

## عنوان مقاله:

Experimental Investigation on Linde-Hampson Refrigerating System Operating with Different Blends of Hydro-Carbons as Alternate Refrigerants

## محل انتشار:

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## خلاصه مقاله:

Refrigerants are the basic working fluids in refrigeration, air conditioning and heat pumping systems. The development of refrigeration and air conditioning industry depends to a large extent on the development of refrigerants to suit various applications and the development of various system components. At present the industry is dominated by the Vapour compression refrigeration systems, even though the Vapour absorption refrigeration systems have also been developed commercially. A number of climate-friendly alternatives to CFC/HCFC/ HFC refrigerants are, or will become, available for use in commercial refrigeration applications. Alternatives available today include hydrocarbons-isobutene (R-600a), propane (R-290), and propylene (R-1270) - ammonia (R-717), and carbon dioxide (R-744) respectively. This research focused to develop a strategy of refrigerants to improve the efficiency of the refrigeration system. The proposed methodology consists of Linde-Hampson refrigeration system operated with blends of hydrocarbons propane (R290) and butane (R600) as the low-temperature working fluid. To improve the efficiency of the system an evolutionary machine learning hybrid lightning search algorithm-simplex method (LSA-SM) is proposed in the study to forecast the refrigerant temperature and pressure at different ambient temperatures and loading conditions. LSA-SM has higher computational accuracy, faster convergence rate, and stronger stability than other algorithms and can effectively solve the problem of constrained nonlinear optimization in reality. The proposed methodology is mathematically modelled and executed in the running platform of Mat Lab and executed as performance charts.

## کلمات کلیدی:

Linde, Hampson refrigeration system, Vapour absorption refrigeration systems, Hybrid lightning search algorithm, simplex method (LSA, SM), Mat Lab

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