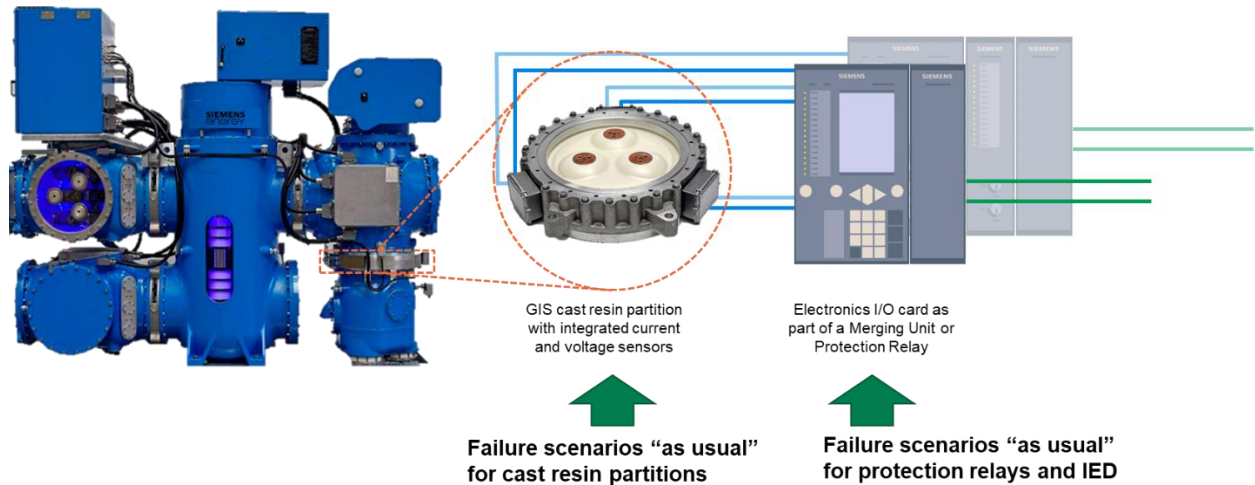


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GROUP REF. : A3
 PREF. SUBJECT : PS3
 QUESTION N° : Q20

Failure scenarios for a GIS LPIT



Reliability considerations for GIS LPIT Partition

- The LPIT partition on the left is designed similarly to conventional cast resin partitions. The embedded sensors are completely passive (only copper wire).
- Artificial aging test with 3 x rated voltage for >2000 h (equivalent to >50a life-time at rated voltage).
- The connection box PCB has a calculated MTBF@40°C of 397 years and a calculated MTBF@75°C of 86 years. Real life MTBFs are typically even higher than the calculated ones.
- Therefore we expect a very long lifetime at least similar to conventional Instrument Transformers with no impact on overall GIS lifetime.

Reliability considerations on the electronics and replacements

- The SIPROTEC5 IO240 module has a lifetime similar to the SIPROTEC5 IO modules for conventional instrument transformer
- Calculated MTBF@40°C = 25 years, calculated MTBF@75°C = 8 years. Real life MTBF are typically even higher than the calculated ones.
- All components (except for the partition) can be replaced without need for recalibration (see CIGRE 2022 paper 1077).
- Availability of spare parts according to common practice for digital protection devices.