The power needed for the DALI-signal can be created by an external power supply. Some products have the functionality of DALI power supply integrated, I.e. MultiDim dimmers. Always use exactly 1 power supply in a DALI-system [5].

In conclusion, DALI is the ideal, simplified, digital way of communication tailored to the needs of present day lighting technology [2]. The scope of using lighting systems is constantly expanding, the light comfort is increasing, the lighting is adapting to individual requirements. Also DALI products become cheaper and thus more available.

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EXPERIMENTAL EVALUATION OF THE EFFECTIVENESS OF WATER MIST FIRES SUPPRESSION SYSTEM ON OIL TRANSPORTATION FACILITIES

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Main pipeline transport is an essential component of the fuel and energy complex of Russia. The country has an extensive network of trunk pipelines, oil pipelines and gas pipelines that pass through the territory of the majority of subjects of the Russian Federation. Most of the oil and gas industry are highly explosive. One of the areas that provide prevention of emergency situations is to equip the production facilities with modern fire protection systems.

Currently popular means for extinguishing constructed and reconstructed facilities were modern systems that use water spray. The unique features of these systems have made them nearly ideal for fighting fires. The main advantage of extinguishing water spray – high fire extinguishing efficiency with minimal effects on

their application for building and property contained therein. Atomized water is considered water spray droplets with an average diameter of 150-500 microns. Formation water spray occurs through the use of special nozzles. When passing through such a high-speed jet nozzle under high pressure takes its crushing into separate drops of [1].

To a method of exposure water spray on fire it is cooling, heat radiation shielding and reduced oxygen concentration. So if it enters the area of fire to boil water. Due to the very high specific heat of vaporization – 2256 kJ / kg of water at boiling heat removal is efficient from the combustion zone, which can lead to a complete cessation of the combustion reaction. Furthermore, upon evaporation of water in the high temperature region formed by vapor which prevents gas exchange at the time of the combustion products with the ambient air, and also reduces the oxygen concentration near the combustion zone. Thus, the water Thus, the water, in addition to the cooling mechanism implements two extinguishing insulation and dilution.

Modular system water spra completely autonomous. Requires neither power nor additional water containers. An important feature is the actual harmlessness of water mist to humans. Therefore, in the near future, these systems should be widely disseminated [2].

The purpose of this paper is the experimental study of phase transformations of water droplets as they move in gaseous environments using modern methods of digital optical "tracer" visualization and high-speed video recording.

Cycle experience includes two series. In the first series of experiments were recorded videos sprayed operating the water entering the cylindrical channels with flames. In the second series of recorded images of droplets after passing the flame combustion zone. As a result, studies have provided a number of plots shown in Figures 1 and 2. According to the parameters that characterize the change in the size of water droplets moving through the high-temperature gas medium from the initial droplet size at different initial temperature of the liquid (Fig. 1), it was found that the growth of the initial water temperature of 10 degrees even able to increase the intensity of evaporation of the droplets.

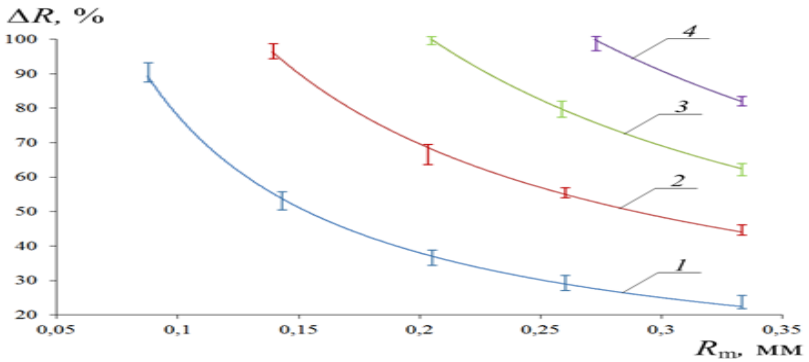

Fig. 1. Experimental dependence of the parameter Δ R from the initial droplet size Rm (1 – at Tw = 293 K, 2 – at Tw = 303 K, 3 – at Tw = 313 K, 4 – at Tw = 323 K)

