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DRDO claims breakthrough in using solar energy for heating at night

By Vijay Mohan

Tech to make troops' shelters cosy

- *It utilises phase-change materials (converting solid to liquid and liquid to solid on change of temperature, thereby releasing heat) to store thermal energy*
- *It has a thermal trap area over the roof that utilises greenhouse concept for creating a tunnelling effect to trap solar heat in the shelters for the troops*

The Defence Research and Development Organisation (DRDO) has claimed to have made a breakthrough in developing technology for utilising solar heat harnessed during the day for heating rooms during the night at extreme altitude. The Defence Institute of High Altitude Research (DIHAR), a DRDO laboratory based at Leh, has developed a shelter for troops that uses non-conventional energy for heating, instead of fossil fuel. The shelter, costing about Rs 60 lakh, was tested through the winter at Chang La, located at 17,600 feet in Ladakh, with temperature as low as minus 40°C. The DRDO established the world's highest research station there last year.

Scientists at DIHAR said while solar energy could be harnessed and stored in batteries for later use, the same is not applicable for solar heat and conventionally solar heat can be used only while the sun is shining. Claimed to be the only kind of shelter, it utilises phase change materials (converting solid to liquid and liquid to solid on change of temperature, thereby releasing heat) to store thermal energy collected from evacuated tube solar collectors. It has a greenhouse based thermal trap area over the roof and utilises greenhouse concept for creating a tunnelling effect to trap solar heat in the shelter.

"The shelter maintained a temperature of 7-10°C when the ambient temperature stood around minus 30°C. Other shelters in similar conditions have temperature of minus 10-15°C," a DIHAR scientist said. "However, there is a need to operate a diesel generator for six hours during the peak winter months (January and February) when the temperature falls below minus 30°C," he said.

At present, the Army uses "bhukaris" and generator-run electrical appliance to heat spaces like barracks and bunkers in Ladakh as well as the North-East, consuming lakhs of litres of kerosene and diesel every year. The non-conventional energy shelter would be environmentally beneficial in ecologically sensitive areas, besides generating carbon credits.

DECCAN HERALD

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IAF officer creates record in skydiving

Indian Air Force officer Wing Commander Kamal Singh Oberh has created a new record by skydiving with the largest flag in India at the National Defence Academy.

The record skydive jump was undertaken by the Wg Cdr Oberh, a Tenzing Norgay National Adventure Award winner, on 29 May at National Defence Academy (NDA) airfield with a flag measuring 51 feet 10 inches in breadth and 81 feet 3 inches in length.

The record jump was undertaken from a Mi-17 V-5 helicopter that flew at 7,000 feet in the early hours so as to take advantage of nil wind weather conditions.

"The all-up weight carried by the officer was 77 kgs with the weight of the flag being 52 kgs and the parachute 25 kgs. The flag was made using special nylon fabric that is used for making parachute canopies. The flag was initially fabricated by the Ordnance Clothing Factory at Avadi in the outskirts of Chennai. The final technicalities handled by the Aerial Delivery Research and Development Establishment at Agra which also manufactured the main parachute with which Wg Cdr Oberh undertook the jump," a Defence Ministry spokesperson said.

Wg Cdr Oberh is a highly-trained and qualified Parachute Jump Instructor.

THE FINANCIAL EXPRESS

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Milk test strip, first of its kind in India, to thwart adulterators

An easy-to-use kit allows testing of milk to thwart milk adulterators. It helps to find out whether what you are drinking is milk or urea, starch, boric acid, soap/detergent, neutraliser, hydrogen peroxide or something else.

An easy-to-use kit allows testing of milk to thwart milk adulterators. It helps to find out whether what you are drinking is milk or urea, starch, boric acid, soap/detergent, neutraliser, hydrogen peroxide or something else. The strip-based milk-testing kit is the first of its kind in the country. The Defence Food Research Laboratory (DFRL), Mysuru, has transferred the technology developed by them to Navi Mumbai-based Pearl Corporation.

DFRL is under the life science cluster of DRDO. Defence minister Manohar Parrikar, released the milk kit at the Defence Institute of Advanced Technology in Pune on Tuesday. Pearl Corporation has commercialised the technology and launched the milk testing kit under the 'Test-o-Milk' brand.

Initially developed to prevent adulterated milk from reaching soldiers, the kits were being used in the field by the defence services. "It is now being commercialised and we want to take this technology to the masses," Mahesh Rathi, director of Pearl Corporation, said. There was a need for this technology as there is no way to check milk adulterants at home; milk adulteration has reached alarming proportions, he said. This led Rathi to DFRL, which was already using it for the armed forces.

Pearl Corporation will be manufacturing the kit in Navi Mumbai and Daman and will sell it through medical shops and pharmacies. The packs come with a DFRL logo. It is currently being sold across major cities of Maharashtra and will be launched in MP, Rajasthan and Delhi, with a pan India launch by the end of the year. “With the easy-to-use kit, milk can be be tested with test strips that detect chemical adulterants. Though a number of technologies are already available in the market, they target institutions and use a lot of hazardous chemicals, and the equipment is expensive, he said.

The availability of adulterants has emboldened milk vendors all over India to mix synthetic milk in natural milk. The synthetic milk is a mixture of vegetable oil, urea, cane sugar, neutraliser and detergents at appropriate proportions.

The kit will be a deterrent for milk vendors and adulterators, Rathi said. The kit also provides strips to check the microbial quality of milk for freshness, and a lactometer to detect the presence of water.

THE HINDU

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Takes charge as DRDO aero cluster DG

C.P. Ramanarayanan has taken charge as the Director-General of Aeronautical Systems, DRDO, with effect from June 1, according to an official statement.

Dr. Ramanarayanan, Distinguished Scientist, succeeds K. Tamilmani who has superannuated. Prior to this post, he was Chief Controller, R&D (HR). Based in Bengaluru, the aeronautics cluster of seven labs is one of the seven cluster labs of the military R&D organisation.

The new DG (Aero) has a Ph.D. in Energy Systems from Jawaharlal Nehru Technological University, Hyderabad. He has also served as the Director of DRDO lab GTRE (Gas Turbine Research Establishment) in Bengaluru, at VRDE, Ahmednagar, and as Project Director for thermal propulsion development for heavy and light weight torpedoes at naval research lab NSTL, Vishakhapatnam.