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PCB Testing Machine of LED Light

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Abstract : *In this proposed paper we proposed literature survey of PCB testing machine of LED lights. Now a day LED's as growing future of India. As we are Indian in developing nature .LED plays an important role of energy saving and illumination LED holds. As the market for LED PCB's bring to take hold and grow, our understanding of the technology has advanced significantly. The flexure inspection of LED PCB during assembly and operation is the object of the article is to identify the variation in the illumination which can lead to reduction in the light intensity using the sensing technique. How is the proper installation of sensors, hardware components and wires are identified. In this paper literature survey has been done to any research who going to start his own research on LED testing .The wide range of designing choices to meet specific application and market need is available for LED luminous.*

Keywords: *DC motor, sensing technique, controlling technique*

I. INTRODUCTION

The theoretical concept of LED was first assigned by English radio engineer H. J. Round in 1907. But in [practical the first visible spectrum (red) LED was developed in, 1962 by Nick Holonyak Tr. While working at general electric Holonyak first reported his LED in the journal applied physics letter on December 1, 1962. also the first production of LED was done in 1962.

A. Type of LED's

- 1) SMD LED (surface mounted device LED)
- 2) COB LED (chip on board LED)
- 3) Traditional inorganic LED .
- 4) High Brightness LED.
- 5) Organic LED

B. Working Principle of LED light

LED works on the principle electroluminescence i.e., sensing of illumination or luminance or light intensity. LED is an electric component that emits light when connected to direct current. It works on electroluminescence principle and can emit light in visible spectrum as well as infrared and ultraviolet. They have characteristically low energy consumption, small size, long life type and fast switching than incandescence lamps because of that have a wide palette of application.

C. Invention in LED (based on Colours)

- 1) *Red LED:* Invented in 1962 by Nick Holonyak Tr.
- 2) *Yellow LED:* Invented in 1972 by M. George and Craford.
- 3) *High Brightness LED:* Invented in 1976 by Thomas P. Pearsall.
- 4) *Blue LED:* Invented in 1976 by Shuji Nakamura.

LED source emit light potentially for a very long time, and integrated lamps appear to be capable of at least 25,000 hrs of operation for LED luminous, the end of life of may not be evident. The LED does not have filament that will burn out and they do not get remarkably hot. LED contain two element of processed material referred to as the P type and N type semiconductor. The light generated by LED is not particularly bright and mostly etc monochromatic sudden changes in load. Variation in voltage, fluctuation in supply frequency, damages the PCB and other hardware equipments. The scope of this document is to describe the problem associated with the luminance of LED PCB's. And detection of faulty PCB's in accordance with the result.

II. LITERATURE SURVEY

Makes Kumar, Niraj Kumar Singh, Animesh Kumar, Ajay Kumar, Vishwakarma, 'A Novel communication and automation (ICCCA) 2015 International conference 11-05-2015

In recent year the development of low cost consumer electronic products such as television, mobile, washing machine, etc. Market high demands on manufacturing of defect free printed circuit boards and printed circuit board assembly. Therefore, It is necessary to know the different types of defects and defect detection techniques of PCB in order to produce high quality zero defect PCB.

(In today's market the development of electronic product's such as television ,mobile,washing machine etc. make high demand's on manufacturing of defect free PCB.The purpose of this paper is to know the different types of defect's and defect detection techniques of PCB in order to produce high quality zero defect PCB)

Jithendra P.R.Nayak, B.D .Paramesha Chari ,K.M.Sunjiv, Soyjaudah ,Rajashekarappa ,Reshma Banu,A.C Nuthan ,'Identificatio of PCB faults using images processing ",Electrical Electronics Telecommunication Computer and optimization techniques on,pp.1-4-2014

The aim of this paper is to developed a more accurate PCB inspection system .In this method capturate colour images are natural images it means that without any precustomised environment and hence the every time the capture images varrie with lighting conditions. The distance and inclination and this issues are to be handle eggetively

(The aim of this paper to developed a mechanically soft ,zero defect and more accurate PCB inspection system in this method caputured colour images are natural images it means that without any precustomised enviornment and hence the every time capture images varies with lighting conditions .The distance and indication and this issue are to be handle effectively.)

Seiichi Takamatsu,Takahiro Yamashita, Toshihiro Itoh,National Institute of Advanced Industrial Science and Technology, "Fabrication of fabric LED array".

We have developed mechanically soft and conformable light emitting diode (LED) implemented fabric for the applications to the three dimensionally complicated shapes of furniture ,tents and ceilings by transforming the shape of the lighting fabric .The developed LED fabric is assembled by the process in which the LED mounted 5*20 mm pieces of printed circuit board is firstly soldered to 2cm wide ribbon with copper power lines and the resultant ribbons are secondly wovn as wefts by using a 1.2mm automatic looming machine .

