

Appendix

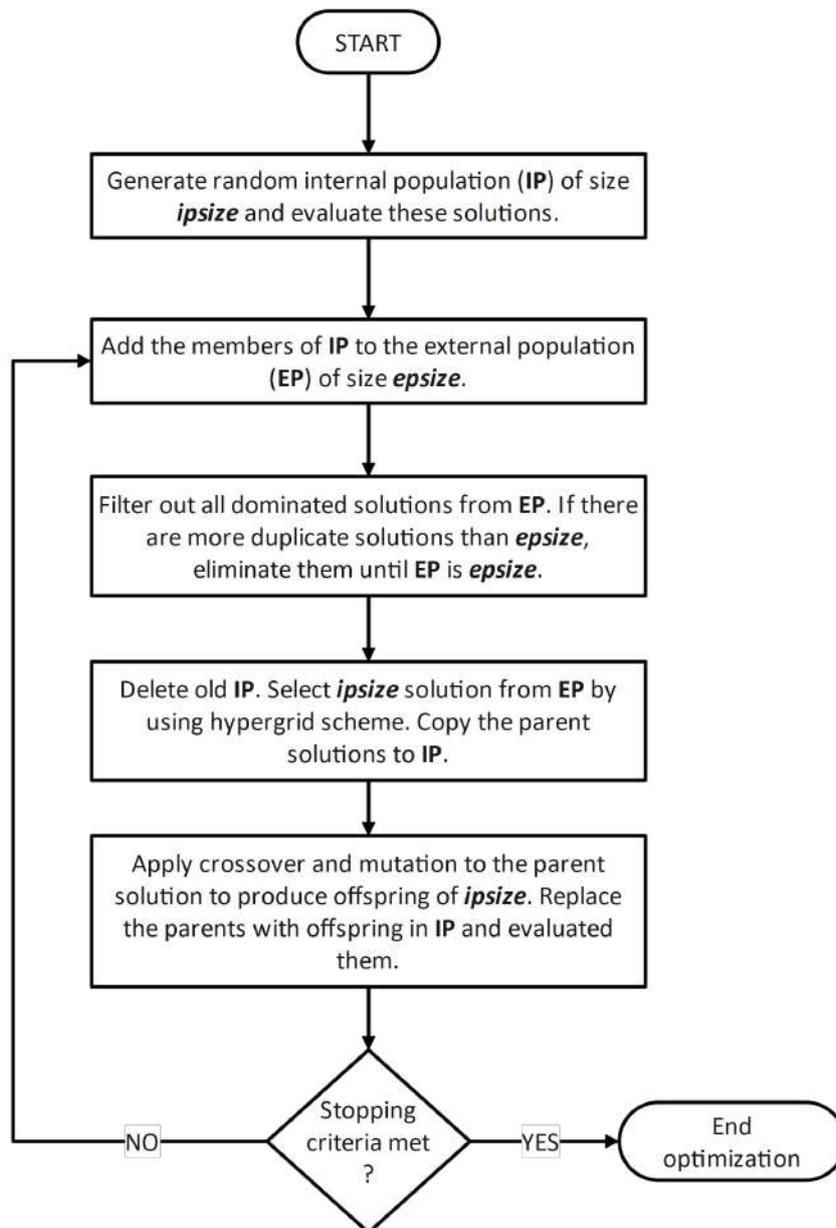


Fig. A.1: A block diagram of the PESA-II.

Table A.1: Purchase equipment costs at the optimal conditions of the ORC configurations.

Components	Basic ORC	Recuperative ORC	Regenerative ORC	RR-ORC
VG	24000 \$	24324 \$	24778 \$	24797 \$
VT	603840 \$	638590 \$	665320 \$	678500 \$
COND	47896 \$	49862 \$	54019 \$	54674 \$
FP-I	20919 \$	26433 \$	6550 \$	6760 \$
FP-II	–	–	26433 \$	27012 \$
FH	–	–	34433 \$	56021 \$
IHE	–	10670 \$	–	12710 \$

Table A.2: Purchase equipment costs for each component of four CCHP systems at the optimal conditions.

Components	system-I	system-II	system-III	system-IV
AC	6934000 \$	6934000 \$	6934000 \$	6934000 \$
APH	137440 \$	133640 \$	142130 \$	134750 \$
CC	2592200 \$	2561800 \$	2820100 \$	2696700 \$
GT	4894400 \$	4544900 \$	5197200 \$	4461300 \$
HRSG	2993900 \$	3864700 \$	2894600 \$	3064400 \$
ST	4251200 \$	6886400 \$	8568500 \$	8933800 \$
FP-I	220250 \$	302520 \$	188210 \$	196820 \$
FP-II	81983 \$	55873 \$	9141.6 \$	7550.6 \$
FP-III	44977 \$	93930 \$	–	2134.4 \$
FP-IV	62634 \$	–	–	–
OWH	–	–	856770 \$	663640 \$
COND (ST)	–	–	277540 \$	223250 \$
VG	385610 \$	594660 \$	–	–
VT	2287900 \$	2997300 \$	–	–
IHE	153180 \$	198780 \$	–	–
FH	27892 \$	26756 \$	–	–
COND(ORC)	281010 \$	381430 \$	–	–
GEN-I	76674 \$	35778 \$	39973 \$	79462 \$
ABS-I	76823 \$	105250 \$	132370 \$	79617 \$
CON-I	29964 \$	41416 \$	52087 \$	31053 \$
EVA-I	80701 \$	108130 \$	135990 \$	83635 \$
SHE-I	15630 \$	26129 \$	32862 \$	16198 \$
GEN-II	42310 \$	–	–	39431 \$
ABS-II	127370 \$	–	–	127840 \$
CON-II	49680 \$	–	–	50306 \$
EVA-II	133800 \$	–	–	131340 \$
SHE-II	25915 \$	–	–	31738 \$
WH	46851 \$	46851 \$	46851 \$	46851 \$

