9. Milk Chilling Plant with Exergy Optimised Heat Based Refrigeration

Preamble:

The project entitled "Cold Storage Facility for Post-Harvest Preservation of Fruits & Vegetables Using Solar & Biomethane Heat Based Refrigeration" was sponsored by Rajiv Gandhi Science and Technology Commission, Govt. of Maharashtra, and successfully implemented by Institute of Chemical Technology, Mumbai. A heat based refrigeration technology is set up at Gokul Dairy, Kolhapur, for Milk Chilling process which conserves energy and is cost effective. The heat based technology for refrigeration is a combination of Vapour Absorption and Vapour Compression Refrigeration system.

Objectives of the Project:

- To set up an industrial scale demo unit for milk chilling using vapour absorption refrigeration technology by employing green energy source.
- To enhance the heat based refrigeration technology for storage of fruits and vegetables.

Salient Features of the Technology:

- The developed technology for refrigeration is a combination of Vapour Absorption and Vapour Compression Refrigeration system.
- The combination has been optimised by the use of Exergy Engineering technique such that an optimum use of both technologies results in maximum benefits.
- This technology reduces electrical energy consumption by using heat energy source.
- The heat can be obtained from agro waste through a boiler generating steam or by direct combustion of agro waste and also from solar energy.
- The technology is already in operation at a milk chilling centre of Gokul Dairy, Kolhapur, where approx. 2 lakh liters of milk is being chilled every day. The operating experience is quite promising.
- Capital investment for 100 TR load of refrigeration is approx. Rs. 100 lakhs.
- The payback period for this technology is approx. 2 years.
- The technology can be used in food industry, pharmaceutical industry and for storage of fruits and vegetables, dairy products, medicines, etc.

Vapur Absorption Refrigeration Unit at Gokul Dairy, Kolhapur.

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