



International Science Group

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**XXXV
INTERNATIONAL SCIENTIFIC
AND PRACTICAL CONFERENCE
"SCIENCE, DEVELOPMENT AND THE LATEST
DEVELOPMENT TRENDS"**

**Paris, France
September 06 - 09, 2022**

ISBN 979-8-88796-819-3

DOI 10.46299/ISG.2022.1.35

SCIENCE, DEVELOPMENT AND THE LATEST DEVELOPMENT TRENDS

Proceedings of the XXXV International Scientific and Practical Conference

Paris, France
September 06 – 09, 2022

INCREASING THE EFFICIENCY OF FIRE PROTECTION OF ELECTRICAL NETWORK SWITCHING APPARATUS

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The statistics of fires in Ukraine shows a steady tendency towards maintaining the number of fires from sources of ignition of electrical origin. The main directions of ensuring fire safety are the elimination of fire conditions and the minimization of its consequences [1]. More than 14% of fires occur as a result of malfunctions of electrical networks, but the occurrence of emergency situations due to large values of transient resistance is one of the most difficult issues.

The presence of a large transient resistance at the switching point leads to excessive local heating, besides this, there are no significant changes in the controlled characteristics of the electric current in the circuit, which would trigger the protection devices. Switching devices can be protected from fire by opening the electrical circuit when the contact connection is heated above a certain limit value. It is offered to solve the given problem by using thermal fuses or relays, which must be placed in the body of the device in such a way that they touch the main element that can overheat or through heat-conducting materials.

Today, temperature fuses are used to prevent damage to various electrical and thermal devices, electrical machine tools, and industrial equipment from overheating [2]. The peculiarity of its operation is that at normal operating temperatures, the fusible alloy conducts current in the normal mode. When the nominal temperature is exceeded, the fusible element melts, which opens the electric circuit. The thermal fuse is also created to protect against current overload. When one of the set parameters is exceeded, the circuit opens and de-energizes, thereby preventing ignition.

The implementation of the developed models of fire protection of electric networks at the switching points of excessive consumer capacities is the installation of a temperature fuse, which will be triggered when the permissible connection temperature is exceeded and will stop further heating by opening the electric circuit. This fuse can be used in all existing systems of fire protection of electrical networks in places of switching of excessive consumer capacities.

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