CONDIS®

Reference Sheet

Grid Measurement

36kV Impulse Voltage Divider for Artemes



ARTEMES GmbH, a company located in Eibiswald, Austria, offers measurement instruments for power quality monitoring and HV diagnostics. They also provide services like measurements and evaluation according to international standards and norms.

To identify the source of damage on pumped hydro generator located in an indoor MV substations, ARTEMES needed a voltage transformer capable of measuring voltage signals over a large frequency band at several locations on the MV busbars.

Due to space restrictions, the probes needed to be compact, have the ability to be mounted horizontally and to sustain low frequency mechanical vibrations, as they were installed close to the rotating generator.

None of the existing measuring equipment available on the market was able to cover all these stringent requirements, except for CONDIS's custom built CR divider.

Our solution

CR 36kV impulse voltage divider :

- Indoor and outdoor (IP65) models
- Large frequency bandwidth up to 30kHz
- Capability of accurately measuring fast occurring events, such as HF transients
- Reduced footprint, light weight and compact
- Vertical and horizontal installation
- Secondary voltage compatible with any standard measuring equipment, like oscilloscope and transient recorders

Why CONDIS ?

- Proven experience in high voltage capacitors design and manufacturing
- Customized solution to meet customer's requirement
- Manufacturing and testing of the entire LPIT in one factory.
- Short lead time, from conceptual design to product dispatch.

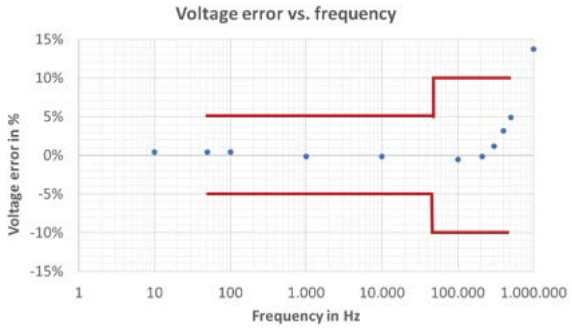
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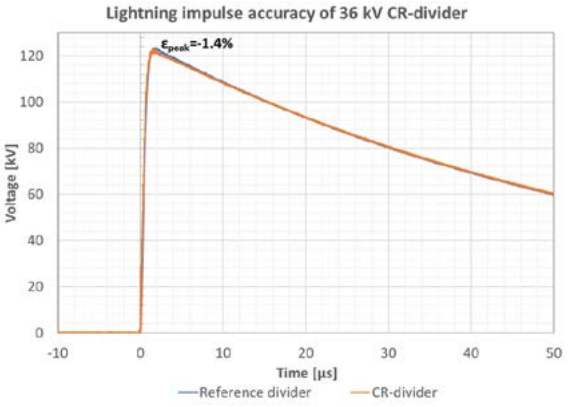
Accuracy at extended frequency bandwidth

The voltage error for the extended frequency bandwidth is measured using a signal generator injecting 10 Vpp in the primary terminal of a CR divider with Um=36 kV. The secondary voltage measured on the low voltage terminal of the divider, by use of an oscilloscope, is compared to the reference signal. The sinusoidal frequency is varied from 10 Hz up to 1 MHz. The resulting voltage error of the CR divider for this extended frequency band is shown in Figure 2. The red lines show the permitted error vs. frequency according to wideband accuracy classes defined in IEC 61869-1 Ed.2.



Accuracy at impulse voltages

Due to the integrated damping resistance, the CR divider has excellent impulse measurement performance. The damping resistance suppresses internal oscillations in the divider for fast transients, or impulses, respectively, resulting in accurate reproduction of the primary voltage. Figure 3 shows a comparison of accuracy between a laboratory reference divider (blue curve) and CONDIS' CR divider (orange curve), when a standard lightning impulse (1.2/50µs) is injected in the primary terminal.
The secondary voltage, measured on the low voltage terminal of the divider, is scaled by the divider ratio and plotted together with the reference signal.



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