

IMPORTANCE OF AUTOMATIC FIRE EXTINGUISHING SYSTEMS IN FIRE PREVENTION

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Annotatsiya: Mazkur maqola zamonaviy avtomatik yong‘inga qarshi tizim va zilzila klapanlarini samaradorligini o‘rganish orqali yurtimizda zamonaviy avtomatlashgan yong‘inga qarshi tizimlar samaradorligini oshirishga bag‘ishlanadi.

Аннотация: Данная статья посвящена повышению эффективности современных автоматизированных систем пожаротушения в нашей стране путем изучения современных автоматических систем пожаротушения и сейсмических клапанов.

Annotation: This article is dedicated to improving the efficiency of modern automated firefighting systems in our country by studying the efficiency of modern automatic firefighting systems and seismic valves.

Kalit so‘zlar: Yong‘in, zamonaviy avtomatik yong‘inga qarshi tizim, zilzila, zilzila klapani, bino va inshootlar, gaz, avtomatik tizim, yong‘inni o‘chirish.

Ключевые слова: пожар, современная автоматическая система пожаротушения, землетрясение, сейсмостойкий клапан, здания и сооружения, газ, автоматическая система, пожаротушение.

Keywords: Fire, Modern automatic fire extinguishing system, earthquake, earthquake valve, buildings and structures, gas, automatic system, fire extinguishing.

INTRODUCTION.

Fire plays an important role in human life in nature. Fire involves the reaction of different substances to produce energy in the form of heat and light, rather than matter itself. It can cause large fires of all kinds, especially when uncontrolled, but it also serves many useful purposes. Post-earthquake fires have long been recognized as a major hazard and a major source of damage. Today, transportation of gas, oil pipelines, electricity cables and other fuel products spread around the world is widespread. These systems are the main sources of fire after an earthquake.

Cracking and shaking of the ground can easily rupture natural gas mains and water pipes, which also contributes to fire outbreaks and hinders their control efforts [5].

Fire is an uncontrollable phenomenon, an emergency situation that destroys priceless material and cultural assets in a minute, destroys the environment, and

especially the lives of citizens. The origin of fire is the result of three factors meeting at the same time, in one place, namely:

- combustible material (oil, paper, wood, etc.):
- air temperature (heat),
- spark-flame (match , spark, short circuit of electric wire[3].

The main causes of fire are as follows:

- a) careless handling of fire during smoking, burning flammable substances, lighting with matches, etc. Such a fire makes up 26% of the total fire;
- b) children playing with grass - 14%;
- v) as a result of violation of the rules for managing electrical equipment - 13.5%;
- g) as a result of improper installation of the stove and smoke pipes - 8.5%;
- d) improper use of heating equipment - 8.3%;
- e) violation of the rules of installation of electrical devices - 5%;
- y) violation of fire safety rules during welding work-2.3%;
- j) Violation of technological equipment management rules - 1.2% [7].

Therefore, the primary causes of fire may be the impulses of small sources of fire, such as cigarette butts, sparks, and unextinguished matchsticks; high-temperature heat sources, flames, stoves, and heated constructions of smoke pipes, etc. Also, the influence of the human factor on the spread of fires and their spread is high.

RESULTS AND CONSIDERATIONS.

Currently, construction works are being carried out in our republic with intensive pictures. These constructions are mainly residential buildings and industrial buildings. Following the modern way of ensuring the safety of residents in new high-rise residential buildings and industrial buildings remains a requirement of today. Automated fire extinguishing systems are increasingly used to ensure fire safety of the population. Recently, automated devices have become more and more popular. They are connected with the alarm, and their task is to take measures to fight against the fire in the object without delay. Modern fire fighting complexes are aimed at automatic operation, human is excluded from this process, and automatic electronic devices play a leading role.

Automatic fire extinguishing devices are suitable for extinguishing local (local) fires in rooms with an average level of fire risk, i.e. administrative buildings, hotels, parking lots and other places. intended [6].

A modern automatic fire protection system is a set of equipment that helps to ensure the necessary fire safety in the enterprise. Modern automated tools are designed to detect fire at an early stage and extinguish it before it spreads over a large area. Automated fire protection systems are used in a wide variety of facilities.



Figure 1. Modern automatic fire protection system.

The necessity and procedure for their installation and use are regulated by special normative documents. In particular, in Chapter 16 of the Resolution No. 649 of October 20, 2020 of the Cabinet of Ministers of the Republic of Uzbekistan "On Approval of Fire Safety Regulations" "Requirements for automatic fire extinguishing devices" It was pointed out [1]. Automatic fire extinguishers have a number of advantages over other fire extinguishers:

- ability to quickly respond to the outbreak of fire;
- different substances can be used to extinguish the fire;
- the presence of a person is not mandatory to activate the fire extinguishing system;
- high effectiveness of combating fires of various degrees of complexity;
- works well with fire alarms.

