

Increasing the Efficiency of He and H₂ Liquefaction Using Small Coolers

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People have been re-condensing helium and hydrogen with coolers for many years. There are a number of companies that sell systems that liquefy helium gas at room temperatures. These same coolers can be used to re-liquefy hydrogen at room temperature as well. This author has used coolers to cool-down a superconducting magnet and and liquefy helium in its cryogenic vessel. The rate of liquefaction was affected by several factors. This paper will talk about ways of making the liquefaction of helium and hydrogen more efficient. Both helium and hydrogen require much more cooling to cool down the gas from room temperature to the liquefaction temperature at the 0.1013 MPa boiling point temperature than it does to change the gas to a liquid. This means that the precooling of these gases is very important.