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A Review on Performance of Solar Powered Air Conditioning System

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Abstract: ***Solar energy converts the renewable energy to increase growth. The development of energy in to generated worldwide. It in the most easy to construct the process of solar air Conditioning systems. The different energy areinvolved into the solar air conditioning to the decreasing current Sources Then using high oil and concern environmental effects have been Controlling. The most comfortable Process of the solar energy system. It we implemented nowadays, increase in progress. we are air Conditioning systems are using in. every building, malls,Colleges industries, flats, etc. solar power air conditioning system is the hot issue to study building energy Consumer. I Then we indoor and outdoor comfort of air Conditioning while be cold storage system. To increasing the efficiency of air Conditioning intensity of the cooling system. The transient thermal efficiency we can using the storage system to maintain the temperature to indoor,The solar system must be using the different. Parabolic collector from the high accommodation,The basic analysis, to investment of Solar air conditioning system are using 3-phase accumulator. The solar energy using of high rate of low grade energy to high grade of energy are Converting them. It will high efficient process could be panels, collectors, will cool the High temperature can be assumed to use the chilled water storage tank. can be provided due to reduce the system of on and off options. There are improving solar system.It will high efficient process could be panels , collectors, will cool the High temperature can be assumed to use the chilled water storage tank. can be provided due to reduce the system of on and off options. There are improving solar system.it is common for the storage chilling water can be utilized, that can to be operated solar energy.***

I. INTRODUCTION

The solar energy which is coming from the sun in the form of solar radiation is a kind of alternative source of clean renewable energy. As one of the sources of renewable energy, solar energy is likely the but in this project concentrates on development and improvement of a normal air conditioner unit in order to operate using electricity generated from the system. Utilizing solar energy to run the air conditioning system is a practical technique to replace conventional electricity. In order to obtain a feasibility of the air conditioning system using solar, a lot research and testing have been initiated to learn and discover the design and operation of the air conditioning and solar system which is consist of system. Other components, such as fans and water pumps, also consume energy, but it is a relatively small and constant amount. By controlling the compressor frequency, the air-conditioning load could be flexibly tuned to follow the PV generated power. However, this method may destabilize the indoor air temperature and affect the thermal comfort. To further enhance the system performance, the second integration strategy is to integrate the components of the absorption refrigeration cycle with the desiccant cooling. Moreover, both the evaporator coil and the condenser coil from the absorption refrigeration cycle are adopted individually.

1) The most critical input in process of social development, industrial development and economic is energy. Energy consumption is rapidly increasing in day-today life.
2) The conservation of energy can neither be created nor be destroyed but can be transformed from one form to another form, From one place to another place energy can be transported.
3) In primary part of world, air conditioning working on electrical energy has many consumers which usually causes shortage of energy required to run the air condition.
4) Day by day demand of energy is increasing due to increases in population, transportation and industrialization.

The sun is the most important feature in our solar system. The great energy release by sun's is nothing but the result of an elaborate chemical process in sun`s core of thermonuclear fusion

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II. LITERATURE REVEW

There are different types of process are available for solar powerded air conditioning system. We studied some of those papers are mentioned as follows:

1) Yuehong Bi et al (1) introduced "Performance analysis of solar air-conditioningsystem based on the independent-development solar parabolic through collectors". The solar refrigeration system to use the collectors performed, the three phase accumulators are not using the parabolic collectors,but also high energy can be performed three-phase accumulators. Based on the independent-developed solar parabolic trough collector (IDPTC) for solar air conditioning system will performed to the measurement data of the solar radiation intensity the dynamic system of solar air conditioning through three-phase accumulators can be analyzed.

2) B.Y. Zhao et al (2) proposed by "An adaptive control method to improve the power tracking performance of solar photovoltaic air-condition systems". In order to increase the utilization of solar energy to lower the effect of photovoltaic power output fluctuations on power grids, an adaptive PID control method to improve the power tracking performance of solar photovoltaic air-conditioners proposed. In the energy performed to improvement, the control system useful solar absorption system to the solar cooling process such as off grid PAVC system

3) K.F.Fong et al (3) introduced "Performance advancement of solar air-conditioning through integrated system design for building". In the previous studies, the solar absorption air-conditioning using the working pair of water e lithium bromide is found to have energy saving than the convenient compression air conditioning for buildings in the hot-humid climate. The different source of energy to flow to the air refrigerants can be utilized in to design of building comforts human being.

