Abstract

This work presents the computer aided comparative analysis of the effects of subcooling and superheating on the performance of R134a and R717 in simple vapour compression refrigeration systems. The analysis was done by carrying out a comprehensive study of the simple vapour compression refrigeration systems, determining the subcooling and superheating parameters by calculation and developing a computer program for the analysis and results generation. The results obtained show that superheating is not an ideal way of improving performance with R717 as the COP reduces with increasing superheat temperature, rather subcooling the refrigerant gives an improvement in the COP of the system. On the other hand, both subcooling and superheating refrigerant R134a improve the performance of the system as the COP increases with the subcooling and superheating temperatures. These were presented graphically using the MATLAB programming language. The program developed for this study can also be used for examination purposes to reduce the work load for the lecturer and to also ensure accuracy of results.
References


Index Terms

Computer Science

Applied Sciences
Keywords

Refrigeration, Subcooling, Superheating, Vapour Compression system