

DAFTAR PUSTAKA

- Adlaa, L. Q., Nengse, S., Setyowati, Rr. D. N., & Nilandita, W. (2025). *Kajian Efisiensi Penyisihan Unit IPAM Karangpilang III PDAM Surya Sembada Kota Surabaya*. Jurnal Rekayasa Hijau, 9(1), 32–43. <https://doi.org/10.26760/jrh.v9i1.32-43>.
- Ahn, Y. H. (2006): *Sustainable nitrogen elimination biotechnologies: a review*, Process Biochemistry, 41 (8), 1709-1721.
- Akbar, R. A. (2020). *Analisis Kinerja Pengolahan Limbah Cair Domestik Dengan Metode MBBR*. Skripsi. Universitas Hasanuddin.
- Al-Aboodi, A. H., Al-Saati, N. H., & Al-Mamoori, S. K. (2020). *Performance of combined A/O moving-bed biofilm reactors for biological nutrients removal from domestic wastewater under different gas/water ratios*. Journal of Water Process Engineering, 38, 101562.
- Al-Amshawee, S., Yusri, M., Mohd, B., Lynam, J. G., Hyoung, W., Dai, F., dan Habib, I. (2021): *Environmental Technology & Innovation Roughness and wettability of biofilm carriers: A systematic review*, Environmental Technology & Innovation, 21, 101233.
- American Public Health Association, American Water Works Association, & Water Environment Federation. (2017). *Standard methods for the examination of water and wastewater* (23rd ed.). American Public Health Association.
- Anisa, A., & Herumurti, W. (2017). *Pengolahan Limbah Domestik Menggunakan Moving Bed Biofilm Reactor (MBBR) dengan Proses Aerobik-Anoksik untuk Menurunkan Konsentrasi Senyawa Organik dan Nitrogen*. Jurnal Teknik ITS, 6(2), F361-F366.
- Awad, H. M., Li, Y., & Zhang, L. (2025). *Insights into nitrogen removal from domestic wastewater by a novel divided-flow aerobic-anoxic reactor without external carbon source*. Journal of Environmental Management, 351, 119850.

- Azmi, K. N., Danumihardja, I. G., dan Said, N. I. (2018): *Aplikasi teknologi pengolahan air limbah domestik menggunakan kombinasi biofilter aerobik media plastik sarang tawon dan biofilter media kerikil dengan aliran ke atas*, Jurnal Air Indonesia, 10 (2), 42 – 51.
- Badan Standardisasi Nasional. (2008). *SNI s6989.59:2008: Air dan air limbah, Bagian 59: Metoda pengambilan contoh air limbah*. Badan Standardisasi Nasional.
- Capua, F. Di, Iannaccone, F., Sabba, F., & Esposito, G. (2022). *Simultaneous nitrification–denitrification in biofilm systems for wastewater treatment: Key factors, potential routes, and engineered applications*. Bioresource Technology, 361, 127702. <https://doi.org/10.1016/J.BIORTECH.2022.127702>.
- Chen, Y., Sun, Y., Zhang, J., Li, J., & Peng, Y. (2022). *A novel control strategy to strengthen nitrogen removal from domestic wastewater through eliminating nitrite oxidizing bacteria in a plug-flow process*. Bioresource Technology, 350, 126856. <https://doi.org/10.1016/j.biortech.2022.126856>.
- Ensya, M. (2018). *Karakteristik fisik, kimia, dan biologi air limbah domestik*. Skripsi. Universitas Lampung.
- Fauzi, M., Soewondo, P., Handajani, M., Tedjakusuma, T., & Nur, A. (2025). *Effect of polymer variation as carrier media for microorganism growth in biofilm development using aerobic fixed-biofilm reactor system*. Results in Engineering, 25. <https://doi.org/10.1016/j.rineng.2025.104038>.
- Fauzi, M., Soewondo, P., & Nur, A. (2023). *Treatment of Domestic Wastewater on Fixed-Bed Reactor Using Plastic Supporting Media–A Review*. Ecological Engineering & Environmental Technology, 24. 276–281. <https://doi.org/10.12912/27197050/169240>.
- Huang, X., Dong, W., Wang, H., dan Jiang, S. (2017): *Biological nutrient removal and molecular biological characteristic in an anaerobic-multistage anaerobic/oxic (A-MAO) process to treat municipal wastewater*, Bioresource Technology, 241, 969-978.

