



















- [11] M. M. Ghorani, M. H. Sotoude Haghighi, A. Maleki, and A. Riasi, "A numerical study on mechanisms of energy dissipation in a pump as turbine (PAT) using entropy generation theory," *Renew. Energy*, vol. 162, pp. 10336–1053, 2020, doi: 10.1016/j.renene.2020.08.102.
- [12] M. Le Marre *et al.*, "Pumps as turbines regulation study through a decision-support algorithm," *Renew. Energy*, vol. 194, pp. 561–570, 2022, doi: 10.1016/j.renene.2022.05.128.
- [13] M. Venturini, L. Manservigi, S. Alvisi, and S. Simani, "Development of a physics-based model to predict the performance of pumps as turbines," *Appl. Energy*, vol. 231, no. 4, pp. 343–354, 2018, doi: 10.1016/j.apenergy.2018.09.054.
- [14] A. E. Sani, "Design and synchronizing of Pelton turbine with centrifugal pump in RO package," *energy*, vol. 172, pp. 234–242, 2019, doi: 10.1016/j.energy.2019.01.144.
- [15] A. Neris Bachtiar, I. Yusti, F. Pohan, F. Santosa, I. Berd, and U. Gatot, "Performance of a Centrifugal Pump as a Pico Hydro Scale Turbine," *Adv. Appl. Sci.*, vol. 4, no. 4, 2019, doi: 10.11648/j.aas.20190404.11.
- [16] A. N. Bachtiar, A. F. Pohan, Santosa, I. Berd, and U. G. S. Dinata, "Performance on compressor as turbine (CAT) piko hydro scale," *Int. J. Renew. Energy Res.*, vol. 9, no. 4, pp. 2073–2081, 2019, doi: 10.20508/ijrer.v9i4.9331.g7830.
- [17] A. N. Bachtiar, A. F. Pohan, R. Ervil, and Nofriadiman, "Effect of Rotation and Constant Head Variation on Performance of Three Sizes of Pump-as-Turbine (PAT)," *Int. J. Renew. Energy Res.*, vol. 13, no. 1, pp. 171–183, 2023, doi: 10.20508/ijrer.v13i1.13537.g8673.
- [18] A. N. Bachtiar *et al.*, "Effect of head variations on performance four sizes of blowers as turbines (BAT)," *Int. J. Renew. Energy Res.*, vol. 10, no. 1, 2020.
- [19] M. Stefanizzi, T. Capurso, G. Balacco, M. Binetti, S. M. Camporeale, and M. Torresi, "Selection, control and techno-economic feasibility of Pumps as Turbines in Water Distribution Networks," *Renew. Energy*, vol. 162, pp. 1292–1306, 2020, doi: 10.1016/j.renene.2020.08.108.
- [20] F. Plua, V. Hidalgo, E. Cando, M. Pérez-Sánchez, and P. A. López-Jiménez, "Pumps as Turbines (PATs) by Analysis with CFD Models," *Int. J. Adv. Sci. Eng. Inf. Technol.*, vol. 12, no. 3, pp. 1098–1104, 2022, doi: 10.18517/ijaseit.12.3.15290.
- [21] A. N. Bachtiar *et al.*, "Effect Of Geometric Differences Impeller Blades On Performance Blower-As-Turbine (BAT) On Pico-Hydro Scale," *Int. J. Renew. Energy Res.*, vol. 11, no. 3, pp. 1124–1135, 2021, doi: 10.20508/ijrer.v11i3.11943.g8243.
- [22] F. Yang, Z. Li, Y. Yuan, Z. Lin, G. Zhou, and Q. Ji, "Study on vortex flow and pressure fluctuation in dustpan-shaped conduit of a low head axial-flow pump as turbine," *Renew. Energy*, vol. 196, pp. 856–869, 2022, doi: 10.1016/j.renene.2022.07.024.
- [23] K. Kan, Q. Zhang, Z. Xu, Y. Zheng, Q. Gao, and L. Shen, "Energy loss mechanism due to tip leakage flow of axial flow pump as turbine under various operating conditions," *energy*, vol. 255, pp. 870–878, 2022, doi: 10.1016/j.energy.2022.124532.
