



Technical guidelines for re-winding of conductors

Transmission

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Compiled by

Author
Bertie Jacobs
Chief Technologist

Date: 20/07/2022

Reviewed by


Sibonelo Nzama
Middle Manager
LES SCH Cluster

Date: 20/07/2022

Authorised by


Faith Makhonoana
Senior Manager (Acting)
Line Eng. Services

Date: 21/07/2022

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Name	Functional Responsibility	Date	Signature
Ravi Singh	Peer Review	20/07/2022	<i>R Singh</i>

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1. PURPOSE

The purpose of this document is to provide technical guidelines to be used when re-drumming a cable which can include phase conductors, earth wires or OPGW in cases when the original drums has deteriorated to a point where normal stringing operations become unsafe. This document will provide high level guidelines for on-site re-drumming, as every drum on site might pose unique challenges during re-drumming due to the different levels of degradation of the drums.


2. METHODOLOGY

- 2.1 Two methods or concepts are described below that are known to re-drum conductors. The first method is where the damaged drum is kept horizontal in its normal position provided the barrel and flanges are not too badly damaged to support its own weight.
- 2.2 The second method is where the damaged drum is positioned on its side where the flanges and/or barrel is damaged and not safe to re-drum in the normal horizontal position.
- 2.3 Alternative methods may exist and can be used, provided a detail description and safe work procedure (SWP) is submitted for inspection.

3. EQUIPMENT REQUIRED

The following list is the key equipment required and is by no means a complete list of all tools and equipment necessary to perform a re-drumming operation.

- 3.1 The contractor or party responsible for the re-drumming should establish the correct number and size of new drums that will be required prior to commencing the work.
- 3.2 The winding onto the new drums should be done under tension using equipment preferably fitted with an automatic “transverse movement arm” to ensure the layers are evenly and tightly wound according to the relevant cable diameter. A tensioner machine with hydraulic connection to the drum stand and which is controlled by the tensioner, is advisable in order to maintain a constant tension when the cable is wound onto the new drum.
- 3.3 The tensioner machine should have the means to measure the length of cable that is wound onto the new drum. Any alternative means of measuring the cable length must be provided subject to approval by Eskom Line Engineering.
- 3.4 Suitable anchoring systems to anchor the tensioner machine and other equipment (if required) as well as equipotential earthing systems (if required) should be provided.
- 3.5 Hand tools and hydraulic cutters as required.

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4. PROCEDURE

The following procedure provides a high level guideline in order to re-wind the cable onto the new drum and should be complimented by a more detailed Safe Work Procedure (SWP) compiled by the contractor or party responsible for the re-winding operation.

- 4.1 Position the tensioner machine and new drum with stand on a suitable level stable surface in line with one another.
- 4.2 Place the broken damaged drum with cable a suitable distance away from the tension machine on a drum stand (if the barrel is of sufficient strength to be placed within a drum stand) or lying flat on its side if the flanges are damaged beyond safe working condition in the normal upright position.
- 4.3 Feed the end of the damaged drum cable through the tensioning machine with the appropriate number of windings on the bull wheels to ensures good grip and that any slip will be eliminated. Tighten the end of the cable, once fed through the tensioning machine, onto the new drum in the correct manner with the tail protruding from the side of the drum, noting the correct roll direction as marked on the new drum.
- 4.4 Unwind the cable from the damaged drum slowly by turning it on the drum stand or alternatively uncoil it by hand whilst the tensioner in turn ensure winding onto the new drum.
- 4.5 Stop the machine after every 500 m of conductor rewind and inspect the conductor for any kinks, bird caging, damage or any other defects, and that the winding is uniform with no gaps between the cable within each layer. Also check that the cable is tightly wound onto the new drum with no loose layers or any layers criss-crossing on top of one another. The cable should be wound with enough tension to prevent any looseness onto the drum.
- 4.6 Once all cable is successfully transferred from the broken to the new drum, record the length and apply it onto the new drum as per packing and marking requirements stipulated in Eskom conductor specification 240-152844641.
- 4.7 Remove the new drum from the drum stand using a suitable spreader bar and rigging equipment not to induce any force onto the flanges of the cable drum. Remove the broken drum and prepare set-up for the next re-winding process.
- 4.8 Store the new drum after re-winding as per guidelines in TRMSCAAC6.0 Ref. 240-47172520.