4) Daut et al (4) "Solar powered air conditioning system". The demand of air conditioning is increasing due to the effect of climate change and global warming. If we still rely on the conventional electric air conditioning but electricity is generated form fossil fuels, the greenhouse gas emission would continuously worsen global warming, in turn the demand of air conditioning. In solar is to improved by , air conditioning is a standard provision for buildings.

5) Song Bojie et al (5)"Performance analysis on a new type of solar air- conditioning system". A new system of solar air-conditioning, which adds the heat pump into the original solar air-conditioning, is proposed in order to improve the solar energy system. The new type of solar air-conditioning system is analyzed and compared with the original system. the evaporating temperature can be done into low level of water tanks.

6) Aniket Anil Mhatre et al (6)"Study on solar powered air conditioning system". This system can be used in non-electricity areas. The main reason behind using this energy transformed, solar energy is cost effective, renewable and environment friendly. As the vapor refrigerant leaves the evaporator, the gas is compressed by the compressor to a relatively high pressure and temperature.

7) Jan Wrobel et al (7)"Performance of a solar assisted air conditioning system at different location". Heat Ventilation Air Conditioning systems are the most energy consuming devices among building components. Therefore, to achieve the global aims in energy reduction. Thermally driven air conditioning systems are a possible way to reduce the dependency on traditional vapor compression cycles and to lower the primary energy consumption. Due to the separation of dehumidification and cooling, natural heat sources.

8) R.Z. Wang et al (8)"Design and performance of a solar-powered air-conditioning system in a green building". The operation performance of the system under representative working condition showed that the average refrigeration output of the solar-powered air conditioning system was operation and the maximum Solar fraction for the summer cooling. Compared with the ambient temperature.

9) A.E.Kabel et al (9)"Solar powered air conditioning system using rotary honeycomb desiccant wheel ". A solar powered air conditioning system using liquid desiccant is proposed. A solar air heater containing a porous material is used for regeneration purpose in the system. The honeycomb desiccant rotary wheel is constructed from iron wire and clothes layer impregnated with calcium chloride solution, in honeycomb form, is utilized for the regeneration and absorption processes.

10) Sabina Rosiek et al (10)"Performance evaluation of solar-assisted air-conditioning system with chilled water storage (Ciesol building)". This study presents the performance of solar-assisted air-conditioning system with two chilled water storage tanks installed in the Solar Energy Research Center building. The system consists mainly of solar collectors' array, a hot-water driven absorption chiller, a cooling tower, two hot storage tanks, an auxiliary heater as well as two chilled storage tanks. The chilled water storage tank are the best energy performance.

11) Yingya Chen et al (11)"Performance and optimization of a novel solar-driven liquid desiccant air conditioning system suitable for extremely hot and humid climates". the study investigates the system performance and optimize the ratio of photovoltaic

collector area, considering the building-area constrains typically associated with extreme heat and humidity. Using the proposed system, for every indoor air relative humidity, the regeneration temperature and regeneration heat quantity decrease respectively. The regeneration temperature and regeneration heat quantity of the system increases with outdoor air moisture content. Both regeneration temperature and regeneration heat quantity decrease as the indoor air relative humidity.

12) K.F. Fong et al (12)"Performance advancement of solar air-conditioning through integrated system design for building". This study is to advance the energy performance of solar air-conditioning system through appropriate component integration from the absorption refrigeration cycle and proper high-temperature cooling. In this study, three integration strategies have been generated for solar cooling, namely integrated absorption air-conditioning; integrated absorption-desiccant air-conditioning; and integrated absorption-desiccant air-conditioning for radiant cooling. To realize these ideas, the working pair of ammonia - water was used in the absorption cycle. This implied that the performances of the three integrated systems were much more sensitive to the regenerative water entering temperature as compared to the conventional absorption chiller system.

