Improving Network Reliability Through Independent Third-Party Assessment Of Installer Minimum Required Competencies: Implementing A Competency Assessment System For Medium Voltage Cable Accessories Installers.

Ronan KAVANAGH; TE Connectivity, Europacable, (Ireland), rkavanag@te.com
Filippo LA BELLA; NKT, Europacable, (Germany), filippo.labella@nkt.com
Matthias GANTERT; Cellpack, Europacable, (Germany), matthias.gantert@cellpack.com
Laurent MEUNIER; Prysmian, Europacable, (France), laurent.meunier@prysmiangroup.com
Patrick EKHOLM; ENSTO, Europacable, (Finland), patrick.ekholm@ensto.com
Miroslav KAPLLAREVIC; Pfisterer, Europacable, (Germany), miroslav.kaplarevic@pfisterer.com
Hocine BOUDJEMA; 3M, Europacable, (France), hboudjema@mmm.com
Kristof ROTTIERS; Nexans, Europacable, (Belgium), kristof.rottier@nexans.com
Luca RONCA; Elcon Megarad, Europacable, (Italy), luca.ronca@elconmegarad.com
Jean-François DING; Sicame, Europacable, (France), jfding@sicamegroup.com
Houssam TANZEGHTI, Damien VEILLOT; Enedis, (France), houssam.tanzeghti@enedis.fr, damien.veillot@enedis.fr

ABSTRACT

Europacable Accessories Group (ACC) members have anecdotally reported an increasing number of medium voltage cable accessories (MVCA) failures due to installation error. The ACC concluded that to ensure the quality of installation, demonstration of minimum competency of the existing and entrant installation team members is needed. The ACC (authoring members below) developed an approach to competency assessment, so that network owners and system operators can fully capitalise on modern MVCA kits, extracting the full value of their investment in high quality products. Enedis, the main French DSO, discusses their experience having operated an inhouse training and assessment system for 20 years.

KEYWORDS

Medium voltage cable accessories, MVCA, installers, competency, assessment, reliability.

INTRODUCTION

Cable accessories of today are well proven, easier to install, and fulfil high quality standards[1]. However, having faced many challenges in the past, another significant challenge has emerged through the changes in personnel working on power distribution networks[2]. This has resulted in new players operating in the installation of cable accessories. To ensure the quality of installation, systematic demonstration of competency of the existing and entrant installation team members is needed. By implementing a competency test, utilities/distribution network owners (DNO's) can fully capitalize on modern cable accessories, extracting the full value of their investment in high quality products. This results in longer term reliability of the network, giving higher levels of customer satisfaction, whilst also reducing the total cost of ownership.

Decentralization of energy production, due to new energy sources like solar and wind, has set new requirements for power distribution networks. Consumers turn into producers, feeding small flows of electricity onto networks.

All this will change the load diagram of the network, increasing the number of connections to distribution networks and making networks more complicated. At the same time, the role of utilities/DNO's is changing towards becoming a System Operator (DSO). In this role they are required to become the manager of the distribution of power as well as all the connections to the network. This ultimately results in them being a facilitator, or project manager, of the new players like construction companies who are completing the installation of cable accessories as part of engineering, procurement and construction (EPC) contracts.

It is the view of the ACC that all network owners, as part of their facilitator or project manager role, should mandate an assessment of minimum level of installer competency for all medium voltage cable accessories installers who will work on their distribution network. To facilitate putting such a mandate in place ACC has developed guidelines specifying a systematic approach to assess the minimum competencies expected from installers.

This paper reflects the best knowledge of industry experts across Europe at the time of writing. It is not a legally binding document and is not intended as a substitute for each stakeholder's own assessment and decision making. This document is merely a non-binding information document.

PRODUCT SCOPE

The scope of this document is focused on Medium Voltage, where 'Medium voltage' (MV) in this document means power-frequency system voltages from Um = 7,2 kV to Um = 52 kV where Um is the 'highest system voltage' for which the cable and their accessories are designed. Within this range, the common rated voltages of European networks are 10 kV and 11 kV (Um = 12 kV); 20 kV and 22 kV (Um = 24 kV); 30 kV and 33 kV (Um = 36 kV); 45 kV (Um=52kV).

International technical specifications (CENELEC and IEC) refer to values of Um rather than country-specific rated voltages.

This paper refers both to modern polymeric insulated cables and to historic paper insulated cables. Though the latter are now rarely installed in Europe, they are common in existing utility networks and there is a continuing need to connect new polymeric cables to them via 'transition joints'.

Accessories as mentioned in this paper are of the following