**Energy 145 (2018) 38-51**

Multi-generation system incorporated with PEM electrolyzer and dual

ORC based on biomass gasification waste heat recovery: Exergetic,

economic and environmental impact optimizations

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In this paper, a multi-generation system comprising a dual organic Rankine cycle equipped with an ejector refrigeration loop, a biomass gasification process and a proton exchange membrane electrolyzer is developed to produce the syngas, power, refrigeration effect, heating load, hydrogen and oxygen. R245fa-R134a, R236fa-R1234yf and R600-R290 are applied as three organic working fluid groups inside the dual organic Rankine cycle. The system concerned is modeled using the exergy, exergoeconomic and exergoenvironmental analyses. An elitist non-dominated sorting genetic algorithm is individually used to

optimize the thermodynamic, economic and environmental performances of the system for each working fluid group. The LINMAP and TOPSIS decision makers are applied to select the optimum performances of the system and electrolyzer. The optimization results show that the hydrogen cost and environmental impact per unit exergy are improved within 49.18% and 34.58%, respectively through the LINMAP method for R236fa-R1234yf. In addition, the maximum improvement in the total cost rate of the system is calculated within 39.5% for R245fa-R134a through the TOPSIS procedure and the highest increment in the environmental impact rate belongs to R236fa-R1234yf by about 34.69% using the LINMAP decision maker.

**Energy 91 (2015) 685-699**

Optimization of a novel combined cooling, heating and power cycle

driven by geothermal and solar energies using the water/CuO (copper

oxide) nanofluid

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In this paper, a novel micro CCHP (combined cooling, heating and power system) driven by solar and geothermal energies is modeled and optimized. The CCHP system integrated with flat plate collectors is based on an ORC (organic Rankine cycle) with an ejector refrigeration cycle. The CuO (copper oxide) nanoparticles suspended in pure water are applied as the heat transfer medium inside the collector subsystem. NSGA-II (Non-dominated Sort Genetic Algorithm-II) is individually employed to achieve the

final solutions in the multi-objective optimization of the system for four working fluids including R134a, R423A, R1234ze and R134yf from the energy, exergy and exergoeconomic viewpoints. The multi objective optimization results indicate that the best fluid from the energy and exergy viewpoints is R134a with 30.73% and 1.33% improvement, respectively relative to the base case. Also, R423A is the best fluid with the minimum total heat exchangers area so that the maximum nanoparticles volume fraction is required compared with other studied fluids. Furthermore, the best fluid from the exergoeconomic as well as environmental viewpoints is R1234yf with minimum total product cost rate of 5267.91 $/year. In this case, the maximum collector area and the minimum nanoparticles volume fraction are needed compared with other studied fluids.

**JREE: Vol. 3, No. 1, (Winter 2015) 43-51**

**Multi-objective Optimization of a Solar Driven Combined Power and**

**Refrigeration System Using Two Evolutionary Algorithms Based on**

**Exergoeconomic Concept**

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This paper deals with a multi-objective optimization of a novel micro solar driven combined power and ejector refrigeration system (CPER). The system combines an organic Rankine cycle (ORC) with an ejector refrigeration cycle to generate electricity and cold capacity simultaneously. Major thermodynamic parameters, namely turbine inlet temperature, turbine inlet pressure, turbine back pressure, and evaporator temperature are selected as the decision variables. Three objective functions, namely the energetic efficiency, exergetic efficiency and cost rate of products are selected for optimization. NSGA-II and MOPSO are employed and compared, to achieve the final solutions in the multi-objective optimization of the system operating. It is found that the values of the energetic and exergetic efficiencies increase within 27.7% and 26.1%, respectively and the cost rate of products decreases by about 32.7% with respect to base case.

**Journal of Cleaner Production 139 (2016) 970e985**

Exergoeconomic analysis and optimization of a solar driven dualevaporator

vapor compression-absorption cascade refrigeration

system using water/CuO nanofluid

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In this paper, a novel cascade refrigeration system integrated with flat plate solar collector is modeled and optimized. While LiBreH2O is applied as fluid pair in cascade absorption section, R134a, R1234ze, R1234yf, R407C and R22 fluids are applied in the vapor compression section and the water/copper oxide

(CuO) nanofluid is applied as the heat transfer medium inside the collector subsystem. Nanoparticles volume fraction, mass flow rate of strong solution, low pressure of absorption section, collector tilt angle

as well as solar collector area are selected as design parameters while the daily thermal and exergy coefficients of performance and total product cost rate are selected as three objective functions. Nondominated Sort Genetic Algorithm-II (NSGA-II) is individually employed to achieve the final solutions of the system for the best working fluids from the thermodynamic and thermoeconomic viewpoints. The proposed system modeling represents that R134a is the best fluid from the energy and exergy viewpoints with daily energy and exergy coefficients of performance of 9.340% and 0.5815%, respectively and R1234ze with the total product cost rate of 7016 $/year is the best working fluid from the exergoeconomic viewpoint. The optimization results indicate that R134a with 2.4% and 2% improvement of the daily energy and exergy coefficients of performance, respectively, relative to the base case needs minimum collector area with amount of 680 m2 among the other working fluids. In addition, R1234ze with the total product cost rate reduction of 2.4% requires maximum nanoparticles and collector area with values of 0.041 and 702.01 m2, respectively.

**7th International Conference on Computer and Knowledge Engineering (ICCKE 2017), October 26-27 2017, Ferdowsi University of Mashhad**

**SDSuPK: Secured Data Sharing using Proxy Kerberos to Improve Openstack Swift Security**

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**Abstract- Cloud computing is rather new, and there're, of course, concerns like data-protection. This technology is developing as a standard for data-sharing on remote storages. Cloud has been able to convince users and companies' owners to transfer their data to Cloud so they can use Cloud resources and reduce their costs. Due to importance of data for its owners, there's always concern about security. When the amount of data sent to Cloud increases, giving permission to users and taking it back becomes a challenging topic. Also, as the number of users increases, a large workload lies on Cloud server due to authentication, which is a serious challenge of Cloud. In this paper, we focus on a trusted third-party mechanism, namely Kerberos, to address the mentioned issues. These mechanisms based on tickets are an effective way to ensure user authentication and authorization and force the least interaction and workload to the Cloud server. We designed a mechanism based on Kerberos that completely fits into Openstack Object Storage(Swift) to authenticate and authorize users who desire to access the shared objects. We implement our mechanism and overall system, and evaluate its security and performance. Our results show that our mechanism is practical and efficient.**