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C3Or3A-01: [Invited] Loss of insulation vacuum tests on an EuXFEL-like cryomodule

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Many Free Electron Lasers (FEL) are nowadays based on linear superconducting accelerators (linacs). The typical layout of such a linac consists of a number of cryomodules (CMs) arranged in strings. Each cryogenic circuit in a string is protected by safety valves (SVs) in case of failure of the system or a catastrophic event. A typical worst-case scenario considers the venting of the insulation vacuum, causing a fast and uncontrolled warm up of the cryogenic circuits. Such venting can for example take place across a pump port belonging to a string. The amount of heat deposited on each circuit is a very important parameter to correctly size the safety devices.
This paper describes the tests performed at DESY on an EuXFEL cryomodule to evaluate the heat input to the three cryogenic circuits of the CM while venting the insulation vacuum. Test results are given with a particular focus of their application to long strings.

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