



HV CABLES OPERATING IN A DYNAMIC RATING REGIME, A BENEFICIAL OPTION!



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ABSTRACT

The rating of power cables is a very important subject for utilities. After all, the voltage multiplied by the rating gives the maximum power transmission capacity of the system. Many IEC standards are concerned with testing whether the power cable can withstand the voltage adequately, but there are no standards concerned with testing whether the power cable will have the requested current rating. As such, the actual power transmission capacity of a cable system is not without questions. Still, all utilities use certain MVA values next to each link, usually coming from the early design stages of the specific link.

However, within the field of power cable rating, there are many developments going on. In this article, a number of aspects dealing with dynamic rating systems will be discussed:

Firstly, experience with on-line temperature measurements in the field will be discussed. KEMA has over 10 years of experience with these measurements. In this time period we have learned how to use temperature measurements and how they relate to theory. We also gained much experience in dealing with thermal bottlenecks in cable circuits.

Secondly, dynamic rating versus stationary rating will be discussed. Dynamic rating studies have been made. Stationary rating studies have been made also. And even quasi-dynamic rating studies have been made. In this second topic, it will be discussed how to make optimal choices regarding the rating studies and how to ensure that a proper rating study is conducted, able of being validated in the field, and able of being used for its purpose.

Thirdly, it is discussed whether it is possible to use a combination of dynamic rating systems and temperature measurements to (re-)establish the rating of an existing power cable. Relating theory to practice and vice versa should allow us to determine the actual realised rating of a power cable in the field. And that should allow us a more confident way of utilising power cables towards their limits than utilities do today.