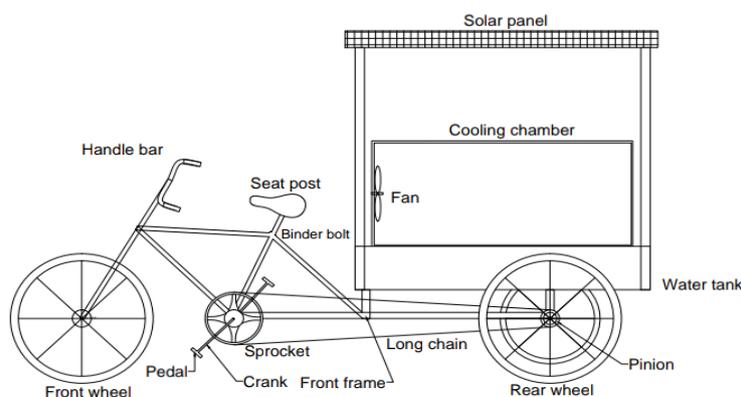


RESEARCH AND DEVELOPMENT

Name of the Researcher	Designation & Department	Research Topic	Year of Completion
Dr. Pravin Potdukhe	Professor & head Department of Mechanical Engineering	Solar Assisted Vegetable Cart	2018

BRIEF SUMMARY OF THE WORK: A solar assisted vegetable cart (SAVC) using evaporative cooling is designed and developed for storage of vegetables at RCERT, Chandrapur. Mobile vendors find it difficult to keep the vegetables fresh to sell. It is well known that absence of sufficient storage and cooling facilities after purchase from main market of city results in deterioration in the quality of vegetables that reach the customers. This has an immediate impact on the distribution and availability of the required amount for human consumption. It also incurs financial loss to mobile vegetable vendor due to deterioration and damage to vegetables. Evaporative cooling system provides a solution to their problem. Cooling is important to minimize quality loss when the vegetables are to be sold. Preserving such vegetables to remain fresh demands that the chemical, biochemical and physiological changes are restricted to a minimum by close control on temperature and relative humidity. The high cost involved in developing cold storage or controlled atmosphere storage on a movable cart is a major problem in India and several developing countries. Evaporative cooling is an efficient and economical means for reducing the temperature and increasing relative humidity in an enclosure. Evaporative cooling is an environmental friendly air conditioning system that operates using induced processes of heat and mass transfer, where water and air are the working fluids. It provides an inexpensive, energy efficient, environmentally benign and potentially attractive cooling system.



Solar Assisted Vegetable Cart

INDUSTRY RELEVANCE -The above work has got wide application to mobile vegetable vendors in towns & cities. The farmers & agro processing industries will also be greatly benefitted by the work.

RESEARCH OUTCOMES: A three wheeler cycle rickshaw is modified to accommodate evaporative cooling system and storage racks for vegetables. The evaporating cooling pad (cellulose/honey comb) made of corrugated paper with spatial cross linking technology has been used. This has increased cooling efficiency. Shelf life of vegetables is also found to increase by 3 to 4 days. A solar panel 100 W/12 V module is used as the power source. It is used to run single fan (DC, 12 V, 0.7 A, 8.4 W) and water pump (DC 18W, 12V) for the evaporative cooling system. Based on the above work one paper was published in journal.