13) Lin Zheng and Wei Zhang (13)"Experimental study on the thermal performance of solar air conditioning system with MEPCM cooling storage".the solar powered air conditioning system and the coupled relation with the solar radiation intensity. According to the analysis result, the transient thermal efficiency would decline with the rising normalized temperature difference. The transient thermal efficiency has the same variation trend with the solar radiation. The research result could help to improve the study of solar powered air conditioning system and its application.

14) Yuehong Bi et al (14)"Performance analysis of solar air conditioning system based on the independent-developed solar parabolic trough collector". In this paper, an independent-developed solar parabolic trough collector for solar air conditioning has been adopted in a solar air conditioning system with a three-phase accumulator. The composition and operation strategy of the system are elaborated in detail. Cooperative operation of the solar absorption refrigeration with the parabolic through collectors and the three-phase accumulator can not only improve the efficiency of the parabolic trough collector, but also ensure the high energy storage efficiency of the three-phase accumulator.

15) Z.G. Zhao et al (15)" The power tracking performance of solar photovoltaic air-conditioning systems". In order to increase the utilization of solar energy to lower the effect of photovoltaic power output fluctuations on power grids, an adaptive PID control method to improve the power tracking performance of solar photovoltaic air-conditioners is proposed in this paper. In this method, a dynamic temperature set point of the indoor zone is generated at each control time step based on the difference between the air-conditioning load and photovoltaic generation.

16) S. E. Aly et al (16)"Combined absorption-desiccant solar powered air conditioning system". This article presents a combined absorption-desiccant wheel high performance air-conditioning system suitable for hot humid Le areas. A absorption machine is powered by medium concentrators with a collection temperature. The heat released in the absorption system condenser is used for firing a silica gel dehumidifier. The system is analyzed and the mathematical model with the governing equations are given.

17) Yosr Allouche et al (17) "A solar-driven ejector refrigeration system for Mediterranean climate: Experience improvement and new results performed ". Many previous theory studies have been fulfilled on this technology but never been performed experimentally at this level. This paper presents the research effort made and the experience gained during the implementation of the whole system: Different operation strategies were followed during more than one year to make the ejector cycle functional.

18) Bhagwat Yashwant Dhalpe et al (18)"Review on Solar Powered Air Conditioning System ". In this paper we concentrate on study of air conditioning system based on Photovoltaic system, which has photovoltaic (PV) panels, inverter, charge controller and charge battery. This system can be used in non-electrified areas. The main reason behind using this energy is, because solar energy is cost effective, renewable and environmental friendly.

19) Joseph Khedari et al (19)"Field study of performance of solar chimney with airconditioned building". The study examines the performance of a solar chimney (SC) within an air-conditioned building. To this end, a single-room house of volume was used. Two configurations of SC were used: the roof solar collector composed of CPAC concrete tile, 14 cm air gap and gypsum board, and the modified wall composed of a masonry wall, 14 cm air gap and gypsum board. To control the induced air flow rate, as excess incoming hot ambient air will increase air-conditioner (AC) load.

20) Muthuraman S et al (20)"Research and analysis of air-conditioning system with cooling air and supplying warm-water". This Article prepared the air-conditioning unit with supplying cooling air and warm water. The unit can work in three modes: only cooling air, only supplying warm water and cooling air with supplying warm water. The analysis results showed that the unit is more efficient than traditional systems, the maximum coefficient of performance is about at cooling mode.

21) B. K. Kanabar et al (21)"Journal of Refrigeration, Air Conditioning,Heating of the process and Ventilation Thermodynamic Analysis of Single Effect, Double Effect and Multi Effect.Vapor Absorption Refrigeration". Energy is most important parameter in any industry. If energy is not saved, it would go waste. Vapor absorption refrigeration system is the best solution for waste heat utilization.

22) Juwari Purwo Sutikno et al (22)"Utilization of Solar Energy for Air Conditioning System". this research are to do a system simulation of air conditioning utilizing solar energy with single effect absorption refrigeration method, analyze the coefficient of performance (COP) for each absorbent-refrigerant variable and compare the effectivity of every absorbent-refrigerant variable used. COP is a constant that denotes the effeciency of a refrigeration system, that is ratio of work or useful output to the amount of work or energy input.

