Invention: **'Multi Heat Exchanger Hybrid Cooling System by Evaporation'**

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Project: A prototype model of 'Multi Heat Exchanger Hybrid Cooling System by Evaporation'

These decades, the energy crisis due to cooling is becoming a challenging issue all over the world. In order to fulfill the requirements of cooling even fossil fuel are burnt to generate energy. This leads to greenhouse emission. Refrigerant such as chlorofluorocarbon CFC and HCFC use in vapor compression system have potential of depleting ozone layer of the higher atmosphere. The growing demand in cooling systems all over the world necessarily requires an effective and efficient cooling system, which utilizes low amounts of energy and has no adverse effect on the atmosphere. Scientists and researchers are finding new solutions for cooling systems. Also, several study and research are being conducted on evaporative cooling system in finding the best answer to its limitations. The evaporative cooling system uses significantly low power than a vapor-compression system but has its own limitations. .

'Multi Heat Exchanger Hybrid Cooling System by Evaporation' (MHEHCSE) is a novel technology in cooling system The main object of this invention is to drop the temperature of the fluid significantly below the ambient wet bulb temperature (approaching to ambient dew point temperature) within the almost same energy required by the conventional evaporative cooling system. MHEHCSE comprises of stages of direct, indirect and forced type (direct and indirect) heat exchangers for adiabatic humidification and sensible cooling of the air, and low pressure

cooling cycle (LPCC) for the process of cooling working fluid in the low pressure expansion. LPCC can also be a standalone complete cycle of cooling, which is based on adiabatic expansion and latent of vaporization under low pressure condition.

MHEHCSE is a low cost (installation, running and maintenance cost) cooling system and has no adverse effect on the environment. It is an affordable cooling system with large area of its applications by **saving expenditure, energy and environment.**

1. "Multi Heat Exchanger Hybrid Cooling System By Evaporation" is also affordable for general people who cannot afford high initial (installation), maintenance and running cost refrigeration system such as vapor compression system.
2. For the people who are conscious to our green and healthy environment because it has no adverse effect on the climate and environment.
3. The region where conventional evaporative coolers cannot work efficiently
4. The region where there is energy crisis.
5. Farmers living in the hot/terai region of Nepal have significant benefits from this technology in their agriculture. More especially for their horticulture, farming, poultry in maintaining favorable conditioning rooms for their cattle and storage of fruits and vegetables for longer period in a very low cost and low energy
6. This technology can also be develop in a large size "Central Cooling System" for the distribution of cooling capacity to the large buildings such as offices, schools, colleges, sports center, society apartments, warehouse, greenhouses etc within a low cost and energy.
7. This technology (Cooling System) is affordable (installation, running and maintenance cost) to provide cooling capacity to schools, colleges and sports center in the hot/terai region of Nepal.

It has many more uses in different field of applications, not limited to mention above, where the cooling effect not below AMBIENT DEW point temperature is required