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New MV cables used in France and improvements in laying techniques

DAVID J.M., MOREAU C., EDF R&D, France
TAMBRUN R., ODDI M., EDF DEGS DRE-MER, France

Abstract: The 20 kV synthetic cable used on the underground French distribution network has an excellent experience feedback. Due to technical improvement on insulation materials achieved during the last 20 years, EDF has considered that its optimisation was possible. As a second step the descriptive specification as been replaced by a more functional one. The notion of the unique model of MV cable in France is now withdrawn.

At the same time, EDF undertakes actions in order to improve laying techniques of MV cable. In particular solutions for mechanical protection of cable leading to suppress the use of sand under and around the cable have been studied or are under consideration. Investigations carried out will allow completing the functional specification. Solutions could be rapidly used on site as a part of rebuilding of MV network

1. Context of reconstruction of MV network

Improving quality and continuity of service had been a major concern for EDF for many years. Many studies and improvement has already been done. After the terrible storms that occurred in 1999 in France, it appeared that this effort had still to be increased. The main effort had to be undertaken on continuity and sensibility of customers with long electrical interruptions. These improvements are now a major objective for EDF Group.

It has been decide to have a work program with the following target : if a similar storm happen again in 15 years of later, 95% of the customers have to be re-energized within 5 days ; additionally, each village must be able to keep continuously at least one emergency electrical source in case of any storm. The objective of 95% / 5 days had to be reached from the year 2005.

Reaching these objectives requires decreasing the sensibility of MV network to climates events. It as

Résumé: Le câble synthétique 20 kV utilisé en France pour le réseau de distribution souterrain présente un excellent retour d'expérience. Tirant parti des avancées techniques intervenues au cours des 20 dernières années, EDF a considéré que l'optimisation des épaisseurs d'isolants était possible. Dans un second temps, la spécification descriptive a été remplacée par une norme plus fonctionnelle, abandonnant ainsi la notion de modèle unique de câble HTA.

Dans le même temps, EDF a entrepris des actions afin d'améliorer les méthodes de pose du câble HTA. En particulier des solutions de protection mécanique du câble permettant de supprimer l'utilisation de sable au niveau de la zone de pose et d'enrobage du câble ont été étudiées ou sont en cours d'évaluation. Les investigations effectuées vont permettre de compléter la spécification fonctionnelle du câble HTA et des solutions pourraient être rapidement mises en oeuvre sur des chantiers de reconstruction du réseau HTA.

been decided to replace main overhead lines situated in wooden zone by underground cables, or even to build another overhead line with another route situated in a non wooden zone. Line situated in zones exposed to direct severe climatic risks such as snow, ice, wind, storms, floods or even developing wooden plantations will be subjected to be re-enforced or rebuilt with underground lines.

Such installation condition have to be managed for economical and management reasons. As a result, MV cable, which represents a high part of the investments, has to be look carefully.

2. Evolution of cables

EDF started in 1998 a wide program of purchasing cost reduction. Analysis of the situation in Europe showed that existing MV cables currently used in Europe could not provide significant saves.