RESEARCH ARTICLE OPEN ACCESS

Flux Linkage Non Destructive Testing By Electro Magnetic Waves

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ABSTRACT
Recent years the conductor, and semiconductor are prepared by melting the raw materials in manufacturing industries and it will filling the molder .In molder raw materials made to condense during the condensing process the material get definite shape. At the time the voids are created due to the air – bubbles. The voids are not inspected by naked eyes. If we use the void material, the material quality is affected. The voids are inspected by electromagnetic wave. The shape, size and location of voids are identified. Depending upon void the material is under goes reconstruction process.
Keywords – conductor, void, arduino ,iron material, electro magnet.

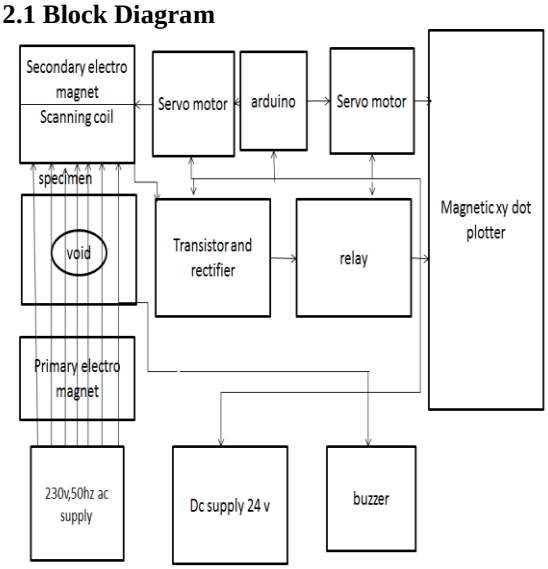
I. INTRODUCTION

Every product is made in industries by melting the raw materials .During the melting process the raw materials is came to lava state. Heavy temperature is applied due to that pressure is increased inside the melted raw material. After melting the raw material, the lava state melted material is filled inside the molder. The moulder is consist of condenser. The condenser is used to cool the hot raw material .During the condensation process the temperature is reduced and proportionally the pressure is also reduced. Due to that variations in pressure the air bubbles is created inside the material .The air bubbles is the main reason for void production inside the material. The void not directly identified. so if we use the void material the tensile strength of the material is reduced and the material is chance to broke downed. The X-ray tomography method provides a solution to identified the air-void parameters of hardened cement-based material . Air-void characterization has generally been carried via stereological examination of two dimensional surface section to gain under standing of the three dimensional features of a material The air-void parameters of determined via stereological examination of two-D Polished section using an optical microscope by means of linear-traverse method X-ray computed tomography imaging is a non-destructive method for obtaining A large number of consecutive sectional images of the internal microstructure Of specimen interest. It is used to characterize the engineering properties of Cement-based material in terms of such parameters as Air-void space ,spatial distribution of air content under axial loading ,and clogging.

II. FLUX LINKAGE NON DESTRUCTIVE TESTING BY ELECTRO MAGNETIC WAVES

The following methods are used to detect the void in iron material.

2.1 Block Diagram



2.1 Block Diagram Descrption

2.1.1 Electromagnent

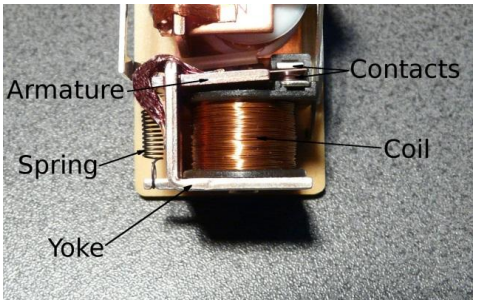
A simple electromagnet consisting of a coil of insulated wire wrapped around an iron core. A core of ferromagnetic material like iron serves to increase the magnetic field created. The strength of magnetic field generated is proportional to the amount of current through the winding.

An electromagnet is a type of magnet in which the magnetic field is produced by an electric current. The magnetic field disappears when the

current is turned off. Electromagnets usually consist of large number of closely spaced turns of wire that create the magnetic field. The wire turns are often wound around a magnetic core made from a ferromagnetic or ferromagnetic material such as iron, the magnetic core concentrates the magnetic flux and makes a more powerful magnet.

The main advantage of an electromagnet over a permanent magnet is that the magnetic field can be quickly changed by controlling the amount of electric current in the winding.

