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Implementation and performance analysis of a controlling system of a water pump coupled with VIF
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Abstract

Through photovoltaic (PV)-based electrical pumps, a substantial quantity of the world's renewable energy production is conserved. The production of irrigated cereals is hindered by the rising price of petroleum and the unreliable supply of electricity. As an alternative to electric and diesel pumps, solar pumps can be used to irrigate crops. This study demonstrates how a solar pump operated by a variable inertia flywheel can be used to power modest irrigation systems that water field vegetation. This study proposes a new model for an eco-friendly, solar-powered, Variable Inertia Flywheel (VIF)-coupled irrigation device that increases irrigation capacity in remote areas while conserving energy. © 2024 Author(s).

References

- Clerk, R.C.
(1963) *ASME*, 711 A.
- Rabenhorst, D.W.
(1980) *Johns Hopkins A PL Tech. Digesl*, 1, p. 2.
- Halcrow, W.
(1984) *Handbook on Solar Water Pumping*,
UNDP Project GLO/80/003, World Bank, United Nations. UK
- Bang, L.T., Ramesh, S., Purbolaksono, J., Ching, Y.C., Long, B.D., Chandran, H.,
Ramesh, S., Othman, R.
(2015) *Mater. Design*, 87, pp. 788-796.
- Ramesh, S., Meenaloshini, S., Tan, C.Y., Chew, W.J.K., Teng, W.D.
(2008) *Ceram. Int.*, 34, pp. 1603-1608.
- Ramesh, S., Natasha, A.N., Tan, C.Y., Bang, L.T., Niakan, A., Purbolaksono, J., Chandran,
H., Teng, W.D.
(2015) *Ceram. Int.*, 41, pp. 10434-10441.
- Tan, C.Y., Yaghoubi, A., Ramesh, S., Adzila, S., Purbolaksono, J., Hassan, M.A., Kutty,
M.G.
(2013) *Ceram. Int.*, 39, pp. 8979-8983.
- Bowen, C., Ramesh, S., Gill, C., Lawson, S.
(1998) *J. Mater. Sci.*, 33, pp. 5103-5110.
- Manladan, S.M., Yusof, F., Ramesh, S., Zhang, Y., Luo, Z., Ling, Z.
(2017) *J. Mater. Proc. Tech.*, 250, pp. 45-54.
- Ramesh, S., Zulkifli, N., Tan, C.Y., Wong, Y.H., Tarlochan, F., Ramesh, S., Teng, W.D.,
Sarhan, A.A.D.
(2018) *Ceram. Int.*, 44, pp. 8922-8927.

- Gunathilake, T.M.S.U., Ching, Y.C., Chuah, C.H., Illias, H.A., Ching, K.Y., Singh, R., Nai-Shang, L.
(2018) *Int. J. Biological Macromolecules*, 118, pp. 1055-1064.
- Francis, K.A., Liew, C.-W., Ramesh, S., Ramesh, K., Ramesh, S.
(2016) *Ionics*, 22, pp. 919-925.
- Ramesh, S., Amiriyan, M., Meenaloshini, S., Tolouei, R., Hamdi, M., Pruboloksono, J., Teng, W.D.
(2011) *Ceram. Int.*, 37, pp. 3583-3590.
- Jais, A.A., Ali, S.A.M., Anwar, M., Somalu, M.R., Muchtar, A., Isahak, W.N.R.W., Tan, C.Y., Brandon, N.P.
(2017) *Ceram. Int.*, 43, pp. 8119-8125.
- Misran, H., Singh, R., Yarmo, M.A.
(2008) *Microporous and Mesoporous Mater.*, 112, pp. 243-253.
- Barzani, M.M., Sarhan, A.A.D., Farahany, S., Ramesh, S., Maher, I.
(2015) *Measurement*, 62, pp. 170-178.
- Yeo, W.H., Fry, A.T., Purbolaksono, J., Ramesh, S., Inayat-Hussain, J.I., Liew, H.L., Hamdi, M.
(2014) *J. Supercritical Fluids*, 92, pp. 215-222.
- Pai, Y.S., Yap, H.J., Singh, R.
(2015) *Proc. Inst. Mech. Eng. Part B J. Eng. Manuf.*, 229, pp. 1029-1045.
- Ramesh, S., Tan, C.Y., Yeo, W.H., Tolouei, R., Amiriyan, M., Sopyan, I., Teng, W.D.
(2011) *Ceram. Int.*, 37, pp. 599-606.
- Sutharsini, U., Thanihaichelvan, M., Ting, C.H., Ramesh, S., Tan, C.Y., Chandran, H., Sarhan, A.A.D., Urriés, I.
(2017) *Ceram. Int.*, 43, pp. 7594-7599.
- Tan, C.Y., Singh, R., Teh, Y.C., Tan, Y.M., Yap, B.K.
(2015) *Int. J. Appl. Ceram. Tech.*, 12, pp. 223-227.
- Afshar-Mohajer, M., Yaghoubi, A., Ramesh, S., Bushroa, A.R., Chin, K.M.C., Tin, C.C., Chiu, W.S.
(2014) *Appl. Surf. Sci.*, 307, pp. 1-6.
- Wen, B., Musa, S.N., Onn, C.C., Ramesh, S., Liang, L., Wang, W., Ma, K.
(2020) *Building and Environment*, 185.
- Alkhatib, S.E., Tarlochan, F., Mehboob, H., Singh, R., Kadirgama, K., Harun, W.S.B.W.
(2019) *Artificial Organs*, 43, pp. E152-E164.
- Zavareh, M.A., Sarhan, A.A.D.M., Karimzadeh, R., Singh, R.S.A.I.K.
(2018) *Ceram. Int.*, 44, pp. 5967-5975.
- Mardziah, C.M., Ramesh, S., Wahid, M.F.A., Chandran, H., Sidhu, A., Krishnasamy, S., Purbolaksono, J.
(2020) *Ceram. Int.*, 46, pp. 13945-13952.
- Sugumaran, T., Silvaraj, D.S., Saidi, N.M., Farhana, N.K., Ramesh, S., Ramesh, K., Ramesh, S.
(2019) *Ionics*, 25, pp. 763-771.
- Mohamed, A.U., Cheong, A.C.H.
Automated color sorting for material handling system

