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DISPERSION OF CUO NANO PARTICLES IN THE LUBRICANT OF A VAPOR COMPRESSION REFRIGERATION SYSTEM: AN INVESTIGATION ON ENHANCING COEFFICIENT OF PERFORMANCE

Abstract:

The cooling performance of a refrigeration system is defined by coefficient of performance (COP) which is directly proportional to the heat removal rate at the evaporator or inversely proportional to the power input to the compressor. In this study, a refrigeration system test rig equipped with pressure and temperature sensors was run with raw oil and nano lubricant separately to compare heat removal rate at the evaporator and a digital energy meter was utilized to determine COP variation. The results suggested that nano particle incorporation was very effective especially in COP by average of 11% due to good tribological features of CuO nano particles in the context of friction reduction in the compressor piston-liner mechanism of the compressor.

Keywords:

Refrigeration, nano lubricant, COP, friction, wear

JEL Classification: Z00, Z00, Z00