Improvement of habitat at high altitude areas for defence.

By Suvarna Fibrotech Pvt. Ltd. Pune

Description of the composites innovation

RTM, moulded FRP Sheltes are made to form in the shape of a barrel so that the entire structure can take maximum snow load upto five meters. The panels are of maximum size 8' x 4' and weigh less than 25 kgs. Which is portable by a human being. These shelters can be erected at any mountain top effectively with lesser time. The panels are of minimum 55 m thickness with polyurethane foam is sand witched.

Value created by the use of composite materials in the innovation

Environmental pollution aspects : As everyone aware that snow melt water is the only source for the drinking water at high altitudes. Now almost all glaziers are made polluted by night soil and

non decomposed organic substances with the lack of bacteria the pollutant remains as such for several years. With the development of Bio-digesters below the toilet chamber of the shelters make the environment totally clean and tidy. The environment made inside the bio-digester is suitable for bacterial to be alive and active and can decompose the night soils. Employment generated both direct & indirect: As the above products are high volume and with lot of component integration, we employed more technical hands to look after production and timely supply. The 1st Pilot project order placed by Army is 8.14 Crore & we completed the project in time. We are proud to say that we got an repeat order worth of Rs.11.47 Crore from the Defence Dept. By next year the projection on this product is around 80 Crore by Ministry of Defence. The technical hands employed: 10 Mechanical Engineers, 10 Chemical Engineers, 10 site Engineers 60 Technicians

Summary of key benefits of the innovation

Self appraisal by the applicant giving full justification of the award: We strongly believe that this product is tried out first time in India, after our prolonged three years effort to make our Soldiers comfortable in boarder areas where the terrains are very much complicated. Our Engineers & team has faced lot difficulties in terms of medical as well as physical problems during the study & trials. We strongly believe that anything done in terms of direct effect to the Indian Army to increase the efficiency of soldiers will have direct affect on fighting against cross border terrorism which a major head ache of Govt. of India & Defence. The product is eco-friendly & keep our boarders clean & tidy which increases the comfort level & belongingness to Indian Territory. This effort also makes our higher authorities in Defence including Ministers to stay comfortably without much acclimatization for a longer period to study the boarder situations time to time.

Description of the development phase and launching of the product.

Suvarna Group of Companies have been actively involved in the development activities for improving the infrastructure for habitation of Armed Forces personnel at high altitudes keeping in mind increased efficiency and mental strength of our soldiers. An in-depth study of the project has revealed certain facts that the basic requirements like food, shelter, security etc. of a human being are not met at forward and vulnerable areas. The other factors those are affecting the efficiency of Army personnel are improper sleep, improper shelter, lack of recreation and entertainment centers, inadequate kitchen facilities and non availability of hygienic toilets and sanitation. Unluckily India has got very rough terrains along North & North east frontiers those are totally at remote and high altitudes of Himalayas, where even electricity is not available or cannot be made available as the terrains are too vulnerable and the weather remains extreme. Our Soldiers struggle to defend the borders challenging the lower oxygen levels and the temperatures even below zero degree lower upto (–)60 C. The tents provided to them are not adequate to protect them from extreme weather, as they are temporary in nature and lacks amenities. The conventional heating system by means of Bukhari or Stove used to produce heat generate higher Co2 levels and make the people unconscious even with a threat of fire accidents. Many such cases were reported in the Commands of Army frequently. One of the basic problems faced by our Soldiers is non availability of hygienic toilets and sanitation. Since the lower temperatures prevent the bacteria thrive and proliferate, no decomposition of human waste takes place. Drinking water also gets polluted resulting in lesser oxygen level and create a condition of de-oxidation at high altitude. The combined effect on our soldiers is lesser intake of food to control metabolism were by they become weak and incompetent for combat. We have studied the entire scenario for last 10 years at various sites and with the strength of this

experience, developed bio-digesters, heating system etc. those have been practically tested at various sites and altitudes and proved successful and useful, where regular engineering practice simply fails. These bio-digesters and water based systems can effectively work at vulnerable terrains and altitudes. Thereafter, with so much of efforts and discussions with The CCE (COD) NEW DELHI, E-in-C' branch, Kashmir House, New Delhi we have come out with a complete solution for The Indian Army which would be an apt answer to these problems dwelt on here. Suvarna has indigenously developed Shelters for OR Living, Officer Living, JCO living, Cook House & multipurpose and Stand alone toilets store shelters which works independently and efficiently in any terrains and provide a decent accommodation for all of our Soldiers so that they themselves keep fresh, energetic and combat ready. This proposal was accepted and approved by the Defence Ministry and placed trial orders on us for execution at high altitudes (worth Rs.8.14 Cr.) . The product is proved and we got repeat order worth of Rs.11.47 Cr. (copy orders enclosed). Also we are the only Indian Company who have developed all these equipments and accessories indigenously.

Market potential for the innovation

Lesser Operations cost: The Power required to operate a shelter to Generate heat inside is hardly 3 KVA compared to the present operating system of 20 KVA. As the heating is water based only 3 litr. of kerosene required in a day to heat upto the media for 8 hours. In other words, total requirement of Kerosene for a day for both Genset and boiler will be (20 ltrs.) which can provide comfort living for 10 soldiers per day expenditure is approx. Rs.500/- for 10 men which is cheap in economical. The permanent investment cost works out approx. Rs.5000/- per sq. feet at high altitude.

Additional information about the Company:
We are one of the leading manufacturer of Fibreglass Reinforced Plastic (FRP) / SMC products in India. We are supplying our products for various applications to Defence, Automobile, Wind Energy, Construction, Chemical Industries, Irrigation, Domestic Applications etc.

Winner of 2011 ICERP- JEC Innovation Award

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