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Fabrication of solar powered automatic seed sowing machine

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ABSTRACT

In India, agriculture has a predominant role in our day to day life. Many agriculture operations are automated nowadays and many automatic machineries and robots available commercially. In india most of the people are living in rural area and they are still dependent on the agriculture field but they are using old technique (conventional method).To overcome the drawbacks of conventional method we developing the solar operated seed sowing machine, this can perform different operations. Here the designing system like plough the land, sowing the seed and pit covering is preferred by this robot using microcontroller. Based on the movement of this robot in the land, the IR sensor helps in obstacle detection, thereby performs turning the position of the robot either in left or right movement. The ultimate objective of seed planting using improve sowing equipment is to achieve precise seed distribution within the row. For effective handling of the machine by any farmer or by any untrained worker simplified its design. Also its adjusting and maintenance method also simplified.

Keywords: Seed Sowing, Solar Panel, Labor Cost.

INTRODUCTION

The area of agriculture is so wide; therefore this field requires the advance technologies in the process of sowing, cropping, and cutting. This advancement in technology will not affect the quality of soil and increase the efficiency of getting crop. During the seed sowing process the feeding of seed as well as fertilizer is pour. Now days the availability of labor is a major problem faced by farmer. In any process of agricultural field timeliness is required. Is most important factor and it can be achieve by using an appropriate used of small, portable and advance technology. Manually seed sowing will cause the inefficient and inaccurate seed sowing. This method will do the seed sowing row by row. At a time multiple strips are utilize/used for sowing process. This method will be achieved the great efficiency and accuracy. It will save the labor cost, fuel cost. This method minimize and overcome the disadvantages occurred in previous process and will achieve the spacing between two seeds and depth of the seed sowing process.

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EXISTING SYSTEM

A field is initially prepared with a plough to a series of linear cuts known as furrows. The field is then seeded by throwing the seeds over the field. The result is a field planted roughly in rows but having a large number of plants [2]. Many projects are undertaken to overcome the drawbacks of broadcasting system. Some of those projects are given below. Drawbacks of manual broadcasting system are no control over the depth of seed placement. No uniformity in the distribution of seed placement. Loss of seeds. Time required for sowing is more.

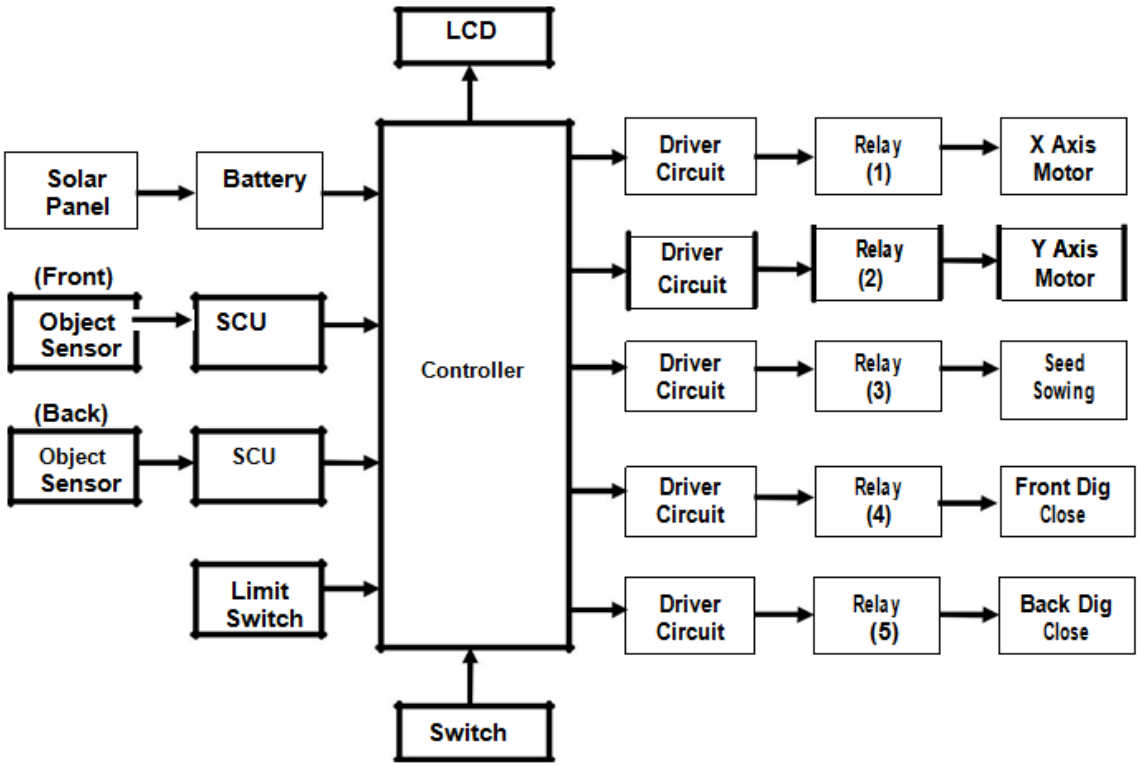
Another method of sowing the seeds is with the help of a simple device consisting of bamboo tube with a funnel on it attached to a plough. As the plough moves over the field the tube attached to it leaves the seeds kept in the funnel at proper spacing and depth. The plough keeps making furrows in the soil in which the seeds are dropped by the seed drill.

