COMPARISON OF CABLE CONDITION PARAMETERS AND INDICATORS

🟢 YES 🔴 NO 🟡 POTENTIAL ⚫ UNKNOWN

Nr	CATEGORY / METHOD	LIRA Frequency Domain Reflectometry	PD Electrical Partial Discharge Measuring	TAN δ Dissipation Factor Measuring	TDR Time Domain Reflectometry	RVM Repeat Voltage Measuring	IRC Isothermal reflection Current Measuring
1	Synthetic material – insulated power cables	🟢	🟢	🟢	🟢	🔴	🟢
2	Paper – insulated power cables	🟢	🟢	🟢	🟢	🟢	⚫
3	Mixed cable routes with various splices	🟢	🟢	🔴	🟢	🔴	🔴
4	Communication/ control cables	🟢	🔴	🔴	🟢	⚫	⚫
5	LV power cables	🟢	🔴	🟡	🟢	⚫	⚫
6	MV power cables	🟢	🟢	🟢	🟢	🟢	🟢
7	HV power cables	🟢	🟢	🟢	🟢	🟢	🟢
8	Short length cables (< 50 m)	🟢	🟢	🟢	🟢	🟢	🟢
9	Medium length cables (> 5 km)	🟢	🟡	🔴	🟢	⚫	⚫

Nr	CATEGORY	LIRA	PD	TAN δ	TDR	RVM	IRC
10	Long cables (> 30 km)[1]	🟢	🔴	🔴	🟢	⚫	⚫
11	Global or integral condition assessment	🟢	🟡	🟢	🔴	🟢	🟢
12	Local condition assessment	🟢	🟢	🔴	🟢	🔴	🔴
13	Ageing indicator	🟢	🔴	🟢	🔴	🟡	🟡
14	Identifying splice/joint location	🟢	🔴	🔴	🟢	🔴	🔴
15	Focus on condition assessment of splices	🟡	🟢	🟡	🔴	🔴	🔴
16	Localization accuracy of dielectric weak points	🟢	🟡	🔴	🟡	🔴	🔴
17	Possibility to assess cable terminations	🟢	🟢	🔴	🔴	🔴	🔴
18	No need to disconnect assets[3]	🟡	🟡	🔴	🔴	🔴	🔴
19	Short time of connection & measurement (< 5 min)	🟢	🔴	🔴	🟢	🔴	🔴
20	No need for additional HV test generator	🟢	🔴	🔴	🟢	🔴	🔴
21	Available online monitoring option (on energized cables)	🟢	🟢	🔴	🔴	🔴	🔴
22	No stress on cable by off-/online measurement	🟢	🔴	🔴	🟢	🔴	🔴

METHOD / CATEGORY	LIRA	PD	TAN δ	TDR	RVM	IRC
23 Easy-to-read graphic/ numeric results	🟢	🟡	🟢	🟡	🟡	🟡
24 Defined acceptance criteria[4]	🔴	🟡	🟢	🔴	🟡	🟡
25 Robustness against external interference	🟢	🟡	🟢	🟢	🟢	🟢
26 Compactness of available equipment	🟢	🟡	🟡	🟢	🟡	🟡
27 No performance difference (On-/Offline)	🟡	🟡	N/A	N/A	N/A	N/A
28 High visibility range of online option	🟢	🔴	N/A	N/A	N/A	N/A
29 Detection ability of single small void	🟡	🟢	🔴	🔴	🔴	🔴
30 Detection ability of small dielectric change	🟢	🔴	🟡	🟢	🔴	🔴
31 Detection ability of fluid intrusion, oil leak	🟡	🟡	🟢	🟡	🟢	🟢
32 Fault localization on already failed cables	🟡	🟢	🔴	🟡	🔴	🔴
33 Finding high Ω faults without reference	🟡	🟢	🔴	🔴	🔴	🔴
34 High reproducibility of measurement results	🟢	🔴	🟢	🟡	🟡	🟡
35 Information value after 1st offline measurement	🟡	🟢	🟡	🟡	🟡	🟡

Nr	CATEGORY / METHOD	LIRA	PD	TAN δ	TDR	RVM	IRC
36	Information value after < 1 measuring	🟢	🟢	🟢	🟢	🟢	🟢
37	Uniqueness of available equipment on market	🟢	🔴	🔴	🔴	🔴	🔴
38	Possibility to produce multiple interpretations and extended value basis from same data	🟢	🔴	🔴	🔴	🔴	🔴
39	Standardized method (e.g. ISO, IEC, IEEE)	🔴	🟢	🟢	🟡	🟢	🟢
40	No influence of probe cable length on results	🔴	🟢	🟢	🟢	🟢	🟢

2)   Fault localization accuracy 0.1 – 0.3% of cable length

3)

4 Cutsomer