

Ne-He cycle refrigeration above 40 K

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The Nelium concept is an approach for highly efficient refrigeration in the temperature range from 25 K to 65K, making it a promising candidate for the cooling of the FCC-hh beam screens in the range from 40 K to 60K. The concept uses a cycle with turbo compressors, which have higher efficiencies compared to classical screw compressors. The mixing of helium and neon reduces the number of stages needed to compress the light gas in a turbo compressor, but comes at the expense of decreased heat exchanger performance. The overall concept and possible cycle configurations were presented during last year's FCC workshop. In this presentation, the critical components compressor and heat exchangers are specified in detail. Emphasis is given on the influence of the mixture composition, which is one of the main optimization parameters.

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