23) Jagannath Korody et al (23)"Journal of Refrigeration, Air Conditioning, Heating and Ventilation Performance Evaluation of Thermoacoustic Refrigeration System". The several technologies which are emerging as alternatives, one technology that can provide cost effective refrigeration without using any of the environment degrading refrigerants is the thermoacoustic refrigeration system.

24) S K Kalla et al (24)"Refrigeration cycles and systems: a review". The methods to increase the efficiency of the refrigeration cycle/system, which will also contribute to reducing emission of Green House Gases (GHG). For achieving the latter objective use of Liquid Vapor Heat Exchanger , use of ejector instead of expansion valve, combining Vapor Compression Refrigeration(VCR) system, with Vapor Absorption Refrigeration (VAR) has been recommended. This paper provides a review of some of the methodologies which contribute to increasing the efficiency of the refrigerating plant.

25) Muthuraman et al (25)"Research and analysis of air-conditioning system with cooling air and supplying warm-water". This Article prepared the air-conditioning unit with supplying cooling air and warm water. The unit can work in three modes: only cooling air, only supplying warm water and cooling air with supplying warm water. The analysis results showed that the unit is more efficient than traditional systems, the maximum coefficient of performance (COP) at cooling mode.

26) Princeton Lobo et al (26)"Journal of Refrigeration, Air Conditioning, Heating and Ventilation Performance Evaluation". Thermo acoustics is a promising area, which if properly explored, could serve as a renewable energy source. In a complete thermoacoustic system, the heat is used in the prime mover to generate acoustic wave. This acoustic-wave is then used as an input to the thermoacoustic refrigerator.

27) S. Radhika et al (27)"Journal of Refrigeration, Air Conditioning, Heating and Ventilation Design of a Compressed Air Vehicle". So it is inevitable to shift towards the renewable energy resources which in turn will reduce pollution levels and save fossil fuels. One possible alternative is hybrid vehicle which uses air and solar energy. Air-powered cars run on compressed air instead of gasoline and we can develop the power required to drive the compressor by using solar energy. The technology of compressed air vehicles is not new. In fact, it has been around for years.

28) Bikrant Rauniyar et al (28)"Research on the Air Conditioning System". The increasing demand for comfort air-conditioning has brought within the need for greater numbers of practical, technical and sales personal who have should training in basics principles and applications of modern air-conditioning. The technical information presented in this work is intended to satisfy the immediate and fundamental concepts and relevant principles in the field of air-conditioning.

29) Mehmet Bilgili et al (29)"Hourly simulation and performance of solar electric-vapor compression refrigeration system".A solar is a electric-vapor compression refrigeration system has been proposed in this study. The SE-VCR system was investigated for different evaporating temperatures and months in Adana city located in the southern region of Turkey. First, the hourly cooling load. By using solar track system.

30) J A Usmani et al (30)"Refrigeration cycles and systems". The objective use of Liquid Vapour Heat Exchanger (LVHE), use of ejector instead of expansion valve, combining Vapor Compression Refrigeration (VCR) with Vapor Absorption Refrigeration (VAR) has been recommended. Vapour Heat Exchanger (LVHE), use of ejector instead of expansion valve, combining Vapor Compression Refrigeration (VCR) with Vapor Absorption Refrigeratio(VAR)has been recommended. This paper provides a review of some of the methodologies which contribute to increasing the efficiency of the refrigerating plant.

III. CONCLUSIONS

The three-phase energy storage system while using air conditioning with parabolic through collectors are a very good machining process. The solar radiation intensity is high, in the three-phase energy system. The most efficient conclusion was that required photo voltaic system, can be reduce gently minimizing in the buildings cooling loads. When using sun radiations of the conditioning system are prepared, new type solar system is high efficiency of cooling process.

