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He has published 80 plus research papers in various Int. Journals and proceedings of Int. Conferences. He is reviewer of International Journals; IJR, ECM, Applied Thermal Engineering, Energy, IJER, Exergy and IJLCT and reviewed 70 plus Int. journal Papers. He is awarded as the outstanding reviewer by the Int. Elsevier journals, ECM and Applied Thermal Engineering for his contribution.

The B. Tech. and M. Tech. projects supervised by Dr. Agrawal, has awarded 5th, 6th and 9th Bry-Air award, excellence in HVAC&R at national level. He has supervised 55 plus M. Tech projects and Three Doctoral Research works. He has completed ISHRAE research Project worth Rs. 3 Lakhs. He has contributed a book chapter in the Int. Hand book of Research on Advances and Applications in Refrigeration systems and Technologies, published by IGI Global Hershey, Pennsylvania. He has delivered 30 plus expert talks across India. He has visited China, Australia, Czec Republic, Japan for presenting the research papers in ICRs and GL conference.

Presently he is heading the Department and holding an additional charge as Training and Placement officer since 2008.

Alternate cooling solutions: Way of sustainability

Summary

Cooling and heating technologies are the outcome of the continuous pursuit of the human mankind for healthy and comfort life. The last decade is witnessed the increased demand of cooling in view of change climatic conditions, open economy and people concern about the health and comfort which have led to an unprecedented increase in the energy consumption worldwide. Conventional Vapour compression systems are the work horse and most commonly used systems for cooling. However, Vapour compression systems are one of the reasons of the environment harmful effects such as greenhouse gas emission, ozone layer depletion and global warming. It is need of the hour and an urgent need to look for the alternate environmentally friendly cooling technologies.

Evaporative cooling is one of the age old technologies, can be effectively used for cooling. Combining direct and indirect evaporative cooling and hybridization of evaporative cooling with VCS are some of non-conventional cooling techniques. Use of natural refrigerant such as CO₂ is need of the hour. Further vortex tube is another alternative environmental friendly cooling solution.

Alternative cooling technologies not only environmentally friendly but also relatively cost effective and ease in use and require less maintenance. One of the important requirement and vital elements for any technology, suggest for army, should enable easy and simple operation with relatively less maintenance. These alternative cooling technologies such as evaporative cooling, vortex tubes can be used even in remote place without much complications. Understanding these technologies may help Army to better equip for any circumstances.