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C1Po1C-06: The variable frequency driver upgrade for cryogenic system

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After nearly 20 years of long-term operation, the variable frequency driver (VFD) of the Main Cryogenic Plant 1 (MCP1) suffered a major failure after a routine shutdown in September 2021. After inspection and replacement of damaged parts, the cause of the failure cannot be found. And some normal spare parts were damaged. Since most of the spare parts are out of production and we still have two same type of VFD in operation. In order to keep spare parts for the other two VFD. We decided to upgrade the whole VFD for the MCP1. After some customized changes, this new VFD has been refitted and started testing in the end of 2021. During the process of dismount the original VFD, we found the reason of the fault, which was a short-circuit occur by power wire damaged. In this paper, I will describe the differences between the original and new VFD, the customized changes, and the test results of the completely system. The failure reason and damage by the old VFD will also present.

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