



USE OF AN ECOCONCEPTION SOFTWARE TO DESIGN A HV CABLE CONNECTION



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ABSTRACT

After the presentation of the Ecoconception software EIME, in Jicable'03, new modules have been integrated in the database, concerning the integration of new raw materials and manufacturing process, transportation, construction works and accessories.

Regarding the cable design, the simulations have shown the advantage of aluminium for the conductor and metallic screen, to decrease the environmental impacts of the cable, with the same electrical transport capacity.

This paper shows also the heavy impact of the line operation. To reduce this impact, it is essential to decrease the losses of the cable link.

KEYWORDS

Environmentally Conscious Design, EIME, HV cable underground link

INTRODUCTION

Even if insulated cables used for the power transmission are not polluting in the common understanding, they have impacts on the environment :

- Consumption of natural resources (materials, energy),
- Impacts linked to the manufacturing (cables & accessories),
- Impacts linked to the construction and installation works (civil works and accessories),
- Impacts due to the line operation (Joule losses).

A presentation made in Jicable'03 (P.Mirebeau, P.Argaut and PM.Dejean) has shown the interest to use the EIME software (Environmental Information and Management Explorer) from Codde to predict the environmental profile of a HV insulated cable link.

The first identified conclusions were :

- EIME is an appropriate software to determine the environmental profile,
- Aluminum vs copper conductor reduces the impact of the cable,
- The impact of the line operation is larger than the cable and accessories manufacturing,
- There is a lack of data on accessories, manufacturing and construction work phases.

For the last two years, this task has been carried out by a working group composed by Nexans, Prysmian, Silec Cable, and Codde.

This has been done in the scope of a project supported by ADEME (French Agency for Environment and Energy

Control), for which the manufacturers will here be grateful. This paper describes the work that has been performed during these two years.

EIME SOFTWARE PRESENTATION

EIME is a simple and pragmatic tool which was developed 10 years ago by 6 major companies of the electronic sector (Alcatel, Alstom, IBM, Legrand, Schneider Electric and Thomson).

The EIME methodology and software allow :

- Designers to easily understand and assess environmental issues during the cable connection design,
- The company to implement in a practical way its environmental product strategy.

EIME is based on scientific and official data:

- The data base is regularly updated thanks to the trade associations and scientific institutions. It is based on life cycle analysis information complying with the standards of the ISO 14040 series,
- The environmental impact assessment methodology is based on the works of the greatest world organisations. For example, the IPCC (Intergovernmental Panel on Climate Change) for the calculation of the greenhouse additional effect, and the WMO (World Meteorological Organization) for the depletion of the ozone layer, etc...

Since 2003 the EIME methodology has been chosen as a reference for the environmental assessments of electro mechanical products by the FIEEC (French Federation Of The Electric And Electronic Industry).

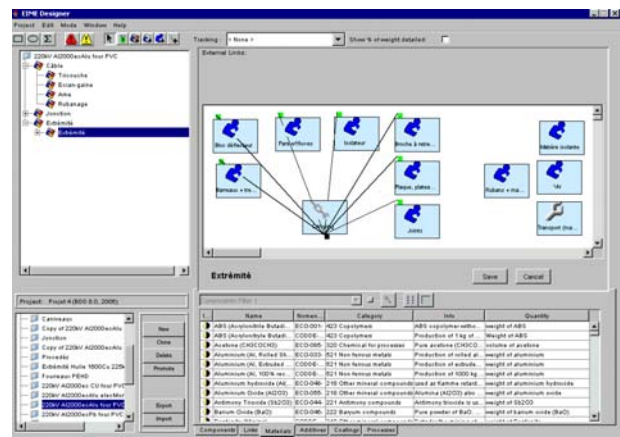


Figure 1 : screenshot of the EIME software