When considering the physical aspects of the vehicle or robotic system, farmer's present condition in particular area plays a major role in designing these aspects. Considering facts of farming industry of India, system to be developed must have advantage over traditional methods and tractors in terms of cost, speed, accuracy in operation for which it is designed, fuel consumption and physical energy required by human for it. By targeting these issues and consideration properly the end product will be real help for farmers.

Drawbacks of Existing System

- In manual seeding, it is not possible to achieve uniformity in distribution of seeds.
- By using the manual operation the wastage of seed is higher and there is no arrangement in seeds.
- Time consumption is more while using the existing seeding machine.
- Handling of equipment due to excess weight of the machinery.

BLOCK DIAGRAM PROPOSED SYSTEM



PMDC Motor

DC Motors fall into the category of Electrical motors that converts electrical energy into mechanical energy. There are several kinds of DC Motors. They work on the principle that when a current carrying conductor is placed in a magnetic field, it experiences a torque and has a tendency to move which is known as Motor.

The motoring action. A permanent magnet motor is a type of brushless electric motor that uses permanent magnets rather than winding in the field. The specification of the performance and efficiency, the permanent magnet machine better solved our cost minimization function, and it was optimal for the range and performance target.

Battery

An electric battery is a gadget comprising of at least one electrochemical cell that change over stored chemical energy into electrical energy. Every cell contains a positive terminal, or cathode, and a negative terminal, or anode. Electrolytes permit particles to move between the cathodes and terminals, which permits current to stream out of the battery to perform work. The lead–acid battery having a very low energy-to-weight ratio and a low energy-to-volume ratio, its ability to supply high

surge currents means that the cells have a relatively large power-to-weight ratio. These features, along with their low cost, make them attractive for use in motor vehicles to provide the high current required by automobile starter motors.

IR Sensor

Infrared technology addresses a wide variety of wireless applications. The main areas are sensing and remote controls. The basic concept of an Infrared Sensor which is used as Obstacle detector is to transmit an infrared signal, this infrared signal bounces from the surface of an object and the signal is received at the infrared receiver.

Solar Panel

A solar panel is actually a collection of solar (or photovoltaic) cells, which can be used to generate electricity through photovoltaic effect. These cells are arranged in a grid-like pattern on the surface of solar panels.

Relay

Electromagnetic relays are those relay which operates on the principle of electromagnetic attraction. It is a type of a magnetic switch which uses the magnet for creating a magnetic field. The magnetic field then uses for opening and closing the switch and for performing the mechanical operation.

Driver Circuit

A driver is an electrical circuit or other electronic component used to control another circuit or component, such as a high-power transistor, liquid crystal display (LCD), and numerous others.

Limit Switch

A limit switch is an electromechanical device that consists of an actuator mechanically linked to a set of contacts. When an object comes into contact with the actuator, the device operates the contacts to make or break an electrical connection.

Switch

A Switch is an electrical component that can "make" or "break" an electrical circuit, interrupting the current or diverting it from one conductor to another. The mechanism of a switch removes or restores the conducting path in a circuit when it is operated.

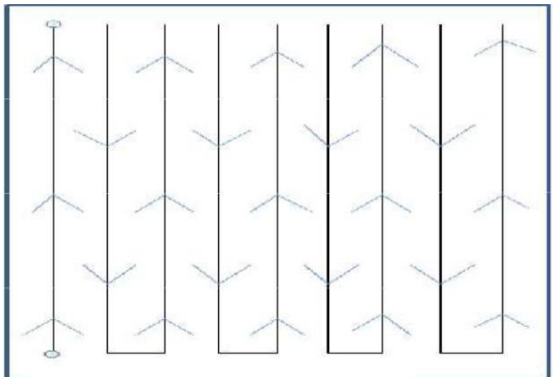
LCD

A liquid-crystal display is a flat-panel display or other electronically modulated optical device that uses the light-modulating properties of liquid crystals. Liquid crystals do not emit light directly, instead using a backlight or reflector to produce images in color or monochrome.

Rack & Pinion

A rack and pinion is a type of linear actuator that comprises a pair of gears which convert rotational motion into linear motion. A circular gear called "the pinion" engages teeth on a linear "gear" bar called "the rack"; rotational motion applied to the pinion causes the rack to move relative to the pinion, thereby translating the rotational motion of the pinion into linear motion.

FIELD LAYOUT



CONCLUSION

We can save more time required for digging and sowing process. It is very useful for farmers. Solar powered seed sowing machine can be Maintain seed to seed spacing and reduce the pollution also. Proper utilization of seeds can be done and reduces the labor requirement so as labor cost, labor time and also save lots of energy.

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