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Manual power generation for mechanical applications

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Manual power generation can be used as one of the power sources at household levels to fulfill the energy demand of a developing country such as Sri Lanka. People waste their energy very often during their day to day activities such as exercising, to have a healthy life. If these waste energy could be harnessed for useful work, it can be used as clean energy while saving money on energy and to reduce excessive energy stored in many people, especially who are categorized as obese. This project aims at introducing a new solution to pump water and as well as to be used in blender machines. This is achieved by pedal power devices such as exercise machines, bicycles or any other form.

Developed human powered water pump could be connected to the pedal power of foot bicycles. The primary purpose of this is to demonstrate the possibility of implementing off-grid pumping systems through affordable and healthy exercising and daily working. When desired, the dual-purpose bicycle can be converted from its transportation mode to its pedal powered mode, or vice versa within a matter of minutes. A counter type blender which is commonly available in the market can be easily operated by pedal power or hand power.

When designing these systems, materials and performance were optimized, to grant them as sustainable designs. It should be noted that the design criteria, used materials, and the adopted procedures in manufacturing may be modified to suit local situations. Low cost, readily available materials and standard bicycle parts were used so that they could be replaced whenever needed.

People on rural parts of the country can generate their own power with an effort of their leg movements and the people on urban areas can recover lost energy while they are on exercising with fitness equipments. Hence, the human energy which is readily available can be used as an alternative energy source for many household requirements.

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