



FIRE EXTINGUISHING SYSTEMS

TUNGUS

POWDER

GAS

WATER SPRAY

"Istochnik Plus", CJSC
1 Socialisticheskaya St., Biysk, 659322,
Altay Region, Russia
Tel./fax: +7-3854-303364, 305830, 305859
svfire@yandex.ru, istochnik_plus@mail.ru

www.antifire.org



www.antifire.org

GENERATORS OF GAS FIRE EXTINGUISHING GGFE

Generators of gas fire extinguishing are purposed for automatical and autonomous suppression in volume of fire sites class A (solid substances), B (liquid substances), and E (electrical equipment under tension).

- 1) GGFE is a compact small-sized device which is allowed to install in any place of volume protected and in any orientation in space.
- 2) There's no need to make capital works, piping, complex valve system for GGFE launching and gaseous substance supply into protected volume.
- 3) There is no pressure inside GGFE frame during its service in the object, therefore there's no need of continuous control of gaseous firefighting substance leakage from a frame, as it is necessary in standard gas fire-extinguishing systems. GGFE itself is not exposed to supervision under Rostekhnadzor services.
- 4) Owing to double cleaning gaseous firefighting substance enters the volