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METHOD AND ALGORITHM OF AUTOMATIC, ANTICIPATIVE PROTECTION AGAINST OVERCURRENTS IN ELECTRICAL INSTALLATIONS

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ABSTRACT

NOVELTY - The invention relates to a method for anticipative automatic protection against overcurrents, which is used in electric installations. According to the invention, the method comprises the step of checking the symmetry of the voltage system when a consumer is power connected and, in case of non-symmetry, the blockage of starting command, the step of comparing the slope of the starting current with the slope of the short-circuit current, where, if the slope of the starting current is larger, the relay will command the consumer's decoupling, and if the slope of the starting current is smaller, the value of the starting current is compared with the value of the maximum starting current in order to make the decision of coupling or decoupling the consumer, and the step of comparing the value of the load current in the protected circuit with the nominal value of the current, and, depending on the resulting values, the consumer is maintained coupled or decoupled, after which the current control cycle is resumed, thereby carrying out an anticipative automatic overcurrent protection relay for electric installations.

KEYWORDS

Amplifiers,
Low power supplies,
Switchgear,
Protection,
Electric drives

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INTRODUCTION

The invention refers to a process for monitoring the stability of existing ecological depositories in mining, dump and landfill areas, as well as in urban areas, such as decanting ponds and landfills.

RESULTS

The process of monitoring the stability of the waste dumps, according to the invention, is built from a tensometric space displacement transducer (2) that slides on a rod (3). The angular displacement αx results from the tensometric half-deck (5) applied to both sides of the elastic element (6), rigidly encased at one end in the reazem (7), at the other end being required by the gravitational component of the mass (8), which by its construction senses angular displacements only after the Ox axis. The angular displacement αy results from the tensometric half-deck (9) applied to both sides of the elastic element (11), rigidly encased at one end in the reazem (12), at the other end being required by the gravitational component of the mass (13), which by its construction senses angular displacements only after the Oy axis. The linear displacement dz results from the tensometric half-deck (14) applied to both sides of the elastic element (15), rigidly attached to the element (16), the neutral position of which is established at the position of the transducer on the depoonia, by a palpator disc (17) necessary to detect +/-z movements, its final fixation being ensured by the screw (18). The processing of information on the spatial-temporal movements of the depoonia is carried out with a microcontroller system (21), by means of an instrumentation amplifier (22), its supply is made from the battery system (23) or by means of the current regulator system (24), connected to the photovoltaic panel (25). The synchronization of information, on the angular movements of the deponia, between each space tensotic transducer located on the depony is carried out by means of an antenna (27) connected to the electronic sensor system, which retrieves the information from the transceiver (28).

The space tensometric transducer for monitoring the movement of the depony is located in the premises (20), the information on movements after the three axes is transmitted to a microcontroler system (21), which is amplified apriori by the instrumentation amplifier for tensometric stamps (22). The numerical tensometric monitoring system shall be supplied from the battery system (23) or via the current regulator system (24) connected to the photovoltaic panel (25) of the electronic sensor system which is placed on rubber spacers (26) of vibration damping that could be transmitted to the photovoltaic panel.

The synchronization of information, on the angular movements of the depony, between each space tensotic transducer located on the depony is carried out by means of an antenna (27) connected to the electronic sensor system, which retrieves the information from the transceiver (28). Tensometric semi-decks that detect angular displacement on the +/- x and +/-z axis respectively bind to the instrumentation amplifier by means of shielded conductors (29), and the tensometric semi-deck detects movement on the +/- y axis are connected to the instrumentation amplifier by means of shielded conductors (30).

