WORKS RELATED TO FIRE USE

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The paper deals with the fire safety requirements of energy facilities,including the necessity of taking special measures, which is associated with the works to be carried outnear electrical equipment by using an open flame. The work presents the specific requirementsto perform fire extinguishing works on devices of power plants and substations under 400 V voltage , the types offire extinguishers to be used for extinguishing fire and the safe distances of use them with the electrical installations.

Keywords: ***electrical equipment, fire safety, extinguishers, voltage, power plants.***

When the works using an open flameare carried out close to electrical equipment or in direct contact with them, it is necessary to be protected with special security measures.

Technological device, on which the works regarding the fire use areincluded, shallbe put in explosion and fire safe condition by using the following methods:

a) Exemption from fire and explosion hazardous substances;

b) Disconnection from effective communications (except for communications, which are used in fire-related works);

c) Pre-clearing, washing, evaporation, ventilation, sorption, etc.

Repositories, where the flammable, combustible liquids and combustible gases vapor can be accumulated, must be ventilated before carrying out fire-related works.

The places for conductingwelding and cutting works in the premises and repositories, constructions of which are made of combustible materials,shall be surrounded bya full incombustible (tape) partition.The height of the partition shall be not less than 1.8 m,and the clearance between the partition and the floor shall be no more than 5 cm.In order to avoid scattering hot particles, this clearance should be surrounded by the net made from incombustible material, withcells size not exceeding1.0X1.0 mm.

During conducting fire-related worksit is prohibited:

a) To start works with failed equipment;

b) To conduct works on newly painted constructions and items;

c) To use gloves or clothes stained with oil, fat, gasoline, kerosene or other combustible liquids;

d) To keep clothing, easily flammable, combustible liquids and other combustible materialsin the welding cabins;

e) To allow pupils, as well as workers with no qualification certificates and appropriate documents on passing fire safety technologyto the work;

f) To touch the compressed, liquefied and dissolved gas cylinders with electric wires;

g) To conduct works on the equipment and the communications full of combustible and technical substances and as well as on those placed underelectric motors;

h) To arrangewaterproofing and vapor seal simultaneously with conducting fire-related works. To install combustible and hard-combustible heating panels,to glue floor cover and to polish premises by using varnishes, glues, mastics and other combustible materials.

Fire extinguishing on the energy devices must be carried out with up to 400 V voltage.

According to basic provisions ofagency-level and state fire fighting services, the devices of power plants and substations under 0.4KV voltage could not bede-energized.

The need to extinguish a fire on the piece of equipment under 0.4 KV voltage is conditioned by the impossibility of removing voltage from the used switching circuits,taking into account the inadmissibility of loss of management of the equipment,which in turn can lead us to severe consequences of energy production technologies and energy systems operation.

Performing fire extinguishing works in accordance with safety requirements includes the following requirements:

- **Fire extinguishing for equipments under 0.4 kV voltage shall be allowed with a jet of water released from fire extinguisher from a distance of not less than 5 m., fire extinguishing with compact jet of water is not allowed.**
- **For extinguishing the fire with air-mechanical foam , while volumetric filling of the repository (tunnel), it is necessary to ground the pumps of foam generators and fire-fighting vehicles. Fire Truckdriver should work in dielectric gloves and overshoes (boots).**
- **During extinguishing fire with fire extinguishers, the safe distances displayed in Table 1 must be observed. Other types of fire extinguishers are permitted to use, withcertificates of the relevant technical specifications issued by the manufacturer .**

The applicable types of fire extinguishers to extinguish the fire on the devices under voltage

Table 1

Voltage,KV	Safe distance to the electric device	Type of fire extinguishers
Up to10	Not less than1 m	Carbon dioxide
Up to 1	Not less than1 m	Dry Powder
Up to 0.4	Not less than1 m	Freon type

During the fire the personnel's actions are predetermined in accordance with security requirements

In the case of fire at the site, the first who noticed the fire, is obliged to immediately notify the shift boss of the electrical power facility or the leadership of the energy plant, and in case of failure

in communication- fire protection unit and commence to extinguish fire with available fire extinguishing means.

The shift boss of the electrical power facility shall immediately notify the fire protection unit, leadership of energy plant (special list), and the energy system dispatcherabout the fire.

Before arrival of fire subdivisions the head of fire extinguishing is the shift boss of the electrical power facility (head of energy plant)who is obliged to organize:

- **Withdrawal of foreigners from the fire site;**
- **Determination of fire sites, its spreading and formation of new sources;**
- **Inspection of automatic fire extinguishing system, in case of failure- manual activation;**
- **For the purpose of efficiency, conducting preparatory works;**
- **Organization of fire extinguishing with personnel resources by fire extinguishing means at electrical power facility;**

R E F E R E N C E S

1. მაჭავარიანი ნ.,. რაზმაძე ნ. ტექნოლოგიური პროცესების ხანძარუსაფრთხოება. თბილისი. ტექნიკური უნივერსიტეტი. 2014.
2. რაზმაძე ნ., ავალიანი მ. ელექტროუსაფრთხოება. ტექნიკური უნივერსიტეტი. 2007.
3. **Основы техники безопасности в электроустановках. М.:Энергоатомиздат. 1984.**