The warm igloo

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The Warm Igloo

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ABSTRACT

About 29% of land on earth can be found in the artic regions. Those regions have 30% of the global fossil resources, large woods, metals and minerals. Moreover, those areas have a very small population. To explore the enteral resources and for the habitation of these artic areas, we have developed a warm-igloo concept. The concept is based on the use of local renewable and cheap resources like ice, soil and wood. By mixing those materials we have developed new techniques and methods to realize structures of ice-based composites. Structures made by ice composites are cheap and effective. Up to now the application was for pleasure, such as exhibitions and competitions. For comfortable habitation, it is necessary to insulate and heat them from the inside. Therefore, we have developed a concept for a warm igloo. In this approach, we can control the temperature of the ice composite by cooling it with glycol in tubes that are integrated in the shell. The glycol is cooled with a “chiller” with the cold air. See Fig 1. A reverse system was tested in 2003. Pronk et al. built an Art Pavilion [1] in Amsterdam with an inflatable membrane mould of PVC-coated polyester at an air temperature of +18°C by cooling down the surface of the igloo directly with a cooling device. The concept of the warm igloo is based on the 2003 and 2006 experiment[1] [2]. However, in this case the cold is outside and the heat is inside. We even think this concept is interesting for space missions, for instance for habitation on Mars or the moon. See Fig 2 for a proposal by Clouds AO[3] for an ice-based Mars habitation.

Fig. 1 Concept for warm igloo, Fig. 2 Concept for Mars Ice House by Clouds AO/SEArch

Keywords

Heat-control, habitation, igloo, ice composites, mars missions.

REFERENCES