



Water Jacket

Challenge Award

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Background

As a response to the challenge of finding solution to reduce drudgery of rural woman who have to carry water on their heads, a group of four engineering students from S.R.M. Engineering College came up with this practical solution of making water jackets. It is something that was obvious but was never thought of before.

Bhardwaj, an adventurer, moved to Stanford University to complete his Master's in Computers after completing his engineering degree from SRM. A bright student since childhood, his other interests include teaching, solving math puzzles, and playing soccer. Neelkantan, a resident of Chennai, has a penchant for crossword puzzles. He enjoys listening to classical music and being in the company of friends. He is presently preparing for masters in business entrance examinations. Arun Raj is working for an anti-virus company in Chennai. He is passionate about sports and music, and can play veena and mandolin. After his engineering degree, Vishnu, also a sports lover, moved on to work in a company.

Genesis

Women in rural India travel long distances to go to wells and rivers to fetch water and face the burden of carrying heavy pitcher on their heads and trudge all the way back. Carrying this heavy load on the head causes discomfort, pain, injuries to their neck and spine.

A challenge was posed by NIF before these students to develop a solution, which could alleviate pain and solve the problem in the conventional way. It was part of twelve challenges which were posed by NIF and Honey Bee network to the participants of Shastra 2004 at IIT madras.

They came up with a wearable, water vest that can be strapped on to the body so that the filled vest can be fixed to the body and the weight is distributed evenly on the front and the back side of the body.

Innovation

The water vest is a wearable plastic jacket with zips and Velcro locks, with belt. It has 1.5" padded

shoulder straps for anchoring the vest with its front and back water-carrying chambers. The presence of a faucet facilitates pouring of water as and when desired. The jacket also has a transparent water level indicator to show how much water is stored. Water is poured in through an opening at the top provided with a lid. The jacket contains a double-layered foldable filter, fitted below the zipper to clean the water.

While filling, it can be taken out after having it unzipped. Water is then filled in from the river by immersing water chambers or poured water into opening using a bucket. The indicator displays water level so that chambers can be filled to the top without spilling water out.

To wear the jacket, faucet is closed, openings are zipped and buckles are unfastened, and finally, the jacket is worn from sideward. After wearing, buckles are fastened and the lengths of the straps are adjusted as suitable. The objective is to distribute the weight of water uniformly with cushioning effect for providing necessary comfort.

In order to empty water jacket, when the vest is worn, faucet at the bottom is opened and water is made to drain off. When the jacket is not worn, entire assembly can be unzipped to transfer the water.

The water jacket is available in four sizes L, XL, XXL and C (special children's size) as per body dimensions and load carrying capacity. Initial calculations by innovators indicated a capacity of 11 litres for C size and 30 litres for XXL size.

Some of the optional accessories visualized by the innovators include thigh pads for additional water storage, foldable water filters, and first aid kit compartment. As against the maximum load carrying on head being 10 Kg, the user here can carry more than twice this load without much problem.

This water carrying solution has more capacity, is more comfortable, safe and versatile than carrying load on head. There is no chance of dropping off the vessel or contamination of water. It is light, completely foldable, made of washable units and has a filter inside. In desert areas, it can be hung on the saddle of camel with chambers on either side. While implementing it, some difficulties were faced because of the inconvenience to the women in the front portion. A social entrepreneur, Madhav Sawant has improvised the concept and developed two boxes hung on shoulder rods, which obviate the need for carrying water on head.