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| **Title:** | Design of a Pelton Turbine using SOLIDWORKS for Ocean Wave Energy Harvesting in MATLAB Simulink | | |
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| **Abstract:** |  |
| Abstract— This article discusses in detail the design and simulation of a Pelton turbine-based ocean wave energy harvesting system. Before that, the quest for renewable energy resources and in this context, the existing ocean wave energy harvesting devices and systems studied from the literature are described in brief. After that, the Pelton turbine’s working principle is also explained with a schematic diagram. The Pelton turbine was designed using SOLIDWORKS, which is a 3D engineering design and product development tool. After that, a MATLAB Simulink model was developed for the energy harvesting process. We simulated the model in the Simulink environment, and simulation results are demonstrated through some graphs. We obtained the maximum and minimum voltages of +440 V and -440 V respectively, a peak to peak current of 340 A, a maximum output electrical power of 3.7 MW, and a maximum speed of 3200 rpm with a constant field voltage of 11.5 V. | |