/10.3390/ma6010101

Fogler, H. S. (2016). *Elements of chemical reaction engineering* (5th ed.). Prentice Hall.

GlobalData. (2024, December 4). *Ethylene Oxide (EO) market analysis* [Industry report summary]. GlobalData. https://www.globaldata.com/store/report/ethylene-oxide-market-analysis/

Grand View Research, Inc. (n.d.). *Ethylene Oxide market (2024-2030) size, share & trends analysis report by product (Automotive, Agriculture, Food & Beverages, Medical & Pharmaceuticals), by application (Ethylene Glycol, Ethoxylates), by region, and segment forecasts*. Grand View Research. https://www.grandviewresearch.com/industry-analysis/ethylene-oxide-market

Holman, J. P. (2010). *Heat transfer* (10th ed.). McGraw-Hill Companies, Inc.

UNIVERSITAS
GADJAH MADA
Prarancangan Pabrik Etilen Oksida dari Bioetanol dengan Kapasitas 100.000 Ton/Tahun
Alfian Taufiqur Rohman, Ir. Yuni Kusumastuti. S.T., M.Eng., D.Eng., IPM.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Hudson, H. E. (1981). *Air-cooled heat exchangers: A guide to fin-fan thermal design*. Petroleum Publishing Company.

Java Integrated Industrial and Ports Estate (JIIPE). (2024). *Company profile & environmental overview*. https://www.jiipe.com

Kabel, R. L., & Johanson, L. N. (1962). Reaction kinetics and adsorption equilibria in the vapor-phase dehydration of ethanol. *AIChE Journal*, *8*(5), 621–628. https://doi.org/10.1002/aic.690080512

Kays, W. M., & London, A. L. (1998). *Compact heat exchangers* (3rd ed.). Krieger Publishing Company.

Kementerian Keuangan Republik Indonesia. (2023). *Peraturan Menteri Keuangan Nomor 40 Tahun 2023 tentang Bea Masuk, Pasal 2*. Kementerian Keuangan.

Kementerian Lingkungan Hidup dan Kehutanan Republik Indonesia. (2016). *Peraturan Menteri LHK No. P.68/Menlhk-Setjen/2016 tentang Baku Mutu Air Limbah Domestik*. Kementerian Lingkungan Hidup dan Kehutanan.

Kementerian Negara Lingkungan Hidup Republik Indonesia. (2010). *Peraturan Menteri No. 03 Tahun 2010 tentang Baku Mutu Air Limbah Bagi Kawasan Industri*. Kementerian Negara Lingkungan Hidup.

Kementerian Perindustrian Republik Indonesia. (2018). *Investasi meningkat, RI mampu jadi pusat pertumbuhan industri petrokimia*. https://kemenperin.go.id/artikel/18946/Investasi-Meningkat,-RI-Mampu-Jadi-Pusat-Pertumbuhan-Industri-Petrokimia

Kern, D. Q. (1965). *Process heat transfer*. McGraw-Hill Book Company Inc.

Kirk-Othmer. (2007). *Kirk-Othmer encyclopedia of chemical technology* (5th ed.). John Wiley & Sons, Inc. https://doi.org/10.1002/0471238961

Kolev, N. I. (2006). *Multiphase flow dynamics 2: Thermal and mechanical interactions* (3rd ed.). Springer.

Kolmetz, K. (2005). *Optimize distillation column design for improved reliability in operation and maintenance*. KLM Technology Group.

Kremser, A. (1930). Theoretical analysis of absorption process. *National Petroleum News*, *22*(21), 43–49.

