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Moisture Sensing Sprinkler System

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Come Clean, Go Green

Moisture Sensing Sprinkler System



Introduction

Water is the most important molecule on the planet. Water affects our everyday lives in ways that we do not realize such as agriculture, recreational purposes, and hydration. While water seems plentiful on Earth this is not necessarily the case since it is estimated that only 2.5% of the Earth's water is freshwater. With an increasing water requirement for humanity water is becoming scarce. More needs to be done in order to conserve the already scarce resource.

Lewis university is a beautiful campus that is full of life and bright colors. The beauty of the campus is used to attract future students and to create a soothing environments for students to learn and live in. In order to maintain the flowers and grass on campus constant watering is required. To combat this large task the campus ground staff uses a timed sprinkler system to water the large 410 acre campus of Lewis. While the use of an automated sprinkler system for this task has plenty of advantages, it does not account for rainfall. According to U.S climate data there was approximately 40.06 inches of rain annually in Romeoville. If the sprinklers were turned off during rain, the rain water could be used as the source of water for the grounds.

Currently the city of Santa Barbara California is using a similar idea to reduce their waste. The city offering it's citizens moisture sensing sprinkler system that turn off when sufficient moisture is detected. According to their community, they were able to cut their water use for irrigation purposes by 36% just from implementation of the moisture sensing irrigation system. While this is a residential example, this system could be implemented on a large scale which could substantially reduce waste of water as well as the funds needed to maintain the large grounds of Lewis.

Integration

Systems that regulate irrigation systems with the help of moisture sensors are already widely available on the market. There are two types of sensors that are available that can sense moisture. The first is an above ground sensor that collects rain in order to detect moisture. A company that sells this product is Rain Bird, and their sensor cost \$20-30. The second type of sensor is a below ground sensor, which senses moisture in the soil. The company Toro sells the soil moisture detector and cost about \$150. The largest challenge in implementation would be the selection of sensor. The physical implementation of the sensors is marketed by the companies as easy for the average consumer.

Conclusions

Water is basic need that all life requires, which makes conservation of water so important. Unfortunately, many times green technologies are not cost effect and hard to integrate into the infrastructure. Luckily moisture sensing sprinkler systems are easy to integrate as well as cheap. With the proposed systems Lewis University could substantially reduce the cost of watering the large campus as well as reduce waste.

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