3D study of cooling system effect on the heat transfer during polymer injection molding

Hamdy HASSAN, N. Regnier, and G. Defaye

Abstract:

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Keywords:

NULL

Published In:

International Journal of Thermal Sciences, 49, 161–169
Study of the parameters and characteristics of flat heat pipe with nanofluids subjected to periodic heat load on its performance

Hamdy HASSAN and Souad HARMAND

Abstract:

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Keywords:

NULL

Published In:

International Journal of Thermal Sciences, 97, 126-142
Effect of rotation speed on the temperature of starter alternator machine

Hamdy HASSAN and Souad HARMAND

Abstract:

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Keywords:

NULL

Published In:

Heat and Mass Transfer, Vol. 52, PP. 197-204
Effect of the condenser type and the medium of the saline water on the performance of the solar still in hot climate conditions

Hamdy Hassan, Saleh Abo-Elfadl

Abstract:

This paper presents an experimental work to study the effect of the condenser and the medium of saline water types on the performance of the solar still. Single slope solar still facing the south is used in this work. Also, four types of the condenser are tested: (i) glass, (ii) aluminum plate, (iii) aluminum heat sink with pin fins, and (iv) aluminum plate covered with an umbrella. Moreover, four mediums of the saline water inside the basin are examined: (i) only saline water in the basin, (ii) layers of black steel fibers in the basin, (iii) saturated sand with saline water, and (iv) mixture of sand and black steel fibers saturated with saline water. The solar still of only glass walls and only saline water in the basin is taken as a reference case. The performance of the other cases is referred to the reference case. The results indicate that using heat sink condenser increases the temperature of the saline water. Also, it increases the temperature difference between the condenser and the saline water relative to using glass condenser. Also, using a glass condenser with black steel fibers inside the water basin increases the daily productivity of freshwater by 35%. Using the heat sink condenser increases the daily productivity from 31% in the case of using only saline water to 52% in the case of using black steel fibers in the basin. Using an umbrella of 20 cm wide at the top of the aluminum plate condenser decreases the daily productivity by 26%. Increasing the umbrella wide to 40 cm decreases the daily productivity by 31%.

Keywords:

Solar still; Condenser; Saline water; Performance

Published In:

Desalination, Vol. 417, No. 1, pp. 60-68
Experimental study on the performance of double pass and two inlet ports solar air heater (SAH) at different configurations of the absorber plate

Hamdy Hassan, Saleh Abo-Elfadl

Abstract:

The effect of using different absorber plate configurations on the performance of double pass SAH with two inlet ports is presented. Moreover, the effect of using different air flow percentages through the inlet ports is studied for each studied configuration. Four absorber plate configurations are considered; (i) flat plate (ii) pin finned, (iii) corrugated finned, and (iv) corrugated-perforated finned. Moreover, four percentages of the inlet air are considered: (i) 0% of the air flows through the upper inlet port and 100% through the lower inlet port (0%Up), (ii) 33.3% of the air flows through the upper inlet port and the remainder through the lower inlet port (33.3%Up), (iii) 66.7% of the air flows through the upper inlet port and the remainder through the lower inlet port (66.7 Up), and (iv) 100% of air flows through the upper inlet port (100% Up). These percentages are studied at all absorber plate configurations and for the same total inlet mass flow rate of the air. The measurements are carried out during the day using the solar flux and at night using a solar simulator. The results indicate that increasing the upper air percentage decreases the absorber plate temperature and increases the SAH efficiency for all studied configurations. The efficiency of corrugated-perforated pin fin is the greatest and the flat plate absorber plate is the smallest. The maximum efficiency of the SAH is about 70% for flat plate configuration at (100% Up) and about 79% for the pin finned absorber plate at (100% Up). It is about 82% for the corrugated finned configuration at (100% Up) and about 83% for the corrugated-perforated finned absorber plate at (66.7% Up). The solar simulator analysis provides very near values of the efficiencies which assures the results. The cost analysis indicates that the cost of energy gained by the SAH for the flat plate configuration for 0% UP flow has the maximum cost (0.025 $/kW.h) and the corrugated perforated finned absorber plate of 66.7% has the minimum cost (0.021 $/kW.h).

Keywords:

SAH, Double pass, Inlet port, Absorber plate, Efficiency, Temperature

Published In:

Experimental work on the effect of saline water medium on the performance of solar still with tracked parabolic trough collector (TPTC)

Hassan, Hamdy; Ahmed, M. Salem; Fathy, Mohamed

Abstract:

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Keywords:

NULL

Published In:

Renewable Energy, NULL, p 136-147
An experimental work on the effect of using new technique of thermal energy storage of phase change material on the performance of air conditioning unit

Said, M.A.; Hassan, Hamdy

Abstract:

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Keywords:

NULL

Published In:

Energy and Buildings, v 173, p 353-364
An experimental work on the performance of single slope solar still incorporated with latent heat storage system in hot climate conditions

Yousef, Mohamed S.; Hassan, Hamdy

Abstract:

NULL

Keywords:

NULL

Published In:

Journal of Cleaner Production, v 209, p 1396-1410
Energy, exergy, economic and enviroeconomic (4E) analyses of solar distillation system using different absorbing materials

Yousef, Mohamed S.; Hassan, Hamdy; Sekiguchi, H.