Additionally, the new type solar system operated by adjusting water mass flow rate under solar radiation intensity. A vapor refrigeration leaves the evaporator the gas is compressed by the relatively high pressure and temperature. The refrigerant flow into the condenser where the refrigerant condenses into the heat transferred from to the surrounding air across the condenser to the air conditioning system will be produced by the powered solar resistance.

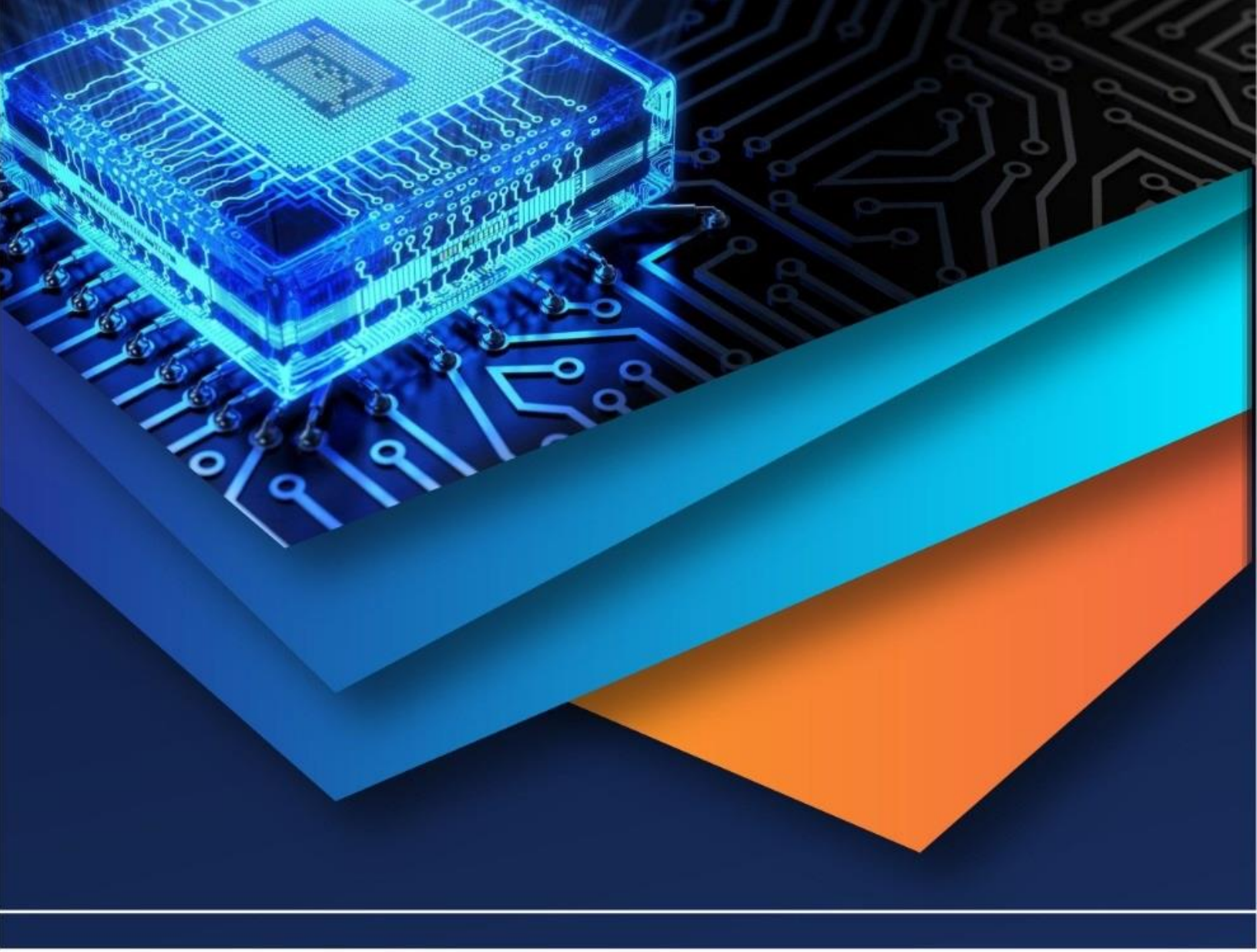
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