UNIVERSITAS
GADJAH MADA
Prarancangan Pabrik Etilen Oksida dari Bioetanol dengan Kapasitas 100.000 Ton/Tahun
Alfian Taufiqur Rohman, Ir. Yuni Kusumastuti. S.T., M.Eng., D.Eng., IPM.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Maotoo Gas. (2024). *99.5% Purity Ethylene Oxide (C_2H_4O) Gas 2N5 Grade*. https://id.made-in-china.com/video-channel/maotoogas_PGhRkVUuhKcS_99-5-Purity-Ethylene-Oxide-C2h4o-Gas-2n5-Grade.html

Matche. (2024). *About Matche*. https://www.matche.com/about/default.html

McKetta, J. J. (Ed.). (2021). *Encyclopedia of chemical processing and design* (Vol. 17). CRC Press. https://doi.org/10.1201/9781003209805

Melhem, G. A., Saraf, S., & Howell, P. (2001). A model for estimating the consequences of safety relief valve discharges. *Journal of Loss Prevention in the Process Industries*, *14*(4), 297–305. https://doi.org/10.1016/S0950-4230(00)00047-X

Mohsenzadeh, A., Zamani, A., & Taherzadeh, M. J. (2017). Bioethylene production from ethanol: A review and techno-economical evaluation. *ChemBioEng Reviews*, *4*(2), 75–91. https://doi.org/10.1002/cben.201600025

Mordor Intelligence. (2025, September 9). *Ethylene Oxide market – size & share analysis – growth trends and forecast (2025-2030)*. https://www.mordorintelligence.com/industry-reports/ethylene-oxide-market

Morschbacker, A. (2009). Bio-ethanol based ethylene. *Polymer Reviews*, *49*(2), 79–84. https://doi.org/10.1080/15583720902834791

Ngcobo, M., Makgwane, P. R., & Mathe, M. K. (2024). A minireview on solid acid catalysts for dehydration of bioethanol to renewable ethylene: An update on catalysts development progress. *Applied Catalysis O, Open*, *193*, Article 206976. https://doi.org/10.1016/j.apcato.2024.206976

Obiora, C. (2022). Optimal cost of production of bioethanol: A review. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4171036

Occupational Safety and Health Administration. (2023). *Process Safety Management (PSM) for small businesses*. United States Department of Labor. https://www.osha.gov/process-safety-management/sbrefa

Pemerintah Republik Indonesia. (1999). *Peraturan Pemerintah No. 41 Tahun 1999 tentang Pengendalian Pencemaran Udara*. Sekretariat Negara.

Perry, R. H., & Green, D. W. (1997). *Chemical engineers' handbook* (7th ed.). McGraw-Hill Companies, Inc.

Perry, R. H., & Green, D. W. (Eds.). (1999). *Perry's chemical engineers' handbook* (7th ed.). McGraw-Hill Companies, Inc.

UNIVERSITAS
GADJAH MADA
Prarancangan Pabrik Etilen Oksida dari Bioetanol dengan Kapasitas 100.000 Ton/Tahun
Alfian Taufiqur Rohman, Ir. Yuni Kusumastuti. S.T., M.Eng., D.Eng., IPM.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Peters, M. S., Timmerhaus, K. D., & West, R. E. (2003). *Plant design and economics for chemical engineers* (5th ed.). McGraw-Hill Book Company Inc.

Phung, T. K., Proietti Hernández, L., Lagazzo, A., & Busca, G. (2015). Dehydration of ethanol over zeolites, silica alumina and alumina: Lewis acidity, Brønsted acidity and confinement effects. *Applied Catalysis A: General*, *493*, 77–89. https://doi.org/10.1016/j.apcata.2014.12.047

Powell, S. T. (1954). *Water conditioning for industry* (1st ed.). McGraw-Hill, Inc.

PT AKR Corporindo Tbk. (2024). *Beyond-Annual Report 2024*. PT AKR Corporindo Tbk.

PT Energi Agro Nusantara. (2019, September 21). *Ethanol 99,5%-Bioethanol untuk Indonesia*. https://enero.co.id/bioethanol-untuk-indonesia/

PT Inaproc. (2024). *Liquid Oksigen 99,99%*. https://katalog.inaproc.id/teknik-industri-mandiri/liquid-oksigen-99-99

Rachman, I. (2025). Sustainable competitive advantage in Indonesia's bioethanol industry: Key variables and ecosystem model. *Journal of Applied Science, Engineering, Technology, and Education*, *7*(1), 1–16. https://doi.org/10.35877/454RI.asci3784

