

# TACTICAL CAPABILITIES OF NEW REMOTE CONTROLLED ROBOTIC VEHICLES IN FIRE EXTINGUISHING

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Abstract:	Keywords
<b>The article contains tactical information on how remotely controlled robotic device operate in emergency situations, as well as information on monitoring the situation, improving work efficiency by ensuring the safety of rescuers and providing assistance to them in emergency situations, as well as information on research and experiments conducted in this direction in foreign countries. Information is provided on the role of robotic device in emergency situations, the development of a monitoring model and the main technical indicators. The results of research and testing have confirmed that the capabilities of this newly developed robotic device are consistent with the original specifications and tactics.</b>	<b>emergency, robotic device, remotely controlled device, monitoring, rescue, fire, tactics.</b>

## Introduction

It is well known to all of us that today's era is the era of modern, innovative technologies, so today, as in all areas, new modern innovative technologies (robotics, unmanned aerial vehicles and The importance of effective use of khakozo) is increasing. Because in any emergency situation, the first priority is the important task of saving human life, and in such cases, the main assistant to the rescuer is definitely equipment and technical tools, in which the use of robotic tools increases productivity in the implementation of these important tasks and, most importantly, safety. is considered as one of the main means of providing. [1-3]

Today, in the world, it is possible to observe the rapid development of innovative technologies, including robotic tools, as well as their wide application in practice and the processes of effective fire suppression.

As an example of this, if we take China as an example among developed countries, the creation and maintenance of new multi-functional robotic tools for use in areas such as fire extinguishing, emergency prevention and elimination, and monitoring. Innovative research such as firefighting has been carried out on a large scale, and as a result, robotic tools used in firefighting; driverless mini-firefighting vehicles and unmanned aerial vehicles are being developed and put into practice (Fig. 1) [ 4 ].



***Figure 1: Emergency drones and robotics and their deployment processes (China).***

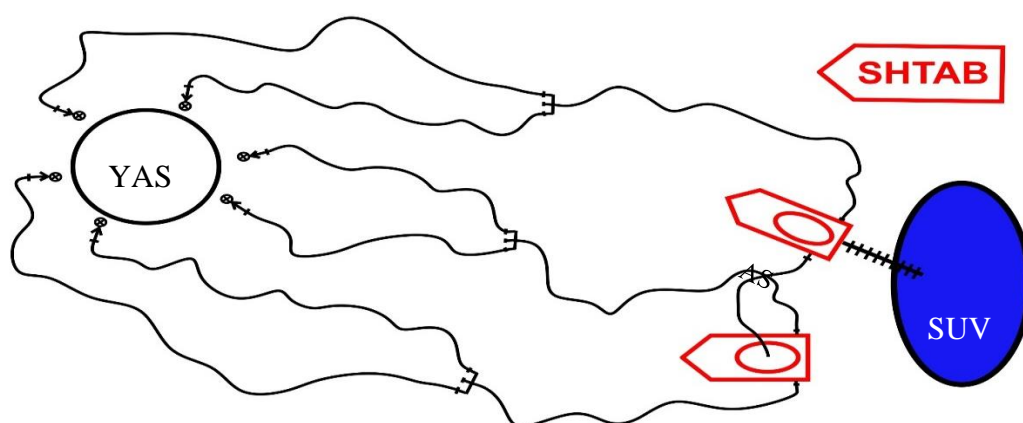
These unmanned aerial vehicles and robotics are modern technologies that protect the life and health of rescuers from endangerment and help them at the same time, and nowadays the need for such innovative technologies in all fields is increasing.

Today, at the Scientific Research Institute of Fire Safety and Emergency Situations of the Ministry of Emergency Situations, large-scale research is being conducted in the direction of creating new types of robotics for use in emergency situations and their effective use in the field. [ 5 ]. A number of positive results have been obtained in this direction, and today research is being conducted on the use of these created robotics in various conditions. In this, their cooperation with rescuers and their tactical capabilities in emergency situations and extinguishing fires in life-threatening objects and additional aspects are being developed.

Eliminating emergency situations, as well as extinguishing fires, is a complex management process, in which the coordinator of all actions is the commander (shift leader) of the fire rescue team, who decides that all actions to improve the situation to serve, if it is the other way around, it can lead to dire consequences. The main criteria for eliminating emergency situations and fires using robotic means is the person directly controlling its actions and its location, i.e. ease of control distance of the robotic means and good cooperation with personnel.

