ANALYSIS ON THE INFLUENCE OF SOME CONSTRUCTIVE PARAMETERS ON THE VALUE OF THE WORKING CAPACITY IN CABLES OF PAPER ISOLATION

Angel Zahariev Toshkov, Plamen Angelov Angelov

Centre of informatics technical and natural science (CITPN), Bourgas Free University, "Aleksandrovska"str. No.101, Postal Code 8000, Bourgas, Bulgaria, phone: +359 56 813890/340, e-mail: angel@fib-bs.com; angelov_plamen@hotmail.com

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In the proces of designing of cables of communication is quite important to know what influence have the separate constructive parameters on the outlet electrical parameters of the cable.

In the article is made an analysis on the influence of the coefficient on the axial overlapping $k_{a,}$ the thickness of the band of paper $\delta_{л}$ and the step of a rest of the band of paper h_t on the value of the working capacity between the conductors of the working chain. It is used a model of a cable of communication with ribbon-paper isolation with twisting of four in TZB type. The received results of the investigating are presented in graphic mode in order to lighten their analysis.

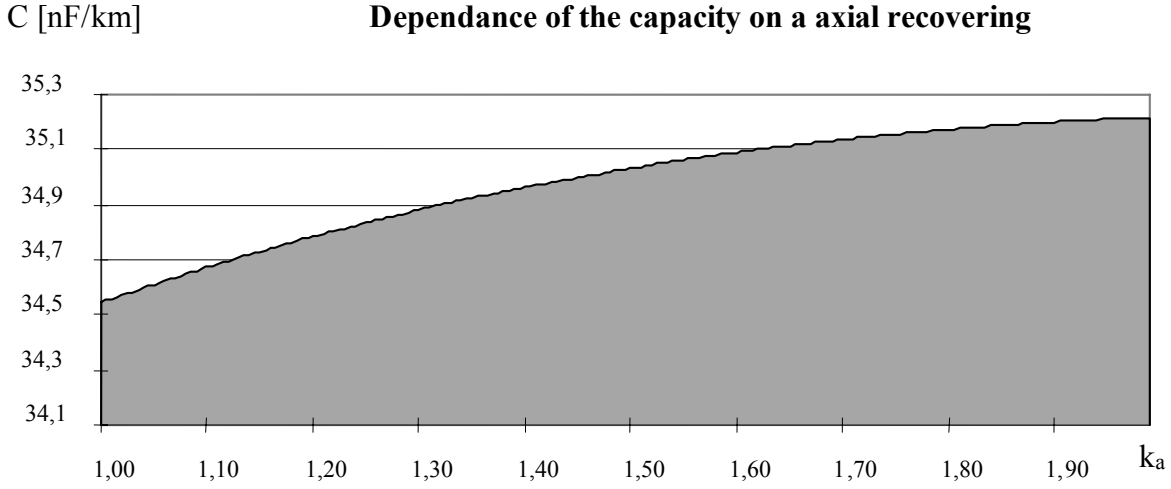


Figure 1 Value of the coefficient of axial recovering

To know the influence of the constructive parameters of the cables for technics of communication on the entrance electrical parameters is of basic importance either in the designing of new products and in a change of the technology of producing.

1. It is investigated the coefficient of the axial recovering k_a (as a function of the width of the tape for isolation, the step of the rest of the thread of paper and the

diameter of the conductor and the thread of paper) on the cost of the working capacity between the conductors of the working chain.

On the Figure 1 is shown the value of the working capacity C, as a function of k_a.

It can be seen that only by the change of the value of k_a the value of the capacity can be correct within the framework of 1.5 %.

C [nF/km] **Dependance of the capacity on the stout of the paper tape**

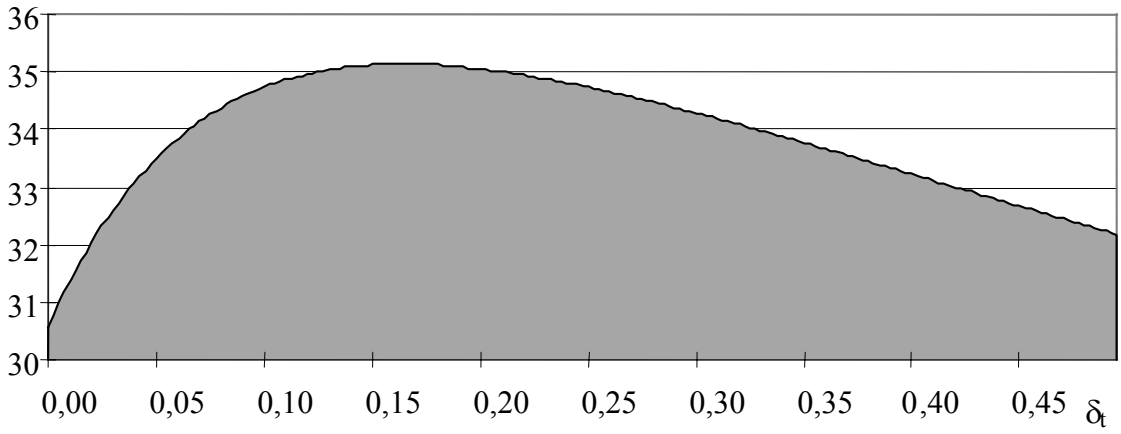


Figure 2 Stout of the paper tape mm

2. It is investigated the influence of the stout of the paper tape δ_t on the value of the working capacity between the conductors of the working chain .

