investments and operating costs, easy operating method and trouble-free operation.

30. An Experimental Study on Sea Water Freezing Behavior in Flow Field

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Recently, we have serious problems due to lack of water because of the rapid development of industry and increasing in population. In Korea, a lot of researchers predict that we will have lack of water about 2 billion tons on 2011 year. Therefore, it has absolutely be demanded to build dams and to develop desalination systems in order to supply fresh water continually. The most important factor for adopting the desalination system is the production cost of fresh water. The cost depends on what and how to use an energy source which should be obtained easily and cheaply. Generally, Liquid Natural Gas(LNG) is stored in a tank as a liquid state at below -162°C. When serviced, however, the LNG absorbs energy form an ambient heat source and then transforms to the gaseous state at high pressure. In this process, a large amount of cold energy is wasted. What is a method to use this wasted LNG cold energy? So, we focused to make the sea water freezing desalination system by utilizing this wasted cold energy. In advance, we need to possess the qualitative and quantitative data regard to sea water freezing behavior to establish its design technique. The goal of this study is to reveal the freezing mechanism, to measure the freezing rate, and to investigate the freezing heat transfer characteristics of sea water. A lot of new informations being made clear through the sea water freezing in flow field will help for us to understand sea water freezing behavior generally.

Key Words : LNG Cold Energy(액화천연가스 보유냉열), Desalination System(담수화장치),
            Sea Water Freezing Behavior(해수동결거동), Freezing Heat Transfer(동결열전달)