Applying modern methods of fire prevention in our country by conducting scientific researches with extensive study of this automatic system remains the need of the hour.

PROBLEMS.

The problem of technical operation of fire automatic systems is becoming more and more important. The importance of this problem is also related to the fact that up to 13% of the number of fire automation systems installed in facilities do not work [4]. The reasons for malfunctions and inefficient operation of systems are explained by the following:

- a) Inadequacy of normative documents defining the norms and rules for the design, installation and use of automatic fire alarm and fire extinguishing systems, as well as requirements for system equipment;
- b) Errors in the design of automatic fire alarm and fire extinguishing systems;
- c) Enterprises engaged in the production and supply of components for automatic fire alarm systems, fire extinguishing and fire fighting equipment, organizations that

perform installation, commissioning and maintenance. that the quality of work performed by is not high enough;

In order to eliminate them, it is necessary to carry out a number of works by developing necessary and based scientific and practical recommendations. There is definitely a need to study countries that have a lot of experience in this field in order to solve their problems. Of course, we should not simply copy foreign practices without thinking, but carefully studying them and adapting them to the specific characteristics of Uzbekistan can give good results in a minimum time.

Every day around the world there are earthquakes that we feel and don't feel. It is natural that large fires occur as a secondary consequence of these earthquakes. Strong earthquakes can rupture gas pipelines instantly, causing extremely dangerous gas leaks. This situation is dangerous inside buildings, where gas accumulates. Accumulated gas is very flammable and dangerous. In addition to triggering gas leaks, earthquakes often create situations where gas can easily ignite. If a fire breaks out in earthquakes and the fire comes into contact with the gas inside the structure, it can cause an explosion. One of the biggest damages of earthquakes are fires and explosions caused by gas leaks. The use of earthquake valves to prevent these fires is an optimal solution to ensure the fire safety of buildings and structures in our seismically active areas.

Earthquake valve - a valve that responds to seismic movements and stops the flow of gas. At the entrance of the building, the main gas pipeline is installed at the main entrance [11]. Earthquake shutoff valves (or sometimes called seismic valves) regulate the flow of gas when an earthquake occurs. They work by using motion sensor technology to detect seismic activity and in turn automatically shut off gas leaking into buildings.



Figure 2. Earthquake valves.

Factors that determine the need to use an earthquake valve [10]:

minimize potential losses from fires caused by catastrophic earthquakes;

that gas shut-off valves can protect it even when you are not at home;

limit the leakage of volatile gas anywhere in the building as a result of damage to the gas pipeline or its connections during or after an earthquake;

in accordance with standard requirements, from the moment of installation, it can automatically start working in response to seismic movements and stop the gas supply without human intervention, etc.

CONCLUSIONS AND SUGGESTIONS.

Taking into account that the densely populated part of our country is located in seismically active areas, in order to reduce the consequences of an earthquake in our cities, it is necessary to put into practice the installation of these earthquake valves in high-rise residential buildings. There is a wonderful proverb in our people that a jar breaks every day. Of course, our fathers and grandfathers did not say this saying for nothing. None of the developed countries have been able to predict these possible earthquakes in advance. Therefore, it is necessary to reduce the consequences of earthquakes and prevent them, with a deep understanding of the danger under our feet.

Issues of ensuring the required quality of automatic fire alarm and fire extinguishing systems can be solved by doing a number of things. The following proposals and recommendations were developed for the installation of modern automatic fire extinguishing systems and further improvement of their technical service system:

1. Normative regulations in the field of development and production of automatic fire extinguishing devices improvement of the legal framework:

a) improvement of regulatory documents regulating technical requirements for integrated fire protection systems and their testing methods;

b) Improvement of the legal framework to ensure the protection of industrial buildings and technological equipment from fire and explosion using radically new technical means of combating fire and explosions;

c) Development of a regulatory document regulating the properties of special fire-fighting powders intended for use in automatic fire-fighting devices;

d) Creation of a normative document defining a single test procedure for large-scale fire extinguishing equipment (powder fire extinguishing modules, gas generators, etc.);

e) Development of a normative document regulating the rules for commissioning and maintenance of automatic fire-fighting devices.

2. Development of a hydraulic calculation method designed to determine the diameters of pipelines and gas outlets to ensure the standard time of delivery of fire-extinguishing gas to the protected volume.

3. Localization of the production of automatic fire protection systems (achieving a reduction in the price of devices by localizing them);

4. Step-by-step implementation of earthquake valves (a valve that responds to seismic movements and stops gas flow) (in manufacturing plants, multi-story residential complexes).

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