Does Your Medium-Voltage Cable Joint Face Elevated Risk?

A practical 3-minute self-assessment for 11–33 kV joints

How to use: **Answer each question with Yes or No.**

Add up the points according to the Weight column.
The total score provides an indication of the risk level; see the interpretation below the table.

This document is a screening tool and does not replace a site inspection or detailed engineering analysis.

Scoretable:

Risk area	Question	Weight
Environment	Is the joint installed in an area with high groundwater, standing water or flooding risk?	2
Environment	Does the groundwater level fluctuate (wet ↔ dry cycles) near the joint?	1
Environment	Is the soil chemically aggressive or contaminated at the installation site?	2
Environment	Is the joint exposed to soil movement, settlement, vibration or mechanical impact?	1
Electrical / Operational	Are strong load fluctuations or frequent thermal cycling expected at this location?	2
Electrical / Operational	Are harmonics, supraharmonics or power-electronic loads present (inverters, drives, EV chargers)?	2
Electrical / Operational	Is there an identified risk of partial discharge, hotspots or elevated electrical stress?	2
Electrical / Operational	Is the network exposed to frequent switching or highly dynamic load profiles?	1
Installation & Asset	Was the joint installed under difficult conditions (limited space, moisture, contamination, time pressure)?	1

Risk area	Question	Weight
Installation & Asset	Does the location require interfacing of mixed cable types or legacy assets (XLPE, PILC, EPR)?	1
Installation & Asset	Is the joint on critical infrastructure where failure causes major downtime or high cost?	2
Installation & Asset	Has the asset been in service long without documented condition checks or recent verification?	1

Score interpretation

0–3 — Low risk: Standard conditions.
Maintain routine inspection and ensure installation guidelines have been followed.

4–7 — Moderate risk: Multiple stress factors are present.
Plan a targeted technical review and condition assessment.

8+ — High risk: Demanding environment.
Perform a detailed engineering assessment and consider enhanced jointing solutions or mitigation measures (resin encapsulation, liquid insulation, improved sealing).

Short technical note

Water ingress and interface degradation, often combined with installation imperfections, are the primary causes of long-term failure in cable joints.
Proper sealing strategies, resin encapsulation and liquid insulation significantly reduce these risks.
Harmonic currents and switching behavior increase local electrical stress and accelerate ageing in joints and terminations.
Thermal cycling and mechanical loads can create microgaps. Void-free filling and strong material adhesion help prevent progressive damage.

Recommendation : If the score falls within the Moderate or High category, schedule a technical review.
Evaluate installation quality, compatibility of cable accessories, sealing strategy and perform relevant measurements where applicable (insulation resistance, partial discharge scan).

This self-assessment is a screening tool only and does not replace a detailed engineering analysis or site inspection.