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PREF. SUBJECT : 1
QUESTION N° : 06

DISCONNECTOR CONDITION MONITORING AND DIAGNOSTICS

In general, monitoring by itself does not necessarily give added value and may be only the first step of an informatic integration with an asset management system.
To improve service reliability and resilience a diagnostic criterion should be developed, based on laboratory tests and field experience.
As an example, critical conditions for dielectric to ground may derive for disconnector in the presence of variation of the pollution conditions with respect to the design one, due to evolving climate or new pollution source. Pollution monitoring and diagnostics could be useful to verify the insulator conditions, anticipating critical conditions and setting up proper preventive maintenance (e.g. washing and cleaning).
As an example, diagnostic criteria have been set up for assessment of the pollution condition of ceramic insulators, based on laboratory tests on many ceramic insulators for line and station applications, as shown in Fig. 1. The highest leakage current was measured at different severities and compared with the maximum current expectable in withstand condition, On the basis of the results a critical value of I highest can be defined. Preliminary, an attention threshold of 250 mA is proposed, associated to a pollution severity equal to 25% of the withstand severity. Long duration on site campaign are going on to optimize the threshold selection,

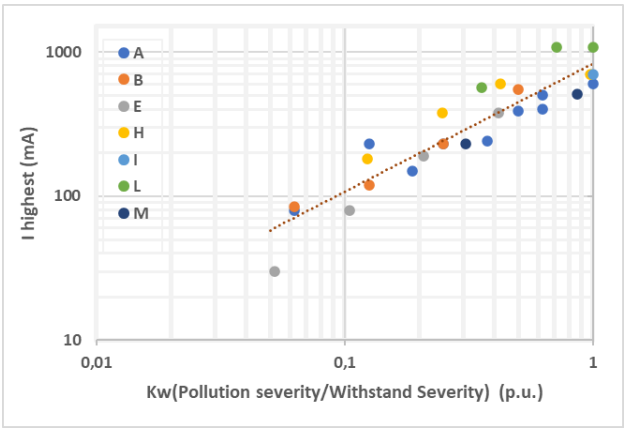
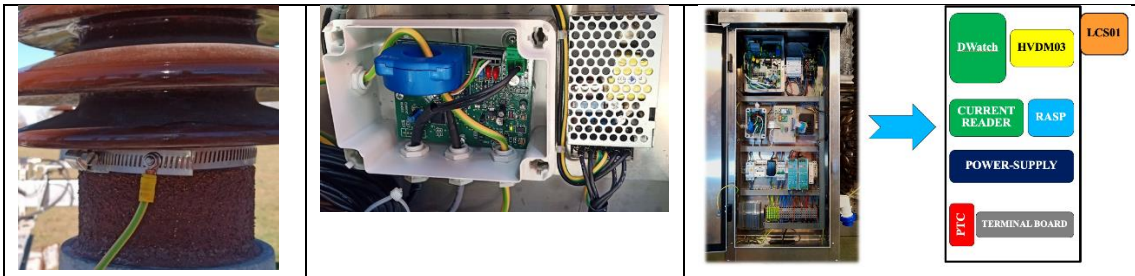


Figure 1. I highest versus the ratio pollution severity to the withstand severity value. Laboratory data obtained on different line and station insulators.

Details of the pollution monitoring/diagnostic system is shown in Fig. 2. As ahown in the same Figure the pollution system makes part of a multiple purpose diagnostics system to make monitoring and diagnostics of electrical and mechanical conditions of disconnectors.
More details can be found in [1]



Leakage current measurement collar	Current reader digital sensor	Measuring cabinet for multiple measurements

Figure 2- Pollution monitoring/ diagnostic system developed

[1] Eros STELLA , Marco NOSILATI, Rodolfo SARACENI. Alberto PIGINI “Pollution design and on-site monitoring of insulators for AIS disconnectors equipped with porcelain insulators under AC voltage” INMR Congress Berlin 2022 (under publication)