The purpose of this paper is to design the defect free , comfortable and smooth LED .The goal of fabric implementation is identified for the application to the tents and ceiling by changing the shape and size of lightning fabric ,complicated shape of furniture, the manufactured fabric LED is assembled by the LED manufacturing process.)

Takumi Miyabe , Masaki Hashizume , Hiroyuki Yotsuyanagi, Shyue –Kung Lu and Zvi Roth,

'A Built-in Electrical Test Circuit For Detecting Open Leads in Assembled PCB Circuits'.ICEP 2016

In this paper , a built-in electrical test circuit is proposed to detect an open defect at an interconnect between a land on a printed circuit board and an IC. The test circuit is made of an integrateing circuit ,nMOS switches and a switch control circuit.A time varying signal generated by the integrating circuit is provided to a targeted interconnect as a stimulus signal in the test .An input buffer gate in an IC is utilized as an open sensor in the test .The open defects is detected by means of supply current of the sensor .We examine by using the test circuit .The result reveal us that an open defect can be detected at a test speed of 50kHz for each input terminal of an IC.

From this paper we have identify the different types of defect of PCB and also detection of that defect by simulation on PCB we examine whether the defect type of PCB the type of fault are identified).

Xiaoji Li,Guilian universitynof electronic technology,Yanping Cao,Guilian university of technology,Chen Chen, member IEEE Xidian university Xi'an China.

Aiming at the problem of indoor visible-light location accuracy,a visible-light indoor location method based on white light-emitting diode (LED) is proposed.Firstly,the data feature is constructed by using time difference of arrival(TDOA),which is arrived at the location point by the reference signal issued by different indoor LED.The physical coordinates of the location points are treated as labels.Use the data feature and label as input samples.Then the neural network model is trained.Finally,the location test is carried out based on the training odel.The proposed method is simulated in the space region of 5m*5m*3m.The results show that the proposed neural network-based machine learning method can achieve the positioning error about 1.662cm in indoor environment.The accuracy of indoor positioning is improved effectively.

(The aim of this paper is to identify the problems associated with indoor visible light location accuracy based on white LED,by examining the physical co-ordinates of the location.The time difference between the location and the LED is uded to solve the problem).

Yi-Cheng Huang,Kai-Chu-Chaung,Mou-Sheng Lin,and Chi-Fan Cgen

The aim of this paper is to develop the detection system for present fast-developing LED photoelectric industry.To cope with the processing size of next generation dwindles,the gear of the inspection equipment in ultra precision fast inspection specifications will become one of the research keys.This paper presents a machine vision to inspect LED Pad\Die is achieved by using the features of piezoelectric actuator(PEA) that is embedded in the probing stage.Such piezo-actuated stage is controlled by using feed-forward neural network (FFNN) learning algorithm to compensate for the nonlinear and hysteresis properties of piezoelectricity.Experimental results show each LED Pad\Die can be finished lighting within the rate of 4 pieces per second of

one probe. This work validates a new inspection machine structure and demonstrates the feasibility on future multi probes for next manufacturing in lower dimensions.

(In this paper we studied the detection system for present fast-developing LED photoelectric industry. This proposed paper presents a machine vision to inspect LED. Microstructure by piezo actuation stage. Experimental results shows each LED Pad\Die can be finished lighting within the rate of 4 pieces per second of one probe).

Hsien-Huang P. Wu, Jing-Guang, Ming-mao Hsu, Chia-Ju Wu

Dramatic changes are unfolding in lighting technology. Semiconductor light-emitting diode (LED), which was once used mainly as simple indicator lamps in electronics and toys, has now become one of the most popular lighting devices. Techniques for improving production method is proposed in this paper for improving the LED measurement and sorting speed in the testing process. This approach combines the mechanical technology, optical measurement instruments and sorting is 3.5 LED dies per second based on repeated testings and evaluations. The experimental results demonstrate the effectiveness and robustness of the proposed system.

(For improving the LED measurement and sorting the speed in testing process a system integration method is described in this paper. By using mechanical and machine vision for making flexible, smooth and highly efficient LED grading system).

Shailesh K R, Savitha G Kini, Ciji Pearl Kurian

LED lighting technology is advancing at fast pace, LED lighting products in the market show a wide range of performance characteristics. This work explains the need for trustworthy, fair product performance information to promote the market for LED lighting products. In this work more than 120 LED down lights were tested and summary of the results is presented in this report. This work has exposed a broad range of performance, from poor to exceptional. Some LED lighting products tested deliver lumen output and luminous efficacies that exceed all expectations others perform badly and do not produce enough luminous flux output for their intended application. Some manufacturers are publishing trustworthy values for luminous flux output and luminous efficiency, there is often a broad gap between performance claims in marketing literature and actual tested LED lighting market and its course. Provides helpful information to use both before and during the creation of test hardware and software.

