

Freezer with Single Stage Hermetic Compressor

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Numeric and experimental study of the J-T refrigerator with new mixture of refrigerants at $-70 \div -140^{\circ}\text{C}$ is described. The refrigerator is based on the hermetic single stage compressor Danfoss SC 10CL that refilled with mixtures of refrigerants instead of the traditional R22. The mixtures R22-R14 and R22-R14-R134A of different compositions are tested. Besides the influence of inert gas impurities was investigated. Comparison between theoretical and experimental data was carried out.

Semi-hermetic contours in existing freezers, which usually assume the two-stage compressor and mixture of refrigerants, may have limits in lifetime because refrigerant leaks decrease its cooling capacity. The hermetic installation is more reliable, ecologically safe, compact and cheap. Moreover, its power consumption is lower because the low-pressure cycle was used. The J-T refrigerator designed may be applied for medical and biological purposes.