Huang, Y., Peng, Y., Huang, D., Fan, J., & Du, R. (2022). *Enhanced nitrogen removal from domestic wastewater by partial-denitrification/anammox in an anoxic/oxic biofilm reactor*. *Processes*, 10(1), 109. <https://doi.org/10.3390/pr10010109>.

Iyo, T., Yoshino, T., Tadokoro, M., Ogawa, T., & Ohno, S. (1996). *Advanced Performance of Small-Scale Domestic Sewage Treatment Plants Using Anaerobic-Aerobic Filter Systems with Flow-Equalization and Recirculation*. *Environmental Technology (United Kingdom)*, 17(11), 1235–1243. <https://doi.org/10.1080/09593331708616493>.

Kamila, A. (2025). *Penyisihan Nitrat dan Nitrit dari Air Limbah Domestik dengan Pengolahan Kombinasi Anaerob aerob Menggunakan Media Lekat Polyvinyl Chloride dan Polyethylene Terephthalate*. Skripsi. Universitas Andalas.

Khoirunisa, A. (2018). *Perbandingan Unjuk Kerja Tray Bioreactor dengan Media Penyangga Serat Tanaman Luffa dan Bioball dalam Meningkatkan Kualitas Air Olahan Parameter Bod dan Amonia Pada Ipal Komunal*. Skripsi. Universitas Islam Indonesia.

Khotimah, K. (2022). *Pengolahan Air Limbah Domestik Menggunakan Fakultatif Anaerobik Horizontal Roughing Filter*. Skripsi. Universitas Hasanuddin.

Lago, A., Rocha, V., Barros, O., Silva, B., & Tavares, T. (2024). *Bacterial biofilm attachment to sustainable carriers as a clean-up strategy for wastewater treatment: A review*. *Journal of Water Process Engineering*, 63, 105368. <https://doi.org/10.1016/j.jwpe.2024.105368>.

Lolascon, A., Bianchi, P., Andolfo, I., Russo, R., Barcellini, W., Fermo, E., ... & Colombatti, R. (2021). *Recommendations for diagnosis and treatment of methemoglobinemia*. *American Journal of Hematology*, 96(12), 1666–1678. <https://doi.org/10.1002/ajh.26340>.

Masruroh, B., Khalid, K., Makrowi, A., & Afrian, R. (2023). *Pengembangan prototipe pengolahan air limbah dapur di Gedung Hadiwinarso dan MES*

Taruna Akademi Angkatan Laut. SAINTEK Jurnal Sains Teknologi dan Profesi Akademi Angkatan Laut, 16(1), 29-35.
<https://doi.org/10.59447/saintek.v16i1.111>.

Metcalf & Eddy, Inc. (2014). *Wastewater engineering: Treatment and resource recovery* (5th ed.). McGraw-Hill Education.

Ningtias, B. C., Moersidik, S. S., Priadi, C. R., dan Said, N. I.. (2015). *Pengolahan Air Limbah Domestik Dengan Anoksik-Aerobik Moving Bed Biofilm Reactor (Studi Kasus: Penyisihan Amonia dan Karbon Dalam Air Limbah Domestik)*. JAI, 8(2), 177-188.

Nur, A. (2022). *Polyethylene Terephthalate (Pet) Sebagai Media Lekat Pada Reaktor Fixed Bed Dalam Pengolahan Air Limbah Domestik Dan Keberadaannya Di Dalam Reaktor Sebagai Mikroplastik*. Bandung: ITB Press.

Nurrahma, A., & Rosariawari, F. (2023). *Pengolahan Lindi (Leacheate) Dengan Metode Moving Bed Biofilm Reactor (Mbbr) Dengan Proses Aerobik-Anoksik Untuk Menurunkan Konsentrasi Cod, Tss, Dan Amonia*. *Envirous*, 1(2), 54–58. <https://doi.org/10.33005/envirous.v1i2.37>.

Oktafianti, B. (2025). *Penyisihan Amoniak dari Air Limbah Domestik Menggunakan Pengolahan Kombinasi Anaerob aerob dengan Media Lekat Polyvinyl Chloride dan Polyethylene Terephthalate*. Skripsi. Universitas Andalas.

PermenLH No. 11, MenLH tentang Baku Mutu Air Limbah dan Standar Teknologi Pengolahan Air Limbah untuk Air Limbah Domestik. (2025).

Pradnyadari, N. M. W., Karnchanawong, S., & Karnchanawong, P. (2018). *Penyisihan amonia, nitrit, dan nitrat dengan biofilter menggunakan plastik bekas sebagai media penopang biofilm*. *Jurnal Teknik Lingkungan*, 24(2), 55–64. Prayatni, S. (2021). *Keberadaan Mikroplastik di Intalasi Pengolahan Air Limbah Permukiman (Studi Kasus Kota Bandung)*.
<https://www.researchgate.net/publication/372403699>.