Test results indicate that there is urgent need to implement strict regulations to curb misleading product literature from representing LED lighting product information. The work aims to discourage cheap low-quality LED lighting products and exaggerated claims, but also serves as a useful source of information for government agencies, and end-users to make informed decisions. Lighting product distributors, retailers, lighting designers, government agencies, and other stakeholders can draw inferences from this study and know the current state of the LED lighting market and its course.

(This paper describes the testing of LED lights with more efficiency i.e., more than 120 LED down lights were tested using industry-approved test procedures. The problems occur in testing are measure and detection of performance from poor to exceptional is exposed).

Xin Geng, Fei Sha, Yunzhi Li

A novel test methodology for PCB test that provides several different levels of testing from a single test is presented in the paper. This paper also contains measured values and recommendations that should be followed in an effort to get the PCB test environment operational. Finally, this paper provides the PCB test flow diagram and descriptions.

(The several different levels of testing from a single test by a novel test methodology for PCB testing in this paper. It also includes instrumentation requirements, testing components, and configuration for PCB testing).

RD Nell and MTE Kahn, Department of Electrical Engineering, Cape Peninsula University of Technology, Cape Town, South Africa.

This paper describes how 3D electronic vision can be used in rotation of the solar panel for optimal use of sunlight to power an incandescent, CFL and LED light. The light intensity from the CFL and LED lighting powered by the solar panel is measured and how the solar panel, battery setup and grid supply is used in a hybrid electrical setup for both daytime and night time lighting.

The method used is to measure the light intensity of the incandescent, CFL and LED lighting. To obtain optimal rotate the solar panel. The CFL and LED light intensity measurement are obtained as daytime lighting are needed in certain buildings. As different ambient conditions occur during daytime, the effect of a half shadow and full shadow on the solar panel is investigating.

(This proposed paper proposed how 3D electronic vision can be used in rotation of solar panel for optimal use of sunlight to power an incandescent ,CFL and LED light. The output light intensity of the CFL and LED light's are measured with the solar panel ,The method is used for measuring the light intensity.)

III. CONCLUSION

From this literature survey we have studied the different types of defects and problems on PCB testing and defect detection technique. The aim of fabric implementation of LED PCB and their applications are identified. The testing is done more efficiently.

REFERENCES

- [1] Makes Kumar ,Niraj Kumal Singh, Manjesh Kumar, Ajay Kumar,Vishwakarma, A novel communication and automation (ICCCA)2015 International conference 11-05-2015.
- [2] Jithandra .P.R.Payal,B.D. Paramesha Chris,K.M. Sunjiv Soyjaudah, Rajashekarappa,Reshma Bani ,A.C.Nathan,Electrical electronic telecommunication computer and optimization techniques (ICEECOT) 2017 International confetrence on pp.1-04-2017
- [3] Seiichi Takamatsu,Takahiro Yamashita, Toshihiro Itoh. "Fabrication of fabric LED array".2015 Symposium on Design Test Integration and Pacaging of MEMS and MOEMS.978-1-4799-8625-5/15/2015 IEEE
- [4] Takumi Miyabe , Masaki Hashizume, Hiroyuki Yostsuyanagi, Shyue-Kung Lu and Zvi Roth, "A Built –in Electrical Test Circuit fot Detecting Open Leads in Assembled PCB Circuits".ICEP 2016 Proceeding.
- [5] Xiaoji Li ,Yanping Cao,Chen Chen, "Machine Learning Based High Accuracy Indoor Visible Light Location Algorithm". 2008 IEEE International Conference on Smart Internate of Things.978-1-5386-8543-3/2018 IEEE
- [6] Yi-Cheng Huang, Kai –Chu Chuang, Mon –Sheng Lin,and Chi-Fan Che, "Inspecting LED Micro Structure by Piezo Servo System".Proceeding of the 2005 IEEE International Conference on Mechatronics July 10/12/2005,Taipei, Taiwan.
- [7] Hsien –Huang P. Wu, Jing –Guang Yang, Ming-Mao Hsu, Chia – Ju Wu, "Automatic measurement and grading og LED dies on wafer by machine vision".Proceedings of International Conference on Mechatronics Kumamoto Japan,8/10 may 2007 1-4244-1184-x/07/2007 IEEE
- [8] Shailesh K R, Savitha G Kini ,Ciji Pearl Durian, "Summary of LED down light testing and it's implications", Department of Electrical and Electronics Engineering Manipal Institute of Technology, Manipal University, Udupi,Indiasa.
- [9] Xin Geng,Fei Sha ,Yunzhi Li, "Study of PCB Test in Electromagnetic Shielded Test Fixture".2005 IEEE International Symposium on Microwave, Antenna,Propagation and EMC Technologies for Wireless Communications Proceedings.0-7803-9128-4/05/2005 IEEE
- [10] R D Nell and MTE Kahn,Department of Electrical Engineering ,Cape Peninsula University of technology ,Cape Town ,South Africa.



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