

Optical Cryocooler

The technology, Optical Cryocooler, is a dual cooler system comprised of an optical laser-energy cooler with a secondary thermoelectric cooler powered by fluorescent radiation emitted during operation.

Salient Features

Existing cryocooler technologies can operate in the 50-150 Kelvin range, but future operations need to extend lower to the 6-20 Kelvin range. This is difficult with mechanical powered coolers due to excess heat and vibrations that are given off. The benefit of the Optical Cryocooler is that there are no moving parts and the captured energy from the initial cooling cycle is used to reduce the temperature more efficiently.

This dual cooler system can remove heat from sensors, detectors and various critical components to reduce the signal-to-noise ratio more efficiently than an optical cooler alone.

Major Application / End Users

The technology can be used by the aerospace, medical and electronic industries where specialized components need to operate at extremely low temperatures.