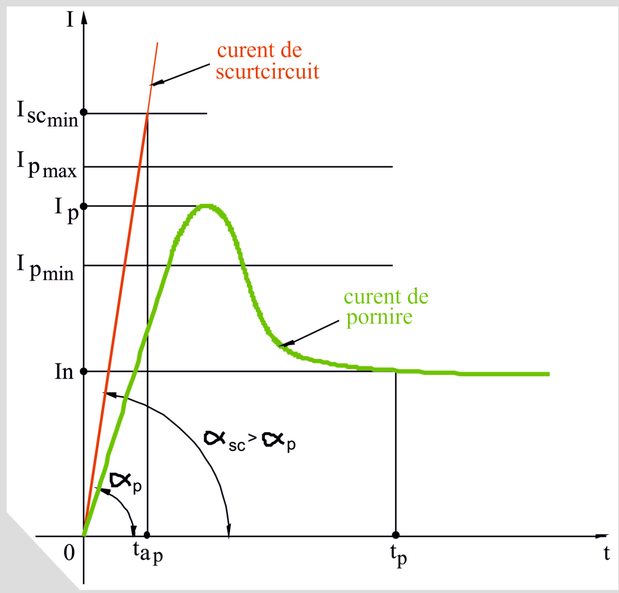

Figure 1. Characteristic of the electric motor consumer's starting current

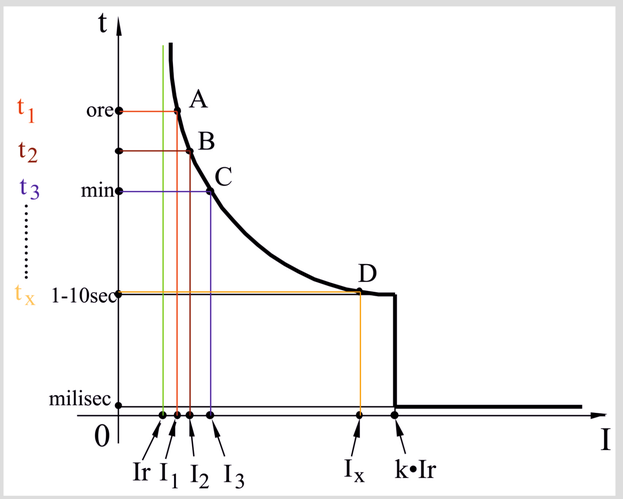

Figure 2. Protection actuator

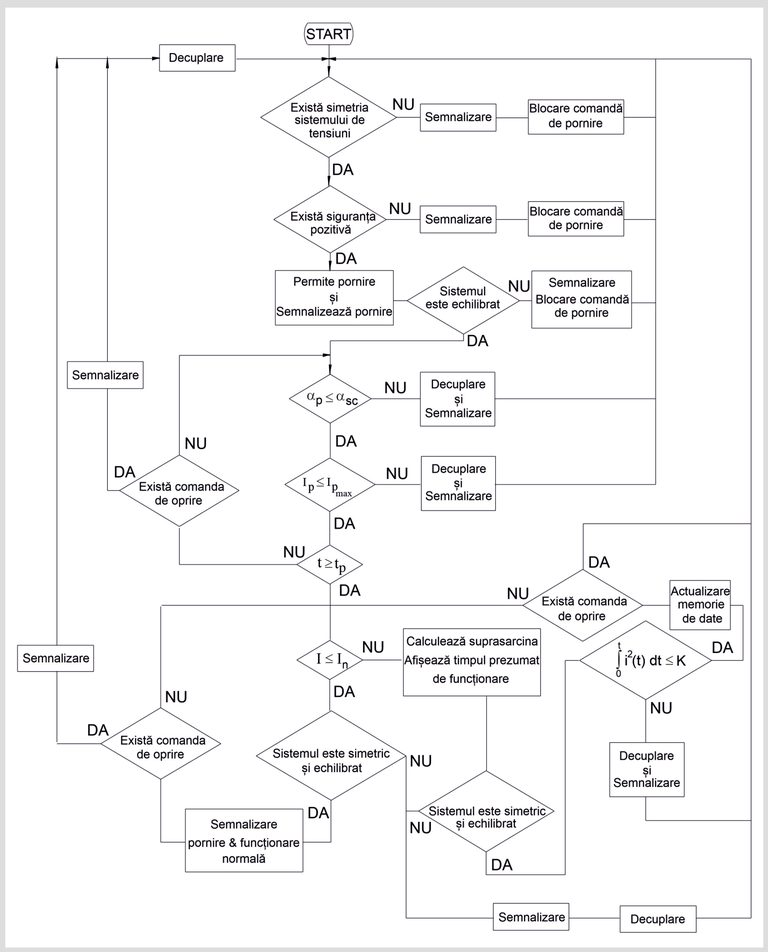

Figure 3. Algorithm for the operation of the current predictive relay