

Parameter Evaluation of Composite Voltages

SC D1: Materials and Emerging Test Techniques

PS 2: Testing, Monitoring and Diagnostics

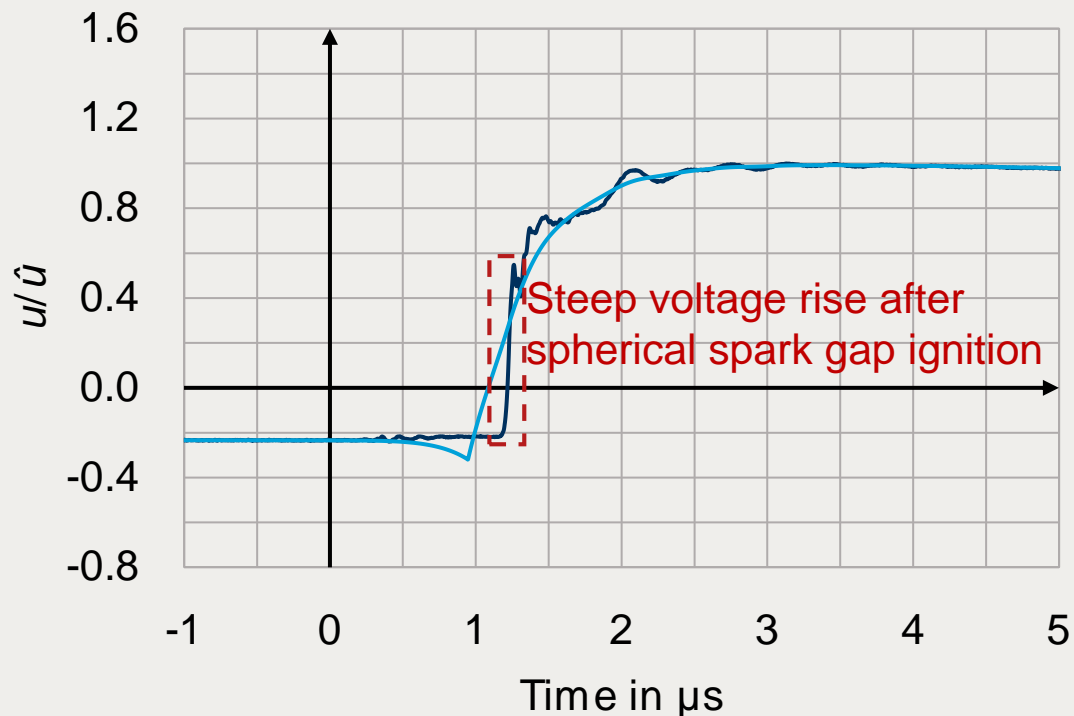
Question 1.01: Which parameters require a more precise specification? Which parameters in the superimposed voltage waveform have proven to be particularly critical?

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Lack of Information in Front Time T_1

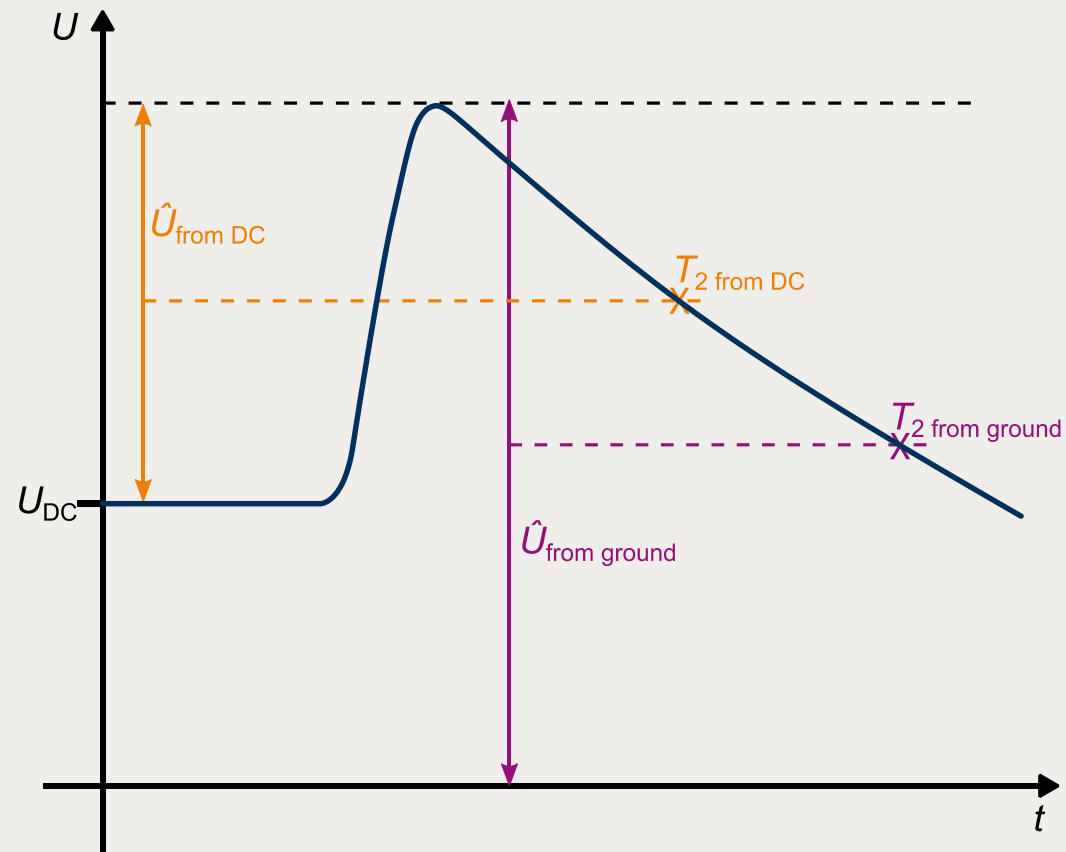
Composite voltage with spherical spark gap

