MAJOR PROJECT

Solar Panel Monitoring System

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What are solar panels and its uses

Solar panels are those devices which are used to absorb the sun's rays and convert them into electricity or heat.

- For operating television receiver and radio receivers.
- For providing electricity for street lights.
- In the areas where direct supply of electricity is either not possible or very costly or cannot be produced by other means.

Problem Statement -

When we set up a solar power system we need to monitor it if the system gives us optimum power output this actually helps us to see if the system works efficiently or not. The monitoring system we are introducing here it actually helps us to monitor the real-time data of the Solar Panel be installed power home or working place

Components Used -

SOLAR PANEL - Solar panels collect clean renewable energy in the form of sunlight and convert that light into electricity which can then be used to provide power for electrical loads.

ARDUINO UNO - Arduino UNO is a low-cost, flexible, and easy-to-use programmable open-source microcontroller board that can be integrated into a variety of electronic projects.

Components Used -

POTENTIO METER -A potentiometer is a device used to measure the potential difference in a circuit. The potential difference between two points in a circuit is the amount of work done to bring a charge from the first point to the second.

ELECTRIC MOTOR - An electric motor (or electrical motor) is an electric machine that converts electrical energy into mechanical energy. Most electric motors operate through the interaction between the motor’s magnetic field and electric current in a wire winding.

Components Used -

CURRENT SENSOR - A current sensor is a device that detects and converts current to an easily measurable output voltage, which is proportional to the current through the measured path.

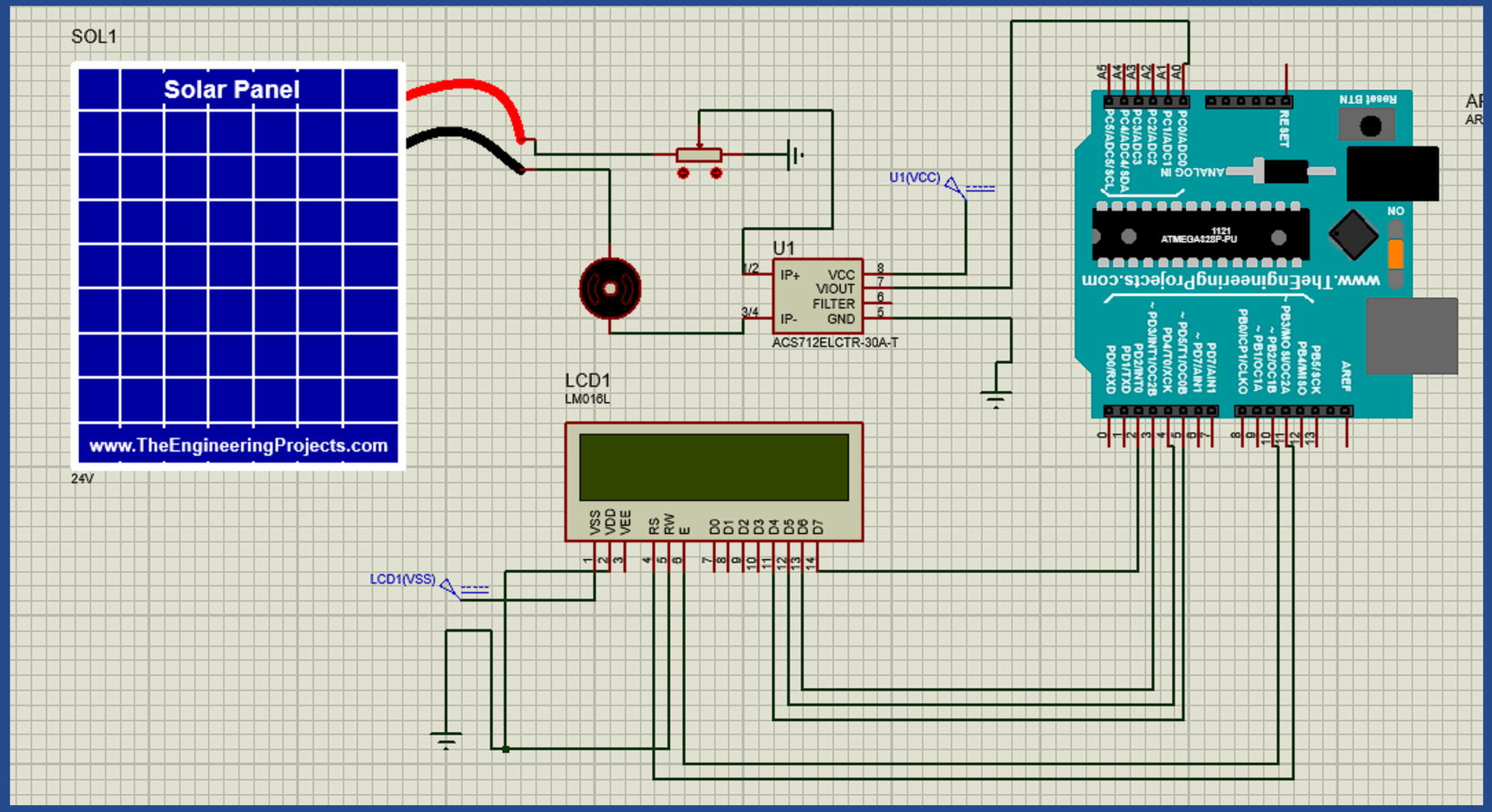
LCD - LCD (Liquid Crystal Display) is a type of flat panel display which uses liquid crystals in its primary form of operation.

Software Used -

PROTEUS - The Proteus Design Suite is a proprietary software tool suite used primarily for electronic design automation. The software is used mainly by electronic design engineers and technicians to create schematics and electronic prints for manufacturing printed circuit boards.

ARDUINO IDE - The Arduino Integrated Development Environment (IDE) is a cross-platform application that is written in functions from C and C++. It is used to write and upload programs to Arduino compatible boards, but also, with the help of third-party cores, othervendor development boards.

CIRCUIT DESIGN AND WORKING



ADVANTAGES -

- Monitoring your solar panels can help you to optimize your home energy costs
- it can protect your home against power outages.
- In addition to detecting issues with solar equipment, solar monitoring systems can pinpoint repair solutions for the energy system equipment.
- Increased solar self-consumption

DISADVANTAGES -

- The initial cost of purchasing a solar system is fairly high.
- Solar Energy Storage Is Expensive
- Weather Dependent.
- Ineffenciency

FUTURE SCOPE -

01.

For very large solar panels dual axis solar panel tracking can be done.

02.

By analysing the data it is possible to predict the future values of parameters.

03.

AI can be implemented by using various ML Algorithms so that the system can become smart enough to take decisions about data and performance.

THANKYOU