- [24] A. Kandi, M. Moghimi, M. Tahani, and S. Derakhshan, "Optimization of pump selection for running as turbine and performance analysis within the regulation schemes," *energy*, vol. 217, pp. 234–241, 2021, doi: 10.1016/j.energy.2020.119402.
- [25] A. Kandi, G. Meirelles, and B. Brentan, "Employing demand prediction in pump as turbine plant design regarding energy recovery enhancement," *Renew. Energy*, vol. 187, pp. 22–236, 2022, doi: 10.1016/j.renene.2022.01.093.
- [26] S. S. Yang, S. Derakhshan, and F. Y. Kong, "Theoretical, numerical and experimental prediction of pump as turbine performance," *Renew. Energy*, vol. 48, no. 3, pp. 507–513, 2012, doi: 10.1016/j.renene.2012.06.002.
- [27] M. Crespo Chacón, J. A. Rodríguez Díaz, J. García Morillo, and A. McNabola, "Hydropower energy recovery in irrigation networks: Validation of a methodology for flow prediction and pump as turbine selection," *Renew. Energy*, vol. 147, pp. 1728–1738, 2020, doi: 10.1016/j.renene.2019.09.119.
- [28] Y. Liu, Y. Han, L. Tan, and Y. Wang, "Blade rotation angle on energy performance and tip leakage vortex in a mixed flow pump as turbine at pump mode," *energy*, vol. 206, pp. 132–141, 2020, doi: 10.1016/j.energy.2020.118084.
- [29] M. Liu, L. Tan, and S. Cao, "Theoretical model of energy performance prediction and BEP determination for centrifugal pump as turbine," *energy*, vol. 172, pp. 712–732, 2019, doi: 10.1016/j.energy.2019.01.162.
- [30] Y. Han and L. Tan, "Dynamic mode decomposition and reconstruction of tip leakage vortex in a mixed flow pump as turbine at pump mode," *Renew. Energy*, vol. 155, pp. 725–734, 2020, doi: 10.1016/j.renene.2020.03.142.
- [31] J. Delgado, J. P. Ferreira, D. I. C. Covas, and F. Avellan, "Variable speed operation of centrifugal pumps running as turbines. Experimental investigation," *Renew. Energy*, vol. 142, pp. 437–450, 2019, doi: 10.1016/j.renene.2019.04.067.
- [32] S. V. Jain, A. Swarnkar, K. H. Motwani, and R. N. Patel, "Effects of impeller diameter and rotational speed on performance of pump running in turbine mode," *Energy Convers. Manag.*, vol. 89, pp. 808–824, 2015, doi: 10.1016/j.enconman.2014.10.036.
- [33] S. Abazariyan, R. Rafee, and S. Derakhshan, "Experimental study of viscosity effects on a pump as turbine performance," *Renew. Energy*, vol. 127, no. 1, pp. 1473–1490, 2018, doi: 10.1016/j.renene.2018.04.084.
- [34] Y. Liu and L. Tan, "Tip clearance on pressure fluctuation intensity and vortex characteristic of a mixed flow pump as turbine at pump mode," *Renew. Energy*, vol. 129, no. 2, pp. 606–615, 2018, doi: 10.1016/j.renene.2018.06.032.
- [35] M. Kramer, K. Terheiden, and S. Wieprecht, "Pumps as turbines for efficient energy recovery in water supply networks," *Renew. Energy*, vol. 122, no. 3, pp. 17–25, 2018, doi: 10.1016/j.renene.2018.01.053.
- [36] A. N. Bachtiar *et al.*, "Performance of Water Wheel Knock Down System (W2KDS) for Rice Milling Drive," *Int. J. Adv. Sci. Eng. Inf. Technol.*, vol. 11, no. 3, pp. 907–916, 2021, doi: 10.18517/ijaseit.11.3.10468.
- [37] M. P. Boyce, *Gas Turbine Engineering Handbook*, Third. Gulf Professional Publishing, 2006.
- [38] F. M. White, *Fluid Mechanics*, Seventh. New York: McGraw-Hill, Inc, 2001.