DESIGN AND IMPLEMENTATION OF AUTOMATED LOW-COST DOUBLE AXIS SOLAR TRACKING SYSTEM

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- **The purpose of this work** is to design and simulate a system that has low-cost and follows the sun by moving in two directions for solar panels. Solar panels collect sunlight and produces electrical energy.

- **In this study** created a system that allow the panel to follow the sun by using light dependent resistor, microprocessor and motors in a simulation program. The built system will integrate into the solar panel and compare with a fixed solar panel then efficiency obtained will be calculate.

Work:

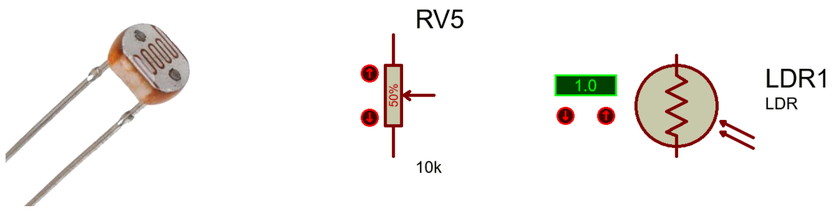

Figure 1 : LDR and LDR in Proteus

An LDR or light dependent resistor is also known as photo resistor, photocell, photoconductor. It is a one type of resistor whose resistance varies depending on the amount of light falling on its surface.

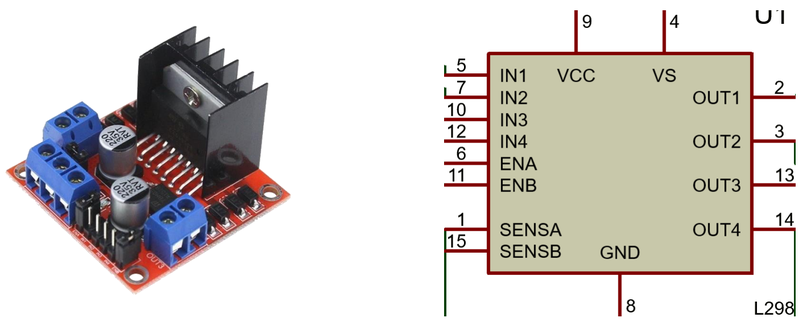

Figure 2 : Motor Driver and Driver in Proteus

The electrical part that controls the motor direction and speed according to the signals coming from the microprocessor is called the motor driver.

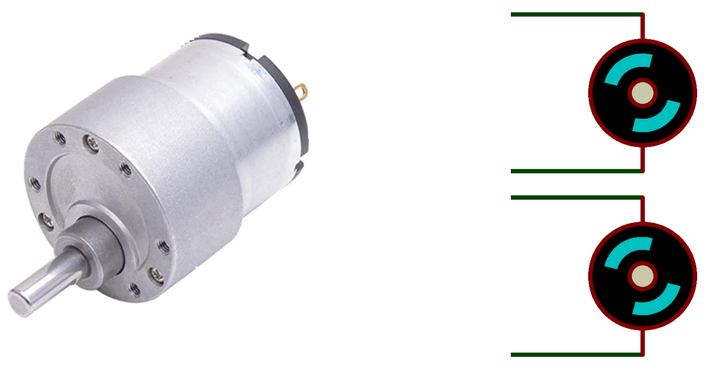

Figure 3 : DC Motor and DC Motor in Proteus

DC motor is the machine that converts direct current into mechanical energy. When electric current is applied to the windings inside the motor, the magnetic force formed in the opposite direction to the permanent magnets inside the motor and the motor rotates.

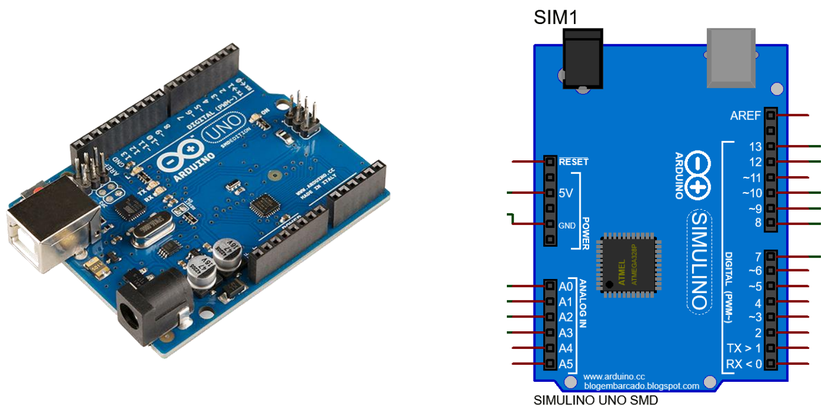

Figure 4 : Arduino and Arduino in Proteus

The electronic card with an Atmel AVR microcontroller and equipment that provides communication with the external environment is called Arduino. Data can be received with various sensors and electronic parts can be controlled with output pins.

Results:

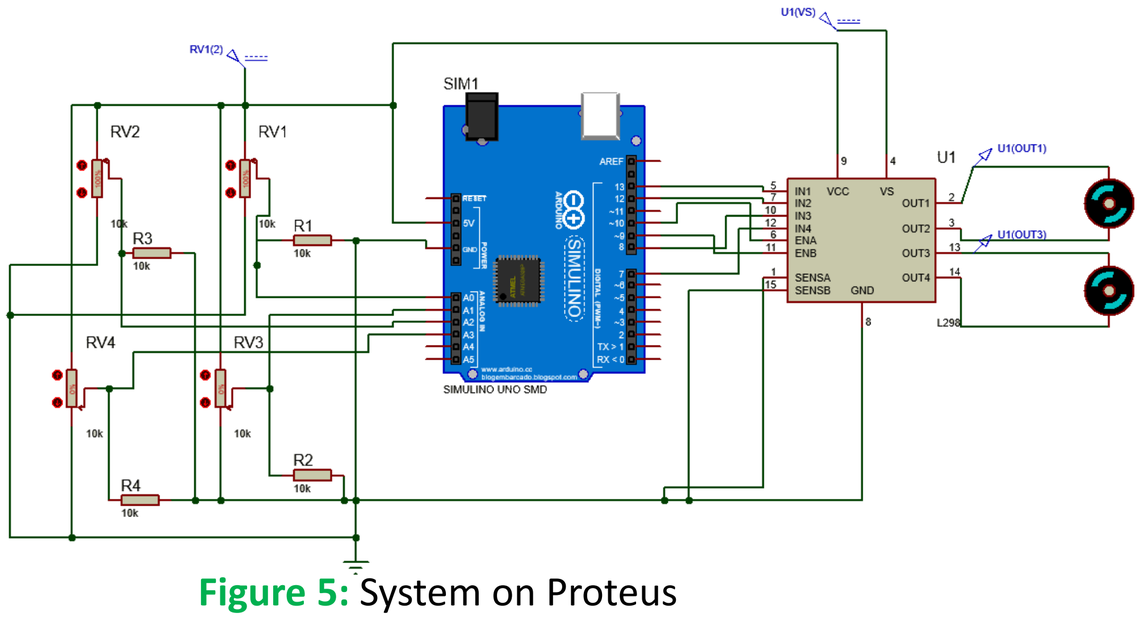

Figure 5: System on Proteus

All parts are combined using the simulation program and according to the results of the design realized;

- ✓ The applied algorithm works correctly.
- ✓ There is no incompatibility between the equipment used.
- ✓ The design can be integrated into the solar panel
- ✓ The efficiency difference between them will be measured with a single axis solar panel.

References:

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