

Method and plant for hydrogen liquefaction

Abstract

Method for hydrogen liquefaction comprising at least one precooling step, wherein a hydrogen feed flow is cooled by a first refrigerant, a cooling step, wherein the hydrogen feed flow is cooled by a second refrigerant, and a step of expanding the hydrogen feed flow. Each of the first and second refrigerants is successively subjected to at least one compression and to at least one expansion in order to cool it, and a liquid phase of the first refrigerant cools the second refrigerant between at least three stages of said compression so that the second refrigerant does not exceed a temperature of 150 K, preferably 113 K, during said compression of the second refrigerant. A plant for the implementation of this method comprises a first refrigerant circuit (R1) containing a first refrigerant and a second refrigerant circuit (R2) containing a second refrigerant and comprising one or more compressors (C21, C22, C23) and a cooling device arranged together, and one or more expansion valves (JT2, E21, E22, E23). The cooling device is configured to cool the second refrigerant in the second refrigerant circuit (R2) with a liquid phase of the first refrigerant in the first refrigerant circuit (R1).

Figure for the abstract: Fig. 3