

Measurement of the moisture content of the slipper in the production of ceramic mass using the Capacitive Soil Moisture Sensor

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Abstract: In this article, the method of measuring the moisture content of the slurry using the Capacitive soil moisture sensor in the production of porcelain is considered and a scheme is developed

Moisture is important for giving a certain shape to the ceramic mass in the viscous method, for this the use of a filter press allows to obtain moisture in the range of 18-24%. If the humidity exceeds it or, on the contrary, decreases, it leads to defects and cracks in the drying and burning processes of the formed product. In many production enterprises, it is carried out in a certain period of time through special physical and chemical processes in the laboratory to ensure that the moisture content of the slurry is in the specified amount. This creates interruptions in the production process. In this situation, the use of moisture measuring devices is an effective method.

In moisture measurement, the device and automatic systems increase the time intensity. The use of special humidity measuring devices reduces the system error. It allows for constant control of the filter press device. Slicker is pumped to the filter press plates under pressure with the help of pumps. The slabs are filled with slipper and the slabs are compressed by external pressure, this process lasts for hours. Non-uniformity of the applied external pressure can cause changes in the moisture content, which is controlled by continuous pressure and humidity measurement, which helps to keep the humidity at accurate values. In addition, over time, the efficiency of filter cloths in filter chambers decreases. They begin to deteriorate, which causes the slipper to leak. The amount of moisture varies significantly. By monitoring the moisture content of the slicker with a moisture sensor, we can quickly determine the amount of moisture and its change every second. A change in humidity indicates a malfunction in the filter press. If the sensor is installed in the cross-section of the plates, it will show which chamber has a problem or if the change in nm depends on the external pressure.

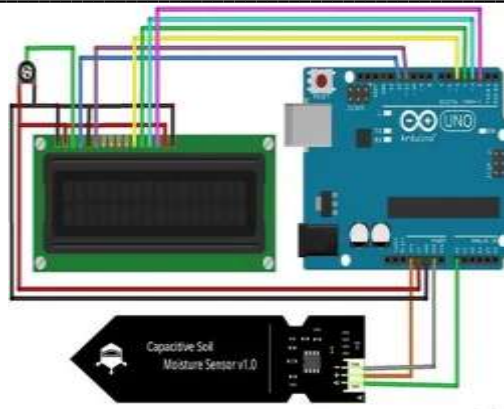


Figure 1: Capacitive Soil Moisture Sensor.

Capacitive soil moisture sensor is effective in measuring, and the sensor has high accuracy and high sensitivity. It can also be used intelligently in automated systems. Allows for remote control via wired or wireless system. uses advanced sensing technology and cloud architecture mode to collect environmental data such as air quality and access via wired or wireless. Cloud-based, enables automatic storage of environmental data and online analysis and monitoring. The user can connect to the system through a personal computer or mobile terminal to receive cloud services in the area of the system peripheral stations, thereby increasing production efficiency and quality.

Through remote control, it is possible to form a precise work cycle of the technological process, to make efficient use of time and manpower. Remote transmission of sensor measurement results is carried out at certain frequencies. This can be in the form of an analog or digital signal. The incoming data is displayed on the central computer screen, display or any gadget. The wireless transmission system is more efficient than the wired transmission, it is protected from various types of interference and does not cause various types of confusion. The network topology is formed through the Modbus protocol. The data transfer rate is very high, and the signal arrives in less than 1 second, which allows you to accurately measure and control the moisture content every second. The error of the sensor increases or decreases depending on whether the amount of humidity is large or small, the error can be up to 3% at the amount of humidity up to 50%, which means an approximate error of 1%.

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