The influence on the costs of the working capacity is 0.5 % lower when use K12 - Figure 2.

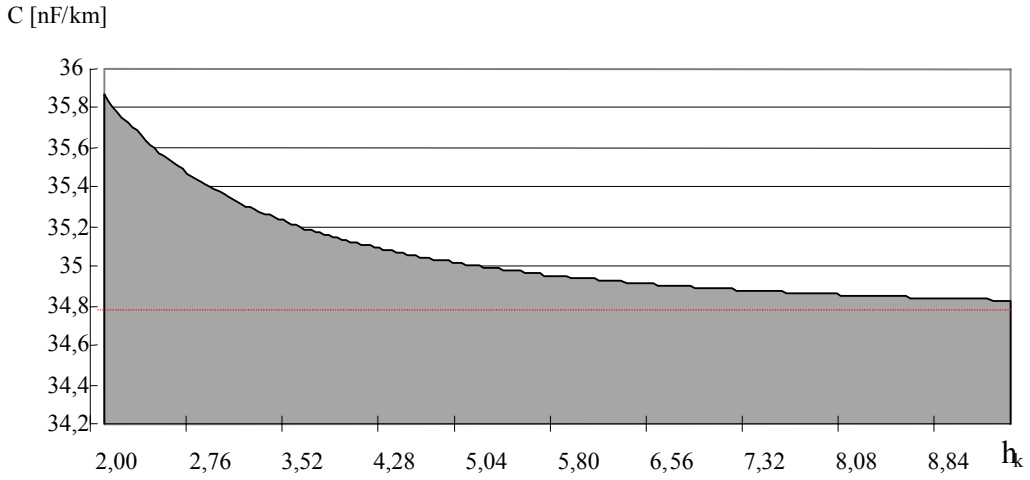
3. The investigation of the influence of the step of rest of the paper tape $h_л$ on the value of the working capacity between the conducers of the working chain.

The width of the paper tape *b* should stay an entrance parameter, and if it is necessary to be done some minimal corrects of the primary parameters it can be varied with k_a.

4.Exploring the influence of the step of laying of the paper-thread h_k on the value of the working capacity between the conductors of the working chain.

The step of laying of paper-thread h_k influences on the volume of the paper in the calculating of the value of $\varepsilon_{ек}$-(equivalent value of the dielectric permeability of the working chain) and in the same time on the value of the capacity. It is better that the step of laying of paper-thread h_k to be two or more times smaller than the step of laying of the paper tape for isolation - $2h_k < h_л$. On figure 3. Are shown the results of the calculations, where we can see the influence of h_k on the value of the working capacity. We can make the conclusion that only by making the change of the value of h_k we can influence on the value of C up to 3%. By decreasing the step of the paper-thread the value of $\varepsilon_{ек.}$ becomes greater .When it is necessary, it can be made a change of the value

of the working capacity only due to a change of the technology regime of a laying of a paper-band.



Step of the paper tie δ_k=0.41

Figure. 3

5. Exploring the influence of the tickness of the paper band $\delta_к$ on the value of the working capacity between the conductors of the working chain.

We can see on the graphics showing the influence of the tickness of the paper-thread on the working capacity on the chain-figure 2. that the tickness of the paper-thread in one by one isolation has the greatest meaning to indentify the value of the capacity between the conductors of the chain.

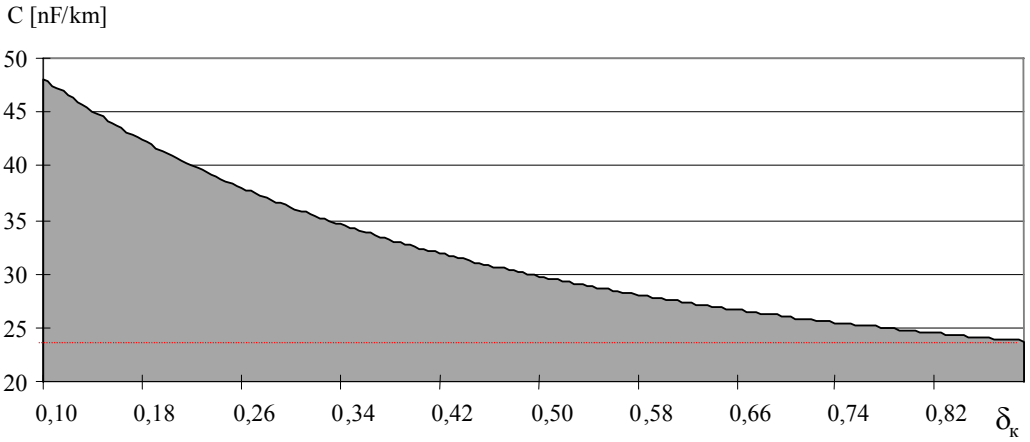


Figure 4 Paper tie diameter mm [mm]

Increasing the tickness of the paper-band increases the quantity of the air in isolation, which considerably influences on the decreasing of the value of the working capacity. In figure 4. we can clearly see that the working capacity can be change to 2 times-from 24 nF/km to 48 nF/km. In other words this parameter can be used for "rude setting" of the working capacity.

The algorithm for counting the results and the way they are obtained are taken from [1], and the calculations and the graphics itself are made in Excel.

Bibliography

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