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Abstract:

The aim of this paper is to present a solar energy collection technology by a photovoltaic cell. To present this efficient solar distributed generation system, a dual-axis solar tracker is designed, built and tested. The tracker actively tracks the sun and changes its position accordingly to maximize the power output. The designed tracking system consists of sensors, comparators and microcontroller operated control circuits to drive motors and gearbearing arrangements with supports and mountings. Two geared stepper motors are used to move the solar panel so that sun's beam is able to remain aligned with the solar panel. The built system has a calculated power gain of 52.78% compared to a static solar panel.

Keywords: Solar tracker, LDR, Microcontroller, Geared stepper motor, Power gain.