



JICABLE'07

Rapporteur's Session Report

B.10 SESSION : ECONOMY OF CABLE SYSTEMS

Chairman : Mozart De SIQUEIRA, BRENNAND Energia BRAZIL

Rapporteur : Chantal FAVRIE, SYCABEL France

This is the first time that this subject is tabled in a JICABLE session. The first three presentations explain the problem due to the costs of OHL compared to underground installation. The economy we can realize in an installation is more and more studied through modelling, which allows to better adapting cable system to the needs. Therefore cable manufacturers should take into account the cost of cable, raw materials, industrial process, installation and exploitation.

B.10.01 : This paper summarize a report from the European Commission done in 2003 which want to have some views on undergrounding cost and impact of incremental cost on electricity consumers. TSOs often quote cost multiples between UGCs and OHLs (generally in range 4-10 times), but partial undergrounding of 10-20% of a transmission line will, in most cases, result in an increased total project cost in the range 1.2-1.8 times. The impact of incremental cabling cost on consumers represents, for example in UK, approx 3% of end consumer electricity bill.

B.10.02 : This paper makes the point of the distribution lines and cables in France.

The commitment is to have more than 90% of new MV lines to be laid underground and 65% for the new LV lines. MV network is relatively young, but certain families of equipment have to be replaced, it is a long term process. To take account environmental conditions for LV lines undergrounding is preferable even if the cost is higher than OL.

B.10.03 : This paper summarizes the question asked to choose underground lines or OHL lines. For lines constructions we must consider technical difficulties, environmental constraints, societal problems, side resident's opposition, long administrative modalities and costs.

Underground line is economically interesting when the risk analyses taking in account all these preoccupations.

B.10.1 : This paper explains the difficulties which happened during cable installation due to different rules and regulations for example in South Asia. The result is the increasing installation duration and of course the price.

B.10.2 : This paper presents the development and use of anti-robbery cables with aluminium conductor. This type of cable was initially developed with copper, but the high cost of that raw material encourages researches where aluminium could substitute copper.

B.10.3 : This paper explains calculations done to adapt duct block within the basement of a substation. Calculations take into account the six different circuits from 400V to 132 kV with backfill, power dissipation, floor surface temperature...and magnetic field.

B.10.6 : This paper presents an optimization algorithm for the analysis of loading of dissimilar cables. A comparison is done between results obtained with IEC 60287 iterative method and the optimization algorithm presented which gives a total ampacity greater than the total ampacity obtained with the IEC method.