

DISTURBANCES IN THE POWER SUPPLY NETWORK OF BUCHAREST SUBWAY SYSTEM (PART 1)

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Rezumat. În prezentul studiu este descrisă problema distorsiunilor apărute în rețeaua principală de alimentare a metroului București (sub pământ) cauza și acțiunile, la fel și măsurile luate pentru limitarea distorsiunilor produse. Toate acestea sunt reflectate în măsurătorile făcute utilizând osciloscopul Fluke instalat la punctul de dispecer, urmând a fi procesate.

Abstract. In the present study it is exposed the problem of disturbances in the main power supply of Bucharest Subway (underground) system, the cause and their action, as well as the measures taken to limit the disturbances produced. All this is reflected in the measurements made using oscilloscope Fluke installed at the dispatch point, following to be then processed.

Keywords: power supply system, electromagnetic compatibility, disturbance, influence, disruptive voltages

1. Introduction

For the Bucharest Subway, the problems with the disturbances in the main power supply system exist. These problems were revealed once with the measurements made using oscilloscope Fluke installed at the dispatch point.

1.1. Subway substations connection to electric power network

Subway substations connection to the electric power network is made by:

- a) High level short circuit currents due to strong loop network;
- b) All transformers of 110 kV / MV (medium voltage) of power stations have the neutral connected to earth on 110 kV - so in the City of Bucharest is a homopolar current circulation with damaging effect on the reinforced concrete buildings;
- c) On the side of medium voltage in the power network and consumers connected to the medium voltage (20 kV - for example, Bucharest Subway Line II) capacitive neutral displacement occurs, with the effect on telecommunication systems and closed circuit television;

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