

# Supergen ORE Hub ECR Fund Report

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- Pole-to-pole DC faults on HBMMC-VSC-HVDC schemes impose significant risk of cascade failure on IGBT/diode pairs.
- Silicon thyristors are used to bypass the DC faults until AC breakers activate. However, silicon thyristors are also at risk of failure due to the capacitor voltage collapse at high junction temperatures caused due to imbalanced reverse recovery current conduction.
- We have investigated the opportunities and challenges of implementation of SiC thyristors by accurately modeling the performance of thyristors at fault, and the role of DBS.
- The results show SiC thyristors, shown on right, are far superior than the silicon thyristors in reducing the electrothermal stress at faults.

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