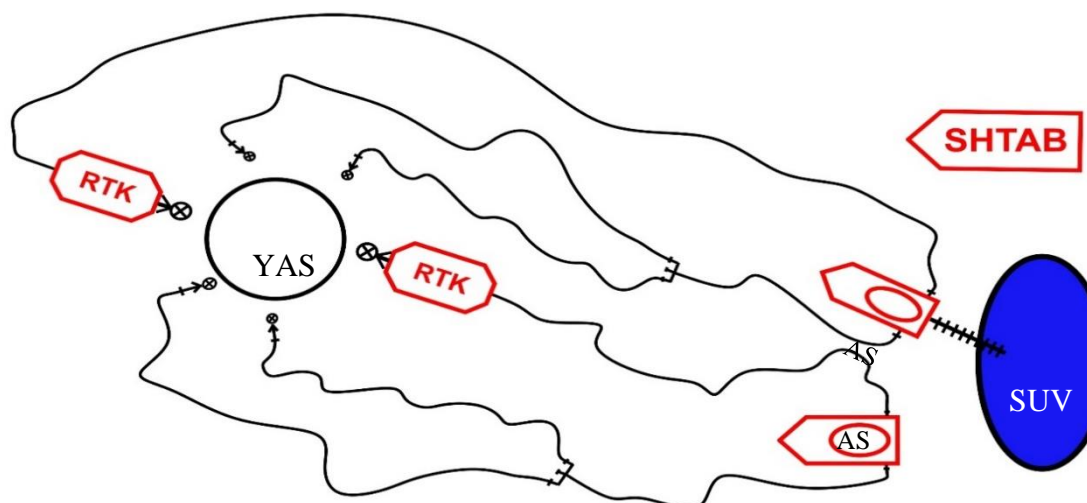
Scheme of extinguishing fires in tanks storing flammable liquids without robotic means, the purpose of showing this scheme is to show how effective it is to extinguish fires without and with the participation of robotic means (Figures 2 and 3).

Here, YAS is a storage tank for highly flammable liquids, SHTAB is a fire chief and robotics operators, AS is a fire truck, RTK is robotics, and they are fire chiefs. and based on the monitoring and management experience of the operators managing the robotic tools, they take measures to eliminate emergency situations in cooperation.



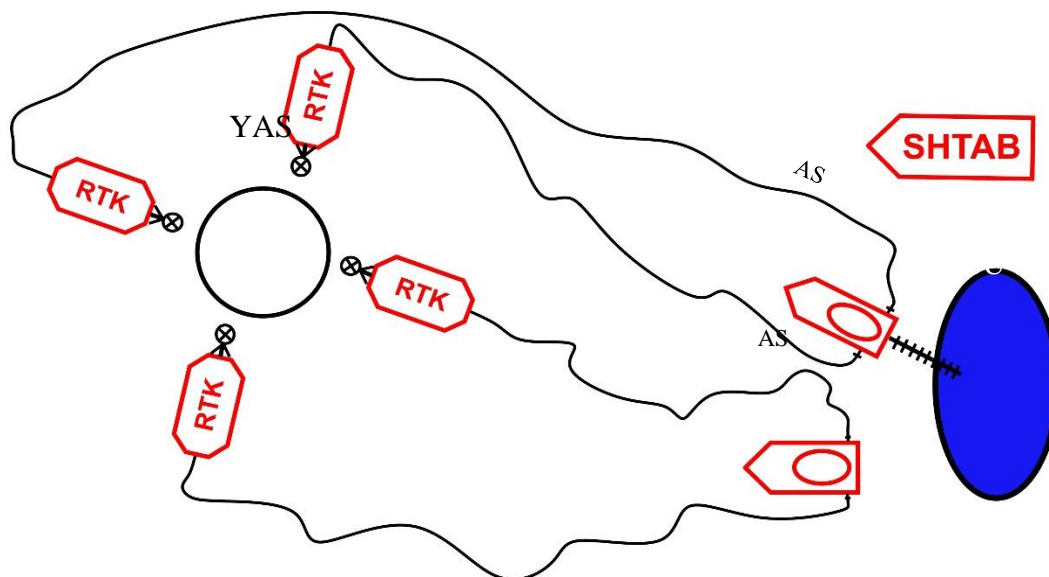
**Figure 2: Scheme of extinguishing a fire in a tank containing highly flammable liquids with the participation of rescuers**

Tactics of movement play a very important role in emergency situations, as well as fires. So, we will consider the tactics of the robotic vehicle movement in life-threatening objects in a schematic drawing and calculate whether this tactic is effective or ineffective (pictures 3-4).



**Figure 3: Rescuers in collaboration with robotics in a tank where flammable liquids are stored fire prevention scheme**

In a word, issues such as the ability of rescuers to eliminate fires in cooperation with robotic tools and to control them remotely, as well as to draw up a tactical scheme with their participation (Fig. 4) are of particular importance.



**Figure 4: Scheme of fire extinguishing in a tank containing highly flammable liquids using robotic means**

In these schemes, conditionally, a reservoir for storing light flammable liquid (YAS) is provided. We know that if there is a fire in the reservoirs where YAS is stored, it may explode, i.e. spread to the surroundings and endanger the life and health of the rescuers who came to extinguish the fire. If YAS spreads around, there is a very high probability that the fire will spread over an open surface, taking into account the above, it is advisable to use robotic means instead of rescuers in life-threatening objects.

In conclusion, it can be said that in today's example, the development of innovative technologies and generalization of aspects of their implementation deserve special recognition. At this point, we can say that in order to save people's life and health in emergency situations, to effectively carry out rescue work in situations where it is difficult to move in dangerous areas, as well as to protect the life and health of rescuers and to monitor the situation, the application of robotic tools in practice tasks such as making, using them effectively in practice, as well as increasing the number of new, modern, innovative technologies with wider possibilities of use, in the field of the Ministry of Emergency Situations, as well as among the goals set for all sectors, will act as a huge wall for our future we can easily say. Because if we look at it from the point of view of the future, the coefficient of need for robotic tools will increase, and the probability of not decreasing is very high.

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