- (2023) *AIP Conference Proceedings*, 2788.
AIP Publishing
- Ahmed, A.A.A., Cheong, A.C.H.
Design and develop spiral conveyor for flexible manufacturing system (FMS)
(2023) *AIP Conference Proceedings*, 2788.
AIP Publishing
 - Sivakumar, S., Alexander, C.H.C., Teow, H.L., Ali, M.Y., Ramesh, S.
Two-Stage Sintering of Zirconia Toughened Alumina Composite (ZTA) Doped with Copper Oxide
(2023) *Proceeding of 5th International Conference on Advances in Manufacturing and Materials Engineering: ICAMME 2022*, pp. 661-667.
Springer Nature Singapore
 - Sivakumar, S., Alexander, C.H.C., Teow, H.L., Ali, M.Y., Ramesh, S.
Effect of Zirconia Doping on the Sintering and Mechanical Properties of Hydroxyapatite Bioceramic
(2023) *Proceeding of 5th International Conference on Advances in Manufacturing and Materials Engineering: ICAMME 2022*, pp. 147-153.
Springer Nature Singapore
 - Yusofe, A.Y.A., Chee, H.C., Ramesh, S., Ali, M.Y., Ibrahim, Z.
Design and engineering analysis of a coconut peeler machine
(2023) *AIP Conference Proceedings*, 2643.
AIP Publishing
 - Jama, M.I.B., Chee, H.C., Ramesh, S., Ya'Akub, S.R., Ibrahim, Z., Ali, M.Y.
Engineering analysis of an upright wheel assembly for passenger vehicle
(2023) *AIP Conference Proceedings*, 2643.
AIP Publishing
 - Cheong, A.C.H., Jie, K.F., Xian, J.I.Y.Y., Ibrahim, Z., Ramesh, S.
Digital twin in manufacturing by using programmable logic controller (PLC)
(2023) *AIP Conference Proceedings*, 2643.
AIP Publishing
 - Lee, Y.I.C., Lai, N.A.I.S., Chee, A.C.H.
(2022) *J. Eng. Sci. Technol.*, pp. 77-106.
 - Chee, A.C.H., Sivanesan, S.
(2022) *J. Eng. Sci. Technol.*, pp. 1-11.
 - Cheong, A.C.H., Sivanesan, S.
(2022) *J. Eng. Sci. Technol.*, pp. 203-213.
SPECIAL EDITION, Wilson
 - Mahmoud, M.M.
(1990) *IEE Proc.*, 137, p. 6.
 - Overstraeten, R., Mertens, R., Kerbeche, T., Anis, W.
(1984) *Solar Wind Technol.*, 1, p. 4.
 - Pulfrey, D.L., Ward, P.R.B., Dunford, W.G.
(1987) *Solar Energy*, 38, p. 4.
 - Velkoff, H.
(1979) *J. Appl. Mech. Trans. ASME*, 46, pp. 186-190.
Ullman
 - Gulia, N.V.
(1973) *Vor. Univ. Press. USSR*,

- Rupp, A., Baier, H., Mertiny, P., Secanell, M.
(2016) *Energy*, 107, pp. 625-638.
- Li, C., Xu, C., Zhao, J.
(2012) *IEEE Trans. Power Electron.*, 31, pp. 1-6.
- Liu, T., Miura, J., Ise, Y.
(2015) *IEEE Trans. Power Electron.*, 31, pp. 3600-3611.
- Yamazaki, M.
(2005), US 6915720 B2
- Salam, S.M., Rashid, M.M.
(2022) *Proc. 8th Int. Conf. Mechatronics Eng.*, pp. 90-94.
- Mahato, A.C., Ghoshal, S.K., Samantaray, A.K.
(2019) *SN Appl. Sci.*, 1, p. 605.

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