

Power cable rating examples for calculation tool verification – Additional cases – Cigre B1.72

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ABSTRACT

This paper provides guidance in the calculation of current ratings for power cables. CIGRE WG B1.72 has developed this guidance on the basis of the IEC standards and the previous work in CIGRE TB 640 and TB 880. Nine, relatively complex case studies encompassing time dependent calculations, parallel and crossing cables and cables in various ducts, are provided for which the detailed calculations will be shown in CIGRE's new TB (expected later in 2023). The case studies and the key guidance points that are required in order to find the correct current rating results are introduced in this paper.

KEYWORDS

Power cable, current rating, ampacity, verification, HVDC, HVAC, HDD

INTRODUCTION

The International Electrotechnical Commission (IEC) provides calculation standards, based on analytical formulae of the Neher/McGrath method, to calculate the current rating of a cable system.

Generations of engineers have developed their own spreadsheets or tools or buy commercial software applications to calculate current ratings. But very often, different engineers that aim to calculate the current rating for the same situation, find different results. In order to help engineers finding the same results, CIGRE decided to launch a dedicated working group to provide guidance and test cases to enable verification of the calculation techniques, whatever the used tools. This resulted in a

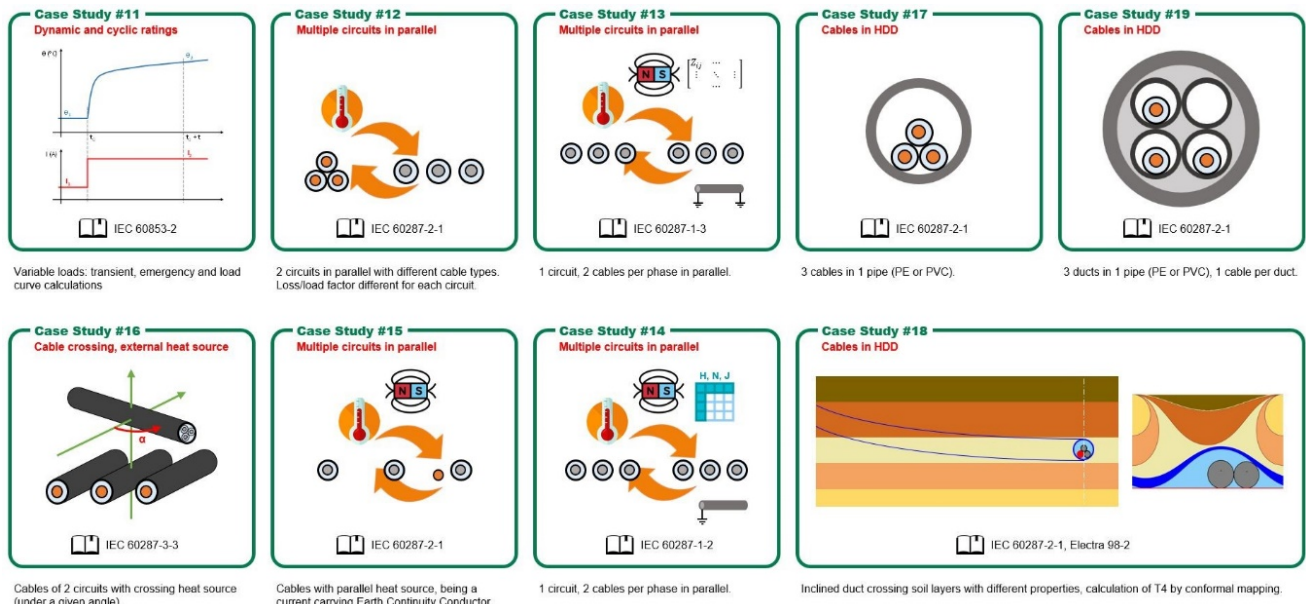


Fig. 1: Overview of the case studies in CIGRE WG B1.72