Quantum Design

SVSM Service Note 1500-224

Power Failures and Condensation on the SVSM

Problem

Large amounts of condensation can form on the top of the SVSM probe during power failures. This condensation can lead to shorting of wiring and damage of the GHM module or the sample tube. The reason this happens is that the top plate heaters which normally control the temperature of the top plate stop functioning during a power outage. This causes the temperature of the top plate to drop and then condensation can start forming. In humid environments this will lead to pools of water forming on the top of the probe and in the GHM module. Once power is restored, the module will then short itself out causing severe amounts of damage to the module usually necessitating the replacement of the module. Due to the large heat load from a stopped cold head, EverCool systems are especially susceptible to this problem.

Solution

During a prolonged power failure (>30minutes) power off the main power on the system with the white switch. This will ensure that the modules do not power themselves up when the power is restored possibly causing damage to the modules. Additionally, remove all the cosmetic panels as described in the manual appendices. Before powering the system, ensure that there is no condensation present on the top plate or in the gas handling module. Once the power is restored it is advisable to run a fan over the top plate for 24 hours to help dry out the condensation that might have formed.

Additionally, when warming up the cryostat in the SVSM, it is advisable to not power down the system until the dewar is completely warm. This will ensure that the top plate heaters stay on during this period, which will help prevent condensation from forming on the electronics. It is also advisable to provide adequate circulation to the components in the form of a fan for at least 24 hours after the nitrogen and/or helium has boiled off from the system.

If you have any question or concerns about these issues, please contact your local SVSM service representative or QD international service at svsmservice@qdusa.com