

An Experimental Study of Neon Compression in a Helium Scroll Compressor

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Commercially available scroll compressors are common fixtures in small-scale helium refrigeration systems. Depending upon the application, alternative noble gas refrigerants present desirable properties for the system designer. This study presents an experimental investigation into the compression of neon with a commercial scroll compressor providing a 98 cm³ swept volume and optimized for helium service. Mass flow and power consumption are evaluated for suction pressures of 20 – 50 psia and pressure ratios ranging between 2.4 and 7.4. Generalized trends are identified and considerations pertaining to heat and oil management with the alternative gas are discussed.