

## An alternative approach about fault location on HVAC and HVDC cables during commissioning and operation

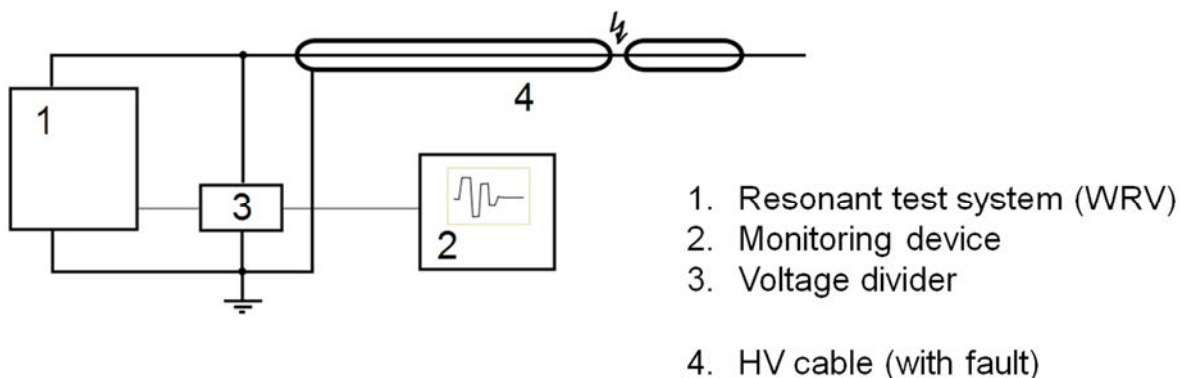
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In the last years it has been found that the localization of spontaneously occurring faults in HV cables is a time consuming and often not really successful task. While the established procedures for fault location are well known and widely used for medium voltage cables of shorter length, they tend to have difficulties to do the same on long high voltage cable.

This article deals with opportunities offered by the monitoring of long HVAC and HVDC cables concerning the detection and localization of fatal errors during test and operation. An alternative method for fault location is reviewed regarding benefits, limitations and conditions.

The presented technology is available for land and submarine cables. Special attention is paid to the used measurement technique, the used equipment and the applicable evaluation by software algorithms.



This technology is mainly intended to be used during the commissioning of new cables. A measuring device is installed on the energizing test equipment which usually consists of a mobile resonant system for medium or high voltage cables. It uses the same high voltage divider as the voltage measurement unit and runs throughout the complete test cycle. Nevertheless, the operation of the measuring device is intended to be completely invisible until a serious error like a breakdown occurs in the cable. In the event of a breakdown of the cable a trigger signal will start a wave form recording. After the measurement an evaluation will directly produce a result which includes the location of the voltage fault.

It can also be used during tests on already installed cables of longer lengths as well as for monitoring of HV cables during normal operation. For permanent monitoring a fixed installation of the system is necessary. The operation has to be stable and must not interfere with the power net system. Under normal condition the operation is again intended to be invisible, but the measurement system can also be used to do quality checks of the power net regularly.