

Expanding the performance of on-site testing with frequency tuned resonant test systems

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The benefit and necessity of after laying tests of long HV and EHV cable line becomes more and more obvious. Still today providing an easy to transport, setup and use test voltage source is ambitious. Especially in case of long lengths and HV or EHV cable systems the usual equipment gets bulky and logistically challenging. Also the setup time and effort for the installation on site might be difficult.

This paper introduces the new trend to use a frequency tuned resonant test system operating at a frequency of the test voltage of 10 Hz. This approach enables either much more light weighted equipment or the possibility of testing much longer lengths compared to existing testing solutions of same type.



Fig. 1: Frequency Tuned resonant Test System, 350kV, 10A, 10 Hz for On Site Cable Testing

This trend is driven by the need for testing ultra-long cables lengths such as submarine cables. Therefore CIGRE technical brochure TB490 proposes an extended frequency range down to 10 Hz for routine and after installation tests of long AC submarine cables.

The equipment in use comprises a 10" container mounted feeder system and a setup of 4 air core reactors of extreme high quality factor. The total setup (see Fig. 1) offers up to 350kV at 10A or 175kV at 20A. With this rating, testing cables up to nearly 2 μ F (equals approx. 10 km) on a 17t trailer becomes possible.

The outlines of the test equipment, its practicability and first onsite experience are described.