

# Optimized cleaning and cooling for photovoltaic modules based on the output performance

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## Abstract

This study aimed to design and implement a smart automatic cleaning and cooling system for photovoltaic modules to be activated based on power drop resulting from dust accumulation and high temperature conditions. This was tested by installing two side by side identical photovoltaic modules. The first module was equipped with the prototype cleaning system while the second one was considered as standard. An optimized cleaning and cooling procedure was adopted using data acquisition system. The operational performance of both panels was recorded and analyzed. An increase in energy yield of 8.7% was obtained as a result of minimizing the operational disturbances of dust accumulation and high surface temperature of the photovoltaic panel.