Electromagnets are widely used as components of other electrical devices such as motors, generators, relay, loudspeakers, hard disks, scientific instruments and magnetic separation equipment. Electromagnets are also employed in industry for picking up and moving heavy iron objects such as scrap iron and steel.



2.1.2 Specimen

Sample(material), a limited quantity of something which is intended to be similar to and represent a large amount of that things.

2.1.3 Void

Void the empty spaces between the galaxy filaments.Void , in boling heat transfer,formed where there is departure from nucleate boiling,causing a critical heat flux.

Void in casting or injection molding , describes a defect where there are empty spaces (air pockets) in a completed part.

2.1.4 Transistor

A transistor is a semiconductor device used to amplify or switch electronic signals and electric power. It is composed of semi conductor material with at least three terminal for connection to an external circuit. voltage are current applied to one pair of the transistors terminals changes the current through another pair of terminals. Because the controlled power can be higher then the controlling power. a transistor can amplify a signal. Today some transistor are tacked individually, but many more are found embedded in integrated circuits.

the transistor is the fundamental building block of modern electronic device and is ubiquitous in modern electronic system.

2.1.5 Rectifier

Rectifier is an electrical devices that converts alternating current (AC), which periodically reverses direction, to direct current(DC)which flows in only one direction the process is known as rectification.

Rectifiers have many uses but are often found serving as components of DC power supplies and high voltage direct current power transmission system. Rectification may serve in roles other than to generate direct current for use as a source of power.

Because of the alternating nature of the input Ac sine wave, the process of rectification alone produces DC current that though unidirectional consist of pulses of current. many application of rectifiers such as power supplies for radio, television and computer equipment, require a steady constant DC current.

2.1.6 Relay

A relay is an electrically operated switch. Many relays use on electro magnet to mechanically operate a switch , but other operating principles are also used ,such as solid state relays. Relays are used where it is necessary to control a circuit by a low power signal, or where several circuits must be control by one signal. The first relays where used in long distance telegraph circuits as amplifiers they repetead the signal coming in from one circuit and retransmitted it on another circuit.

A type of relay that can handle the high power requried to directly control an electric motor or other load is contactor. Solid state relays control power circuits with no moving parts , instead using a semi conductor device to perform switching.

2.1.7 Servo Motor

A servo motor is a rotary actuator or linear actuator that allows for resize contol of angular or linear position , velocity and oscillation it consits of a suitable motor coupled to a sensor for position feedback. It also requries a relatively sophisticated controller, often a dedicated module designed specifically for use with servo motor.

Servo motors are not a specific class of motor all though the term servo motor is often used to refer to a motor suitable for use in a closed loop control system.

Servo motors are used in application such as robotics , CNC machinery or automated manufacturing.

2.1.8 Arduino

Arduino is an open source computer hardware company, project and user community that

designs and manufactures microcontroller based kits for building digital devices and interactive object that can sense and control objects in the physical world the arduino project provides an integrated development environment(IDE) based on the processing project, which includes support for the c and c++ programming languages.

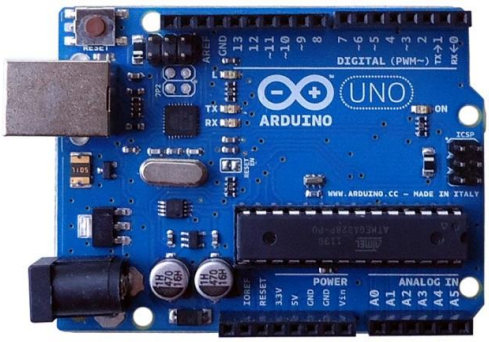
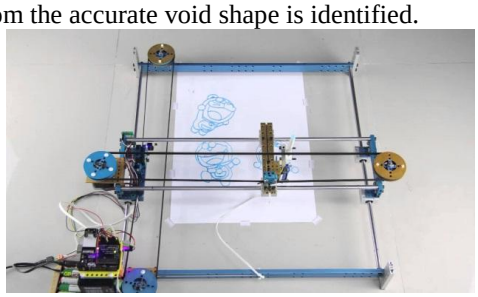


Fig.3ARDUINO

2.1.9 Electro Magnetic XY Dot Plotter

According to the void the electromagnetic xy dot plotter .marks the void shape in a paper. The magnetic x y dot plotter moves in both xy directions. From the accurate void shape is identified.



III. CONCLUSION

From this electromagnetic void detection .any type of material is scanned and accurate void shape is identified. And the material is under go reconstruction process .from this method the lifetime and durability. And quality of the product is improved.

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