Rebsdat, S., & Mayer, D. (2011). Ethylene Oxide. In *Ullmann's Encyclopedia of Industrial Chemistry*. Wiley-VCH. https://doi.org/10.1002/14356007.a10_117

Ripamonti, D., Tripodi, A., Conte, F., Robbiano, A., Ramis, G., & Rossetti, I. (2021). Feasibility study and process design of a direct route from bioethanol to ethylene oxide. *Journal of Environmental Chemical Engineering*, *9*(5), Article 105969. https://doi.org/10.1016/j.jece.2021.105969

Rossetti, I., Compagnoni, M., Finocchio, E., Ramis, G., Di Michele, A., Millot, Y., & Dzwigaj, S. (2017). Ethylene production via catalytic dehydration of diluted bioethanol: A step towards an integrated biorefinery. *Applied Catalysis B: Environmental*, *210*, 407–420. https://doi.org/10.1016/j.apcatb.2017.03.043

Rossetti, I., Ripamonti, D., Tripodi, A., Conte, F., & Ramis, G. (2021). Design of a process for the one-pot bio-ethylene oxide production. *Chemical Engineering Transactions*, *86*, 1447–1452. https://doi.org/10.3303/CET2186242

Rossetti, I., Tripodi, A., & Ramis, G. (2020). Hydrogen, ethylene and power production from bioethanol: Ready for the renewable market? *International Journal of Hydrogen Energy*, *45*(17), 10292–10303. https://doi.org/10.1016/j.ijhydene.2019.07.201

UNIVERSITAS
GADJAH MADA
Prarancangan Pabrik Etilen Oksida dari Bioetanol dengan Kapasitas 100.000 Ton/Tahun
Alfian Taufiqur Rohman, Ir. Yuni Kusumastuti. S.T., M.Eng., D.Eng., IPM.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Rosyidiin, A. F., Nugroho, A., & Amrullah, H. N. (2017). Analisis risiko dengan metode Layer of Protection Analysis pada reactor platforming di industri petrokimia. *Proceeding 2nd Conference on Safety Engineering and Its Application*, 2581–1770.

Seader, J. D., Henley, E. J., & Roper, D. K. (2011). *Separation process principles: Chemical and biochemical operations* (3rd ed.). John Wiley & Sons, Inc.

Seifzadeh Haghighi, S., Rahimpour, M. R., Raeissi, S., & Dehghani, O. (2013). Investigation of ethylene production in naphtha thermal cracking plant in presence of steam and carbon dioxide. *Chemical Engineering Journal*, *228*, 1158–1167. https://doi.org/10.1016/j.cej.2013.05.048

Sen, S. S. (2012). Design optimization and technical specifications of bar rock screens in mineral processing. *Journal of Mining and Material Engineering*, *15*(2), 45–58.

Sinnott, R. K. (2005). *Coulson & Richardson's chemical engineering design* (Vol. 6). Elsevier Butterworth-Heinemann.

Sinnott, R. K., & Towler, G. (2009). *Chemical engineering design* (5th ed., Vol. 6). Elsevier Butterworth-Heinemann.

Smith, J. M., Van Ness, H. C., & Abbott, M. M. (2005). *Introduction to chemical engineering thermodynamics* (7th ed.). McGraw-Hill Companies, Inc.

Stapleton, P. J., Cooney, A. M., & Hix, W. M., Jr. (1996). *Environmental management systems: An implementation guide for small and medium-sized organizations*. NSF International.

Symoens, S. H., Olahova, N., Muñoz Gandarillas, A. E., Karimi, H., Djokic, M. R., Reyniers, M.-F., Marin, G. B., & Van Geem, K. M. (2018). State-of-the-art of coke formation during steam cracking: Anti-coking surface technologies. *Industrial & Engineering Chemistry Research*, *57*(48), 16117–16136. https://doi.org/10.1021/acs.iecr.8b03221

Szyja, P., & Wyrwa, J. (2023). The importance of energy consumption costs in the financial performance of enterprises. *Energies*, *16*(18), Article 6519. https://doi.org/10.3390/en16186519

Tchobanoglous, G., Stensel, H. D., & Tsuchihashi, R. (2014). *Wastewater engineering: Treatment and resource recovery* (5th ed.). McGraw-Hill Education.

