A miniature cryocooler activated by piezoelectric elements in resonance (Technion)

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Rotary and conventional linear compressors tend to have higher maintenance requirements reducing machine lifetime. This invention introduces a miniature cryogenic cryocooler, based on a linear piezoelectric compressor that offers superior efficiency, power density and speed of operation in comparison to other available compression systems. This concept of the direct gas compression effectively employs a piezoelectric actuator in a Stirling-type-cryocooler compressor operating at low-frequency resonance. The high efficiency together with a no-moving-parts design make the double piston piezo compressor a superior alternative for applications requiring long life, reliability and silent operation.

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