# Tasks Model 2 – Functional model 2 / Solar energy

## Construction task model 2

Build model 2 with cover plate according to the building instructions. Observe the following points:

* You can use an artificial light source with sufficient strength (such as an incandescent bulb or halogen bulb over 60 watts) for your experiments, as a replacement for sunlight.
* Always keep a safe minimum distance away from the light source (at least 30 cm, depending on the strength of the light source), since the solar modules can become very hot.

In our experiments with model 1, we learned that the light intensity and angle of light incidence are important for electricity output. However, if we need more current than a small solar system can generate, there are multiple options for handling the issue. We can try to consume less electricity, or enlarge the solar system.

## Topic task

What energy saving tips can you name to help us use less electricity in our everyday lives?

## Experimental task 1

To improve a solar system, solar modules can be added in a variety of ways. The overall effect of doing so will depend on whether they are connected in parallel or in series. In our model 2, two solar modules are connected together in series. The same principle is used in strings of light on Christmas trees. In addition, there is also a fischertechnik button that interrupts the circuit when it is not pressed.

1. Turn the button on with the small lever and align the model to a light source until the indicator starts to turn. Note the distance to the light source for later experiments. Now, shadow either the left or right solar module by putting the cover plate on top of it. What do you observe?
2. The rotational speed of the indicator is much faster at the same distance from the light source, compared to model 1. Why is that?

## Experimental task 2

Connect both solar modules in parallel. See image (xxxx).

1. Turn the button on with the small lever and align the model to a light source until the indicator starts to turn. Use the same distance from the light source that you noted above (experimental task 1). Now, shadow either the left or right solar module by putting the cover plate on top of it. What do you observe?
2. Compare the rotational speed of the indicator between parallel and series wiring with the same distance from the light source. What can you conclude from this?