Towler, G. (2022). *Chemical engineering design*. Elsevier. https://doi.org/10.1016/c2019-0-02025-0

UNIVERSITAS
GADJAH MADA
Prarancangan Pabrik Etilen Oksida dari Bioetanol dengan Kapasitas 100.000 Ton/Tahun
Alfian Taufiqur Rohman, Ir. Yuni Kusumastuti. S.T., M.Eng., D.Eng., IPM.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Towler, G. P., & Sinnott, R. K. (2013). *Chemical engineering design: Principles, practice, and economics of plant and process design* (2nd ed.). Butterworth-Heinemann.

Towfighi, J., Sadrameli, M., & Niaei, A. (2002). Coke formation mechanisms and coke inhibiting methods in pyrolysis furnaces. *Journal of Chemical Engineering of Japan*, *35*(10), 923–937. https://doi.org/10.1252/jcej.35.923

Treybal, R. E. (1980). *Mass-transfer operations* (3rd ed., J. J. Carberry, J. R. Fair, M. S. Peters, W. R. Schowalter, & J. Wei, Eds.). McGraw-Hill, Inc.

Turton, R., Bailie, R. C., Whiting, W. B., & Shaeiwitz, J. A. (2003). *Analysis, synthesis, and design of chemical processes* (2nd ed.). Prentice Hall.

U.S. Environmental Protection Agency. (2006). *Lessons learned from Natural Gas STAR partners: Convert gas pneumatic controls to instrument air* (Natural Gas STAR Program). Office of Air and Radiation. https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P1004FJ1.TXT

Ulrich, G. D. (1984). *A guide to chemical engineering process design and economics*. John Wiley & Sons, Inc.

Van der Borght, K., Galvita, V. V., & Marin, G. B. (2015). Ethanol to higher hydrocarbons over Ni, Ga, Fe-modified ZSM-5: Effect of metal content. *Applied Catalysis A: General*, *492*, 117–126. https://doi.org/10.1016/j.apcata.2014.12.020

Various Suppliers. (2024). *Chemical products*. https://www.alibaba.com/product-detail/

Windsor, B. (2016). *Ion exchange design – hand calculation*. Industrial Water Plus.

WM Strategy. (2021, March 17). *Indonesia: Ethylene oxide market size, growth, forecast* [News article]. WM Strategy. https://www.wm-strategy.com/news/the-ethylene-oxide-production-in-indonesia-is-anticipated-to-reach-666-thousand-tons-in-2025

Wu, C.-Y., & Wu, H.-S. (2017). Ethylene formation from ethanol dehydration using ZSM-5 catalyst. *ACS Omega*, *2*(8), 4287–4296. https://doi.org/10.1021/acsomega.7b00680

Yaws, C. L. (1999). *Chemical properties handbook*. McGraw-Hill.

Zhang, Z., & Albright, L. F. (2010). Pretreatments of coils to minimize coke formation in ethylene furnaces. *Industrial & Engineering Chemistry Research*, *49*(4), 1991–1994. https://doi.org/10.1021/ie900271q

Zhu, J., Cui, X., & Araya, S. S. (2022). Comparison between 1D and 2D numerical models of a multi-tubular packed-bed reactor for methanol steam reforming. *International*

UNIVERSITAS
GADJAH MADA
Prarancangan Pabrik Etilen Oksida dari Bioetanol dengan Kapasitas 100.000 Ton/Tahun
Alfian Taufiqur Rohman, Ir. Yuni Kusumastuti. S.T., M.Eng., D.Eng., IPM.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Journal of Hydrogen Energy, *47*(54), 22704–22719. https://doi.org/10.1016/j.ijhydene.2022.05.109

Zimmermann, H., & Walzl, R. (2000). Ullmann's encyclopedia of industrial chemistry. *Wiley-VCH Verlag GmbH & Co. KGaA*. https://doi.org/10.1002/14356007.a10_045