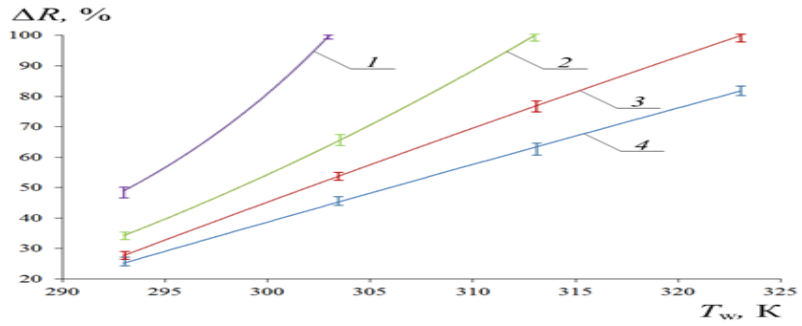

Fig. 2. Experimental dependence of the parameter Δ R on the initial temperature of a liquid spray Tw (1 – at 0,09 ≤ Rm <0,16 mm, 2 – at 0,16 ≤ Rm ≤ 0,23 mm, 3 – with 0,23 <Rm ≤ 0,3 mm, 4 – with 0,3 <Rm ≤ 0,4 mm)

Following are the parameters that characterize the change in the size of water droplets on the initial temperature of the liquid at different initial droplet size. In this case, it can be concluded that the water mist by reducing the evaporation time, increasing the heat transfer coefficient and absorption capacity with decreasing droplet diameter is more suitable for extinguishing gruboraspylennaya than water. However, there is a limit in the amount of drops. This conclusion was obtained during the experimental study of the "braking" and entrainment of droplets by high-temperature gases. Figure 3 shows the set of video recordings of liquid droplets and the velocity field "at the inlet and outlet of the flame. Which can be seen that some of the particles caught in the flow of gases deviated from its trajectory and was blown apart. This phenomenon occurred because the drops have a very small diameter, which led to a reversal of drip flow and its subsequent entrainment gases. Drops optimum diameter to maintain the original direction of flow and reached the source of fire [3].

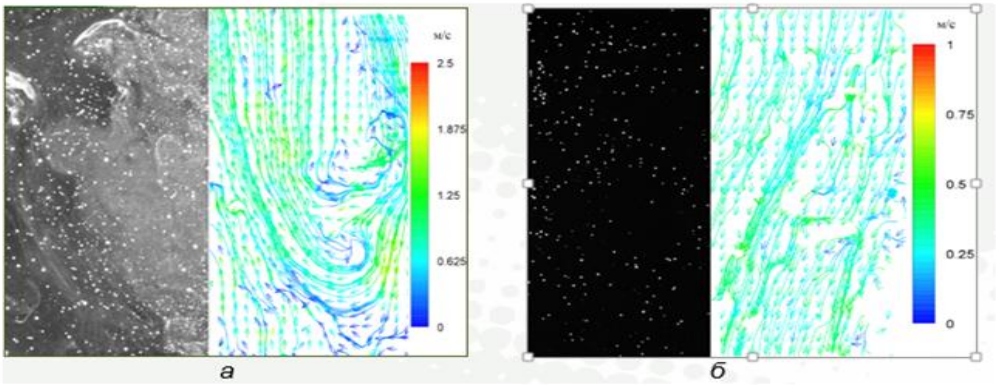

Fig. 3. Videograms combined liquid droplets and the velocity field "tracer" particle inlet (s) and the output (b) of the flame at the initial gas velocity Ug = 1 m / s and droplets Um = 1 m / s

Thus, at present and in the near future on the basis of fire extinguishing water mist is the most effective way to fight a fire if they are used in accordance with the results of research, namely the necessary spatial differentiation droplet size (relatively large drops should be placed around the perimeter stream of smaller drops) with the characteristics of the equipment.

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AUTOMATIC CONTROL SYSTEM VACUUM FURNACE STEAM BOILER DKVR-10-13 OOO "TOMSKNEFTEKHIM"

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The aim of the work – design of automatic control system in the vacuum furnace steam boiler DKVR-10-13 OOO "Tomskneftekhim".

The study conducted analysis and selection of the block diagram ACP vacuum automation hardware, development of functional diagram ACP calculation settings control device. Assessed the resource efficiency of the project.

At present, with the development of large energy facilities developed and small power. Located on the territory of enterprises producing industrial boilers provide process steam and heat. As a rule, boilers equipped with steam generators of low power. Such is the steam boiler DKVR-10-13 OOO "Tomskneftekhim" that runs on gas.

Steam generators series DKVR – this double-drum, vertical water-tube steam generators with natural circulation, intended for the production of saturated, superheated steam, which goes to the needs of industrial enterprises in the heating system in the ventilation system and hot water.