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Performance Analysis of Solar Desalination with Heat Exchanger

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ABSTRACT : This investigation was proposed to seek a simpler and less expensive but effective alternative to heat water removal. Access to drinking water is essential for human development. Industries, farms and communities all need clean water sources. Normally, this water is available locally through natural resources such as rivers or springs, but there are many situations where additional clean water is needed. This includes desert regions and past cities with their natural water resources. The desalination systems are capable of capturing streams of wastewater and producing water that is useful for solar activity. Solar heat collectors can be used for pre-heating to reduce electricity costs. Driving power in the distillation system. This concept affects the major salt extraction systems currently in use, including materials that can be assisted or powered by solar energy. A section has also been set up to address the basic process of zero fluid extraction, which removes waste from sugar deposits. Finally, the concept delves deeper into the project of adding a current solar loop and reflecting the hot solar technology used by the evaporator. In this way the salt level of the water data will be updated on the IoT web page.

KEYWORDS: Internet of Things, solar desalination, heat exchanger

I. INTRODUCTION

Estimates suggest that the supply of freshwater will be a major problem in the international community by 2025 and by the year 2050 about 75% of the world's population will suffer from severe resource shortages. The challenge will be particularly acute in countries experiencing rapid transformation and rapid economic growth, especially where water resources are scarce or when water-related infrastructure and services are inadequate. To overcome this problem, sugar plants provide the energy of an unlimited source of fresh water purified in a vast ocean of salt water. Scientists and government leaders around the world are focusing on the use of force-cutting, low-yielding plants for different marine removal techniques: removal of hot ribs and membranes. Over the past two decades, renewable energy sources, especially wind power and solar power, have been developed to use seawater. It is scientifically proven that future reductions and rising fuel prices will make seawater removed from renewable energy competition more competitive in the years to come. In addition, the production costs of salt water have dropped dramatically and are expected to fall even further. In addition, over the past three decades, interest in the multiple effect distillation (MED) process has increased, and new formations for low-temperature plants that reduce corrosion and measurement have been developed in rural and urban areas. In real terms, the interest in the multi-effect distillation process (MED) has increased, due to its high compatibility with solar desalination, its low brine temperature and its high thermodynamic performance. In recent publications, MED research has largely focused on defining certain thermal performance. The Solar MED plant extraction plant in the "Platform a Solar de Almeria", located in Spain is an important effort in reducing solar energy. This solar-powered plant is fitted with 14 vertical temperature changers. However, there are very few studies on the formation of heat transfer efficiency in the MED plant

II. RELATED WORK

The concept of image inpainting was first introduced by Bertamioetal.[1].The method was inspired by the real inpainting process of artists. The image smoothness information interpolated by the image Laplacianis propagated along the isophotes directions,which are estimatedbythegradientofimagerotatedby90degrees. Exemplar

Based method proposed by Criminisietal. [2]used a best exemplar patch to propagatetarget patch includingmissing pixels. Thistechnique usesanapproach whichcombine structure propagation with texture synthesis and hence produced very good results. In [3], the authors decompose the image into sum of two functions and then reconstruct each function separately with structure and texture filling-in algorithms. Morphological technique is used to extract text from the images presented in [4]. In [5], the inpainting technique is combined with the techniques of finding text in images and a simple algorithm that links them. The technique is insensitive to noise, skew and text orientation. The authors in [6] have applied the CCL (connected component labelling) to detect the text and fast marching algorithm is used for Inpainting.

The work in this paper is divided in two stages. 1) Text- Detection 2) Inpainting. Text detection is done by applying morphological open-close and close-open filters and combines the images. Thereafter, gradient is applied to detect the edges followed by thresholding and morphological dilation, erosion operation. Then, connected component labelling is performed to label each object separately. Finally, the set of selection criteria is applied to filter out non text regions. After text detection, text inpainting is accomplished by using exemplar based Inpainting algorithm.

III. METHODOLOGY

The Internet of Things, or IoT, a system of compatible computing devices, electronic and digital devices, objects, animals or people who are given unique identifiers (UIDs) and the ability to transmit data over the network without the need for human- human or computer communication. An online object can be a person with a heart monitor, a farm animal with a biochip transponder, a car with a built-in sensor to inform the driver when the tire pressure is low or something natural or man-made can be assigned Internet Protocol (IP) address and transmit . The circuit diagram consists the components of core components of NODE-MCU Wi-Fi device, 5v regulator, booster, solar panel, relay, PTC heater, lm358. Solar panel connected to boosted by using booster. Booster two pins are connected to regulator. Regulated voltage through NOD-MCU. VCC connected to positive, GND connected to negative. Relay activated PTC heater. And controlled by NODE MCU WIFI DEVICE. Salt sensor connected to LM358 water analysis. It has three pins. VCC connected to positive and GND connected to negative and output pin connected to analog pin.

IV. EXPERIMENTAL RESULTS

The performance analysis of the solar panel desalination with heat exchanger is developed successfully. The heat exchanger in salt water by using PTC plate with solar power is done and the output of the project proto type model image is given below.

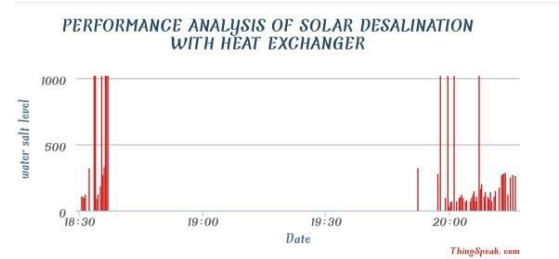


LED Display



created_at	entry_id	field1
2021-09-08 10:20:57	135	1024
2021-09-08 10:21:13	136	1024
2021-09-08 10:21:53	137	1024
2021-09-08 10:22:06	138	1024
2021-09-08 10:22:54	139	1024
2021-09-08 10:23:13	140	1024
2021-09-08 10:23:32	141	1024
2021-09-08 10:23:52	142	1024
2021-09-08 10:24:11	143	1024
2021-09-08 10:24:30	144	1024
2021-09-08 10:24:45	145	1024
2021-09-08 10:25:06	146	1024
2021-09-08 10:25:27	147	1024
2021-09-08 10:25:47	148	1024
2021-09-08 10:26:06	149	1024
2021-09-08 10:26:25	150	1024
2021-09-08 10:26:44	151	1024
2021-09-08 10:27:03	152	1024
2021-09-08 10:27:22	153	1024
2021-09-08 10:27:41	154	1024
2021-09-08 10:28:00	155	1024
2021-09-08 10:28:15	156	1024
2021-09-08 10:28:35	157	1024

Excel Output



Webpage Output

IV. CONCLUSION

We have implemented an automatic text detection technique from an image for Inpainting. Our algorithm successfully detects the text region from the image which consists of mixed text-picture-graphic regions. We have applied our algorithm on many images and found that it successfully detect the text region.

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