List of publications

Journals

- (1) **Nondy, J.** and Gogoi, T. K. Comparative performance analysis of four different combined power and cooling systems integrated with a topping gas turbine plant. *Energy Conversion and Management*, 223:113242, 2020. <https://doi.org/10.1016/j.enconman.2020.113242>. [IF: 11.533, SCIE, Q1]
- (2) **Nondy, J.** and Gogoi, T. K. A comparative study of metaheuristic techniques for the thermoenviromonic optimization of a gas turbine-based benchmark combined heat and power system. *Journal of Energy Resources Technology*, 143(6): 062104, 2020. <https://doi.org/10.1115/1.4048534>. [IF: 3.07, SCI, Q2]
- (3) **Nondy, J.** and Gogoi, T. K. Performance comparison of multi-objective evolutionary algorithms for exergetic and exergoenvironmental optimization of a benchmark combined heat and power system. *Energy*, 233:121135, 2021. <https://doi.org/10.1016/j.energy.2021.121135>. [IF: 8.857, SCIE, Q1]
- (4) **Nondy, J.** and Gogoi, T.K. Exergoeconomic investigation and multi-objective optimization of different ORC configurations for waste heat recovery: A comparative study. *Energy Conversion and Management*, 245:114593, 2021. <https://doi.org/10.1016/j.enconman.2021.114593>. [IF: 11.533, SCIE, Q1]
- (5) Musharavati, F., Khanmohammadi, S., **Nondy, J.** and Gogoi, T.K. Proposal of a new low-temperature thermodynamic cycle: 3E analysis and optimization of a solar pond integrated with fuel cell and thermoelectric generator. *Journal of Cleaner Production*, 331:129908, 2022. <https://doi.org/10.1016/j.jclepro.2021.129908>. [IF: 11.072, SCIE, Q1]
- (6) **Nondy, J.** and Gogoi, T.K. Tri-objective optimization of two recuperative gas turbine-based CCHP systems and 4E analyses at optimal conditions. *Applied Energy*, 323:119582, 2022. <https://doi.org/10.1016/j.apenergy.2022.119582>. [IF: 11.446, SCIE, Q1]

- (7) **Nondy, J.** and Gogoi, T.K. 4E analyses of an intercooled-recuperative gas turbine-based CCHP system: Parametric analysis and tri-objective optimization. *Thermal Science and Engineering Progress*, 39:101719, 2023. <https://doi.org/10.1016/j.tsep.2023.101719>. [IF: 4.56, SCIE, Q1]
- (8) Gogoi, T.K., Lahon, D. and **Nondy, J.** Energy, exergy and exergoeconomic (3E) analyses of an organic Rankine cycle integrated combined cycle power plant. *Thermal Science and Engineering Progress*, 41:101849, 2023. <https://doi.org/10.1016/j.tsep.2023.101849>. [IF: 4.56, SCIE, Q1]
- (9) **Nondy, J.** and Gogoi, T.K. Proposal of a proton exchange membrane fuel cell-based hybrid system: Energy, exergy and economic analyses and tri-objective optimization. *International Journal of Hydrogen Energy*. <https://doi.org/10.1016/j.ijhydene.2023.04.294>. [IF: 7.13, SCIE, Q1]

Conference Papers

- (1) **Nondy, J.** and Gogoi, T. K. Exergy analysis of a combined gas turbine and organic Rankine cycle based power and absorption cooling systems. In *Gas Turbine India Conference*, volume 83525, page V001T02A002. American Society of Mechanical Engineers, 2019. <https://doi.org/10.1115/GTINDIA2019-2351>.
- (2) **Nondy, J.** and Gogoi, T.K. Energy and exergy analyses of a gas turbine and reheat-regenerative steam turbine integrated combined cycle power plant. In *Advances in Thermofluids and Renewable Energy*, pages 233–248. Springer, 2022. https://doi.org/10.1007/978-981-16-3497-0_18
- (3) **Nondy, J.**, Gogoi, T. K. and Shukla, A.K. 4E Analyses and tri-objective optimization of a gas turbine-based combined heat and power system. In *Recent Advances in Mechanical Engineering*, pages 443–456. Springer, 2023. https://doi.org/10.1007/978-981-99-1894-2_38

Book chapters

- (1) **Nondy, J.** and Gogoi, T. K. Trigeneration system: Exergoeconomic and environmental analysis. In *Hybrid Power Cycle Arrangements for Lower Emissions*, pages 219–238. CRC Press. <https://doi.org/10.1201/9781003213741-11>