

ENVIRONMENT

Technologies for Better Quality of Life

MODIFIED VAPOUR ABSORPTION SYSTEM

Utilisation of low grade heat is one of the most challenging problems especially in a tropical country like India. The discharge of gas/ liquid effluents at temperatures above 100°C / 55°C respectively creates thermal pollution, and wastes a large amount of energy.

The Heavy Water Board has developed a new technology for utilisation of low grade effluent energy and converting it into a useful cold energy in the form of sub-zero refrigeration effects.

The system developed by the Board consists of modified vapour absorption system utilizing low grade heat with enhanced co-efficient of performance (COP). The special feature of this technology is innovative absorption cycle and generation of sub-zero of refrigeration through intermediate partial condensation. This enables use of refrigeration at dual levels as well as improved quantity of the refrigerant for the energy invested in the cycle.

R&D pilot plant has been set up by the Heavy Water Board in collaboration with M/s Thermax Ltd., for demonstration of improved co-efficient-of-performance.

SPECIAL ADDITIVES FOR LOW BOILING OF REFRIGERATION

At the Heavy Water Board, development is under way to use special additives for low boiling of refrigeration through a special “salting in” mechanism. An R&D pilot plant is currently under design and engineering for demonstration of recovery of energy of the effluents right down to a temperature of 60°C. Such a machine using low grade energy with improved co-efficient of performance will have tremendous impact in terms of utilization of low grade energy in the liquid effluents from the process, cooling tower blow downs, flue gases from various furnaces and diesel engines which otherwise is being wasted. The R&D is also being proposed to integrate this system with use of solar energy.

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