Abstract:

NULL

Keywords:

NULL

Published In:

Applied Thermal Engineering , NULL , p 30-41
Performance, combustion, and emission characteristics of a diesel engine fueled with Jatropha methyl ester and graphene oxide additives

EL-Seesy, Ahmed I.; Hassan, Hamdy; Ookawara, S.

Abstract:

NULL

Keywords:

NULL

Published In:

Energy Conversion and Management, v 166, p 674-686
Effects of graphene nanoplatelet addition to jatropha Biodiesel–Diesel mixture on the performance and emission characteristics of a diesel engine

El-Seesy, Ahmed I.; Hassan, Hamdy; Ookawara, S.

Abstract:

NULL

Keywords:

NULL

Published In:

Energy, v 147, p 1129-1152
Energy and exergy analysis of single slope passive solar still under Egyptian climate conditions

Yousef, Mohamed S.; Hassan, Hamdy; Ahmed, Mahmoud; Ookawara, S.

Abstract:

NULL

Keywords:

NULL

Published In:

Energy Procedia, v 141, p 18-23
Optimal grid connected hybrid energy system for Egyptian residential area

Abdelshafy, Alaaeldin M.; Hassan, Hamdy; Mohamed, Abdelfatah M.; El-Saady, G.; Ookawara, Shinichi

Abstract:

NULL

Keywords:

NULL

Published In:

Proceeding - ICSEEA 2017 International Conference on Sustainable Energy Engineering and Application: Continuous Improvement of Sustainable Energy for Eco-Mobility, v 2018-January, p 52-60
A 3d model of the effect of using heat spreader on the performance of photovoltaic panel (PV)

Soliman, Aly M.A.; Hassan, Hamdy ; Ahmed, Mahmoud ; Ookawara, Shinichi

Abstract:

NULL

Keywords:

NULL

Published In:

Elsevier B.V. , NULL , NULL
A numerical study on the effect of the heat sink as condenser on the performance of passive solar still

Elbar, Ayman Refat Abd; Hassan, Hamdy; Ookawara, S.

Abstract:

NULL

Keywords:

NULL

Published In:

5th International Conference on Renewable Energy: Generation and Application, ICREGA 2018, 2018-January, NULL
Long-term Thermal Energy Storage Using Thermochemical Materials

Hawwash, A.A.; Hassan, Hamdy; Ahmed, Mahmoud; Ookawara, S.; Feky, Khalid El

Abstract:

NULL

Keywords:

NULL

Published In:

Optimal design of a grid-connected desalination plant powered by renewable energy resources using a hybrid PSO-GWO approach

Alaaeldin M. Abdelshafy, Hamdy HASSAN, Jakub Jurasz

Abstract:

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Keywords:

NULL

Published In:

Abstract:

This paper presents a grid-connected double storage system (DSS) consisting of pumped-storage hydropower (PSH) and battery. The system is supplied by photovoltaics and wind turbines. In the proposed hybrid system, batteries absorb excess renewable energy that cannot be stored in PSH and they cover loads that cannot be supplied from the water turbine. To improve the system performance, a novel energy management strategy for the DSS is proposed. The strategy is based on an optimized factor that governs the charging process of the DSS. The problem of the optimal system design is solved by a non-dominated sorting genetic algorithm (NSGA-II). The multi-objective function considers simultaneously the minimal investment cost and minimal CO2 emissions. A comparative study of photovoltaic/wind/pumped-storage hydropower and photovoltaic/wind/double storage system is performed to show the effectiveness of the proposed strategy in terms of system economic and environmental performance. The considered location of the PSH station is on Attaqa Mountain at Suez (Egypt). The results indicate the effectiveness of the proposed energy management strategy for the storage system from economic and environmental perspectives. Coupling the battery with the PSH reduces the electricity cost by 22.2% and results in minimal energy exchange with the national grid (5% of the annual demand). A sensitivity analysis shows the largest variation of the electricity cost with changing the capital cost of the solar and wind generators. Also, it is observed that when the load increases, the optimal size of the system components increases, but it isn't proportional with the demand increase as could be expected.

Keywords:

Pumped-storage hydropower, Battery, Double storage system, Renewable energy sources, NSGA-II, Hybrid energy system

Published In:

Energy Journal, Volume 192, NULL
Multi-Objective Genetic Algorithm Optimal Planning and Scheduling of Hybrid Energy System Connected to the Egyptian Grid

Alaaeldin M. Abdelshafy, Hamdy Hassan, Abdelfatah M. Mohamed, G. El-Saady, Shinichi Ookawara

Abstract:

NULL

Keywords:

NULL

Published In:

Conference: 16th International Conference on Sustainable Energy Technologies (SET 2017) At: Bologna, Italy , NULL , NULL
A study on the thermal energy storage of different phase-change materials incorporated with the condenser of air conditioning unit and their effect on the unit performance

Said M.A., HASSAN H.

Abstract:

NULL

Keywords:

NULL

Published In:

Elsevier Ltd, 202, NULL