

# SOLAR HEATED SHELTERS

Solar heated shelter has been designed, developed and evaluated by Defence Institute of Physiology & Allied Sciences for reducing dependency on fossil fuel in remote off grid locations. The shelter is modular in design and uses solar energy for space heating and electricity generation. The shelter has steel grillage foundation making it suitable even for areas of soil with low bearing capacity. The superstructure is made of modular panels for ease of transport to remote locations. The solar shelter is designed to endure wind speeds of upto 198 km/hr and snow load of upto 2m. The polycarbonate roof design prevents accumulation of snow and allows optimal trapping of solar heat inside the shelter. The excessive solar heat is trapped in Phase Change Materials (PCM) during the sunlight periods and is released for space heating during evening hours and cloudy weather conditions. It has integrated toilet and insulated water tank for providing tap water in extreme cold conditions. The CO<sub>2</sub>, temperature sensors and fire alarm system provide safety features comparable to international standards. Electricity is generated through ground mounted solar panels and stored in Lithium ion batteries. The shelter is ergonomically designed for optimal utilization of space to provide comfortable habitability. The solar heated shelter provides an eco-friendly habitability solution for extreme weather conditions ranging from -40 °C to + 40 °C in remote locations by reducing fuel dependency. Being modular, it can be constructed in customizable sizes based on habitability requirement viz., 4 men, 6 men, 50 men etc and space available.

