Contribution ID: **641** Type: **Poster Presentation**

C2Po2A-11 [17]: Leak detection system for valves at 20 K with a G-M cryocooler

Tuesday 23 July 2019 13:30 (2 hours)

Abstract. Cryogenic valve is widely used in cryogenic systems such as Aerospace propulsion systems and various cryostats. At low temperature, the valve is prone to strength decline, material brittleness and other problems, which easily lead to gas leakage and thus bring security risks. Cryogenic valves must be tested for leakage at low temperature in addition to normal temperature. In this study, a cryogenic leak detection system was established, which meets the test requirements at temperatures around 20K and pressures of 21MPa, and detects the internal and the external leakage of the valve. Compared with the traditional cryogenic leak detection system, this system has the following advantages: The G-M cryocooler was used as the cold source to get rid of the dependence on liquid hydrogen and enhanced the safety performance, meanwhile, this system has the capability of simultaneous testing of five valves and of quick replacement of the valves to save the test time. The heat exchanger structure, cooling time and heat transfer area were optimized.

Author: Mr BINGKUN, Lv (Technical Institute of Physics and Chemistry, CAS)

Co-authors: Dr DONG, Xu (Technical Institute of Physics and Chemistry,CAS); Prof. RONGJIN, Huang; Prof. LAIFENG, Li; Mr PENG, Jia; Prof. ARATA, Nishimura

Presenter: Mr BINGKUN, Lv (Technical Institute of Physics and Chemistry, CAS)

Session Classification: C2Po2A - Test Facilities