

Liquid helium solutions with 4 K pulse tube cryocoolers

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Helium is an irreplaceable resource with a finite supply. Many laboratories around the world are facing price increasing and supply shortage of helium. New generation of 4 K pulse tube cryocoolers, featuring with low vibration and high reliability, provide solutions for liquid helium usages. Some “dry” systems, such as dry dilution refrigerator, dry ADR, dry sorption cooler and dry superconducting magnet etc., have successfully used 4 K pulse tube cryocoolers to replace liquid helium. Latest liquid helium cryostats use 4 K pulse tube cryocooler to recondense helium vapor to realize zero-boil. A helium reliquefier using 4 K pulse tube cryocooler can be inserted into an existing open cryostat to recondense helium boil off. Portable helium liquefiers and helium recovery system provide solutions for laboratories to recover and re-liquefy helium.