— Recorded curve — Test voltage curve



- Steep voltage rise in composite voltage waveform if a spherical spark gap is utilized
 - Lightning impulse evaluation from IEC 60060-1 is also applied to composite voltage
 - Test voltage curve and so the front time T_1 do not represent the steep voltage rise
- ⇒ Possible impact of steep voltage rise on the dielectric strength (voltage-time characteristic)?

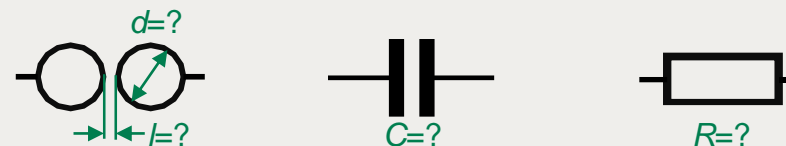
Different Base Values for Evaluation of Time to Half-value T_2



- Two different base values for evaluation of T_2 of a composite voltage possible
 - From DC potential (offset removal)
 - From ground potential
 - Different time to half-values T_2 for the same composite voltage curve
 - Different evaluation procedure for generating composite voltages with blocking capacitor and spherical spark gap \Rightarrow different waveforms
- \Rightarrow Impact on dielectric strength?

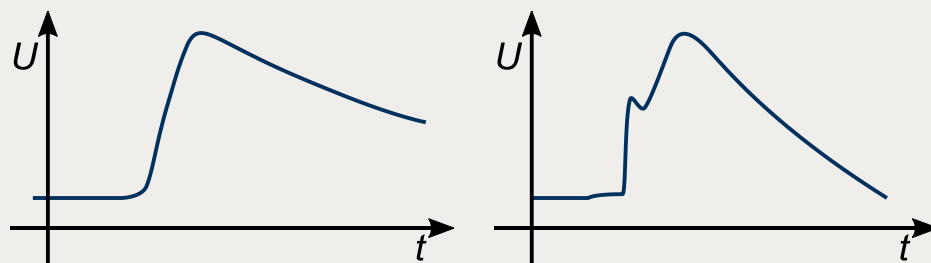
Summary

Different coupling and blocking elements:



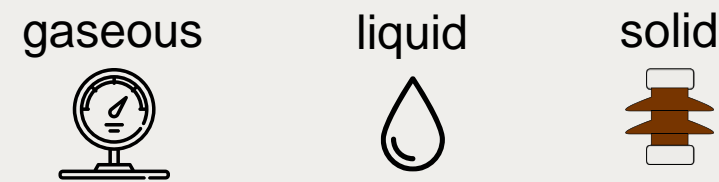
Impact on the waveform

Composite voltages



Front time T_1 = T_1 ?
 Time to half-value T_2 = T_2 ?

Impact on dielectric strength of different insulating materials?



Standardization of evaluation procedure and parameters necessary?

Thank you for your kind attention!



cigre

For power system expertise