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IoT Based Moisture Removing System from Agri Crops

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Abstract: Drying is one of the oldest methods to remove moisture from the agriculture products i.e. Grains, but when the moisture content is improper in the grain's farmer does not get proper value for their products. So it is important to dehydrate and remove moisture from grains mainly in rainy and winter season from agricultural products, By using Dehydration system using force air circulation with the help of electricity remove the moisture from the grains and give the proper value to the framers products, These include drying in chambers with trays also these system builds upon the IoT concept and is able to create a network of interconnected device. By using these approach we are able to combine sensing device also providing common operating principle by sharing information over the platform.

Keywords: Sensors, IoT Technology, Automation, Equipment Control, IoT, Wi-Fi.

I. INTRODUCTION

Drying is one of the methods to remove moisture from the Agri-products and preserve the food for a longer period in the agriculture sector. Drying is one of the best methods from many years. Drying from the sunlight is the oldest technique of moisture removal from the grains. Electricity is also used for the dehydration it is the latest technique for dehydrating the grains, Grains contain dry always as moisture at the time of the harvesting, and the grains Moisture content is at higher level Than the safe short term or long-term storage and also for go to market and sell it. Electrical technology is a technology that is rapidly gaining acceptance as an energy saving measure in agriculture application. applications requiring low to moderate temperature below 80°C, such as crop drying. It is preferred to other alternative sources of energy such as wind and shale, because it is abundant, inexhaustible, and non-polluting. Electrical air heaters are simple devices to heat air by utilizing solar energy and it is employed in many spaces heating.

We are developing an IoT based food dehydration system for Grains. In which Hardware components required for construction are NodeMCU, DHT11 Sensor, MQ4

Sensor, Display, Switches, Indicator bulbs, connecting Wires, Fan, Heater etc. And software used are blynk app, Proteus and Arduino IDE. This is an IoT based project so we can control this system using the blynk app. The agriculture application of this project is to remove the moisture from the agriculture products at proper proportion it may helpful the farmers to get the best money for their hard work for agriculture products like Maize, Soybean, etc. in the market.

II. PROBLEM DEFINITION

- Spoilage of the Agricultural products Due to Rainy season
- Farmers not get proper value in market for their products due to improper moisture content value

III. OBJECTIVE OF SYSTEM

The project of seasonable IOT based dehydration system is carried to achieve some of the objectives like:

- Help the farmers to achieve proper value to their agricultural products
- Avoid spoilage of the Agricultural products due to lack of moisture content
- It decreases human efforts.
- For storage of agricultural products, the system is useful for farmers. -Help the farmers to get financially capable

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IV. LITERATURE SURVEY

The newer scenario of decreasing water tables, drying up of rivers and tanks, and unpredictable environment presents an urgent need of proper utilization of water. To cope up with this use of temperature and moisture sensors at suitable locations for monitoring of crops is implemented in. An algorithm developed with threshold values of temperature and soil moisture can be programmed into a microcontroller-based gateway to control water quantity. The system can be powered by photovoltaic panels and can have a duplex communication link based on a cellular Internet interface that allows data inspection and irrigation scheduling to be programmed through a web page. The technological development in Wireless Sensor Networks made it possible to use in monitoring and control of greenhouse parameters in precision agriculture. After the research in the agricultural field, researchers found that the yield of agriculture is decreasing day by day. However, use of technology in the field of agriculture plays an important role in increasing the production as well as in reducing the extra man power efforts. Some of the research attempts are done for betterment of farmers which provides the systems that use technologies helpful for increasing the agricultural yield.

A remote sensing and control irrigation system using distributed wireless sensor network aiming for variable rate irrigation, real time in field sensing, controlling of a site-specific precision linear move irrigation system to maximize the productivity with minimal use of water was developed by Y. Kim. The system described details about the design and instrumentation of variable rate irrigation, wireless sensor network and real time in field sensing and control by using appropriate software. The whole system was developed using five in-field sensor stations which collect the data and send it to the base station using a global positioning system (GPS) where necessary action was taken for controlling irrigation according to the database available with the system.

The system provides a promising low-cost wireless solution as well as remote controlling for precision irrigation. In the studies related to wireless sensor networks, researchers measured soil related parameters such as temperature and humidity. Sensors were placed below the soil which communicates with relay nodes by the use of effective communication protocol providing a very low duty cycle and hence increasing the life time of the soil monitoring system. The system was developed using a microcontroller, universal asynchronous receiver transmitter (UART) interface and sensors while the transmission was done by hourly sampling and buffering the data, transmitting it and then checking the status messages. The drawbacks of the system were its cost and deployment of sensors under the soil which causes attenuation of radio frequency (RF) signals.



V. SYSTEM ARCHITECTURE

Fig -1: System Architecture Diagram

VI. ADVANTAGES

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- Dehydrating food can save your money
- Reduce food waste
- It is most reliable and convenient food
- It avoids spoilage of the agricultural products
- Proper Value to the Farmers Products

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VII. SYSTEM REQUIREMENTS

Software Used:

- 1. Tool: Arduino IDE
- 2. Programming Language: Embedded C
- **3.** Blynk app
- 4. Domain: IOT

Hardware Used:

- 1. Controller ESP32
- 2. Driver Modules
- **3.** Temperature controller
- 4. Heater Element
- 5. DHT11 sensor
- 6. Heating Unit
- 7. Combined Unit
- 8. Buzzer

VIII. WORKING PRINCIPLE

The IOT Based seasonable dehydration system is works on electric supply and maintaining the temperature with the help of the temperature controller the system includes two units 1st unit consists three fans which circulates or transfer the atmospheric air to the system and passes the air above it also include heating coil this heating coil Which temperature goes up to 100oC and with the help of the coil the forced air is heated and go to the system the 2nd unit includes two tray having pours for proper air circulation

IX. CONCLUSION

On the basis of above information it may concluded that drying is one of the oldest method and during the rainy and winter season farmers may face a big problem for drying their grains due to shortage of the sunlight, Hence with the help of electrical system of dehydration we can remove the moisture of the grains at proper level for storage or selling the market With the help of electricity the system can dehydrate the grains properly by forced air circulation of the air it may help the farmers for getting the proper value of their hard work and their agriculture products and also for storage remove the moisture content the system is very helpful.

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