- Rizka, M., Fauzi, M., Soewondo, P., Handjani, M., & Tedjakusuma, T. (2024). *Pengaruh Beban Influen terhadap Performa Pengolahan Air Limbah Domestik Menggunakan Fixed Bed System dengan Media Penunjang PVC Sarang Tawon*. *Jurnal Reka Lingkungan*, 12(3), 315–326. <https://doi.org/10.26760/rekalingkungan.v12i3.315-326>.
- Rout, P. R., Shahid, M. K., Dash, R. R., Bhunia, P., Liu, D., Varjani, S., Zhang, T. C., & Surampalli, R. Y. (2021). *Nutrient removal from domestic wastewater: A comprehensive review on conventional and advanced technologies*. *Journal of Environmental Management*, 296. <https://doi.org/10.1016/j.jenvman.2021.113246>.
- Sali, G. P., Suprabawati, A., & Purwanto, Y. (2018). *Efektivitas Teknik Biofiltrasi Dengan Media Sarang Tawon Terhadap Penurunan Kadar Nitrogen Total Limbah Cair*. 15(1).
- Septiani, R. W., Sudarno dan G. Samudro. 2017. *Kajian Kinerja Fixed Bed dan Suspended Growth Reactors dalam Penyisihan Ammonium Konsentrasi Tinggi*. *Jurnal Teknik Lingkungan*. Vol. 6(2): 1-7.
- Setiyawan, A. S., Nur, A., Fauzi, M., Oginawati, K., & Soewondo, P. (2023). *Effects of Different Polymeric Materials on the Bacterial Attachment and Biofilm Formation in Anoxic Fixed-Bed Biofilm Reactors*. *Water, Air, and Soil Pollution*, 234(3). <https://doi.org/10.1007/s11270-023-06174-2>.
- Singga, S. & Dukabain, O. M. (2019). *Kombinasi metode anaerob dan aerob pada septik tank untuk menurunkan kadar BOD, TSS dan Coliform pada limbah cair rumah tangga*. *Oehonis: The Journal of Environmental Health Research*. 3(1): 180-184.
- Sirajuddin, F. E., & Saleh, M. F. (2020). *Efektifitas Biofiltrasi dengan Media Arang Tempurung Kelapa dan Batu Apung Terhadap Penurunan Kadar COD, Nitrat, dan Amonia dalam Air Limbah Domestik*. *MITL Media Ilmiah Teknik Lingkungan*, 5(1), 27–35.
- Subroto, T. (2019). *Penyisihan Organik Dan Nutrien Pada Air Limbah Domestik Dari Gedung Perkantoran Menggunakan Sistem Pengolahan Anoksik Fixed*

Bed-Mbbr Dengan Variasi Rasio Resirkulasi Dan Aerasi Berkala. Bandung: ITB Press.

Syahidah, S., Effendy, V. V., & Fananda, A. A. (2021). *Pengembangan sistem FBBR (Fixed Bed Biofilm Reactor) melalui pemanfaatan nanomaterial dan enzim lipase rekombinan sebagai solusi penanganan FOG (Fat, Oil, Grease) pada air limbah*.

Tchobanoglous, G., Stensel, H. D., Tsuchihashi, R., & Burton, F. (2014). *Wastewater Engineering Treatment and Resource Recovery* (L. Buczek, Ed.; Fifth Edition). McGraw-Hill Education.

United States Environmental Protection Agency. (2009). *National primary drinking water regulations*. U.S. Environmental Protection Agency.

World Health Organization. (2011). *Guidelines for drinking-water quality* (4th ed.). World Health Organization.

Zhao, Y., Yuan, Q., He, Z., Wang, H., Yan, G., Chang, Y., Chu, Z., Ling, Y., & Wang, H. (2019). *Influence of carrier filling ratio on the advanced nitrogen removal from wastewater treatment plant effluent by denitrifying MBBR*. International Journal of Environmental Research and Public Health, 16(18), 3244. <https://doi.org/10.3390/ijerph16183244>.

Zhou, Y., dkk. (2023). *A Comprehensive Review on Wastewater Nitrogen Removal and Its Recovery Processes*. Int J Environ Res Public Health. 2023, 20(4):3429. <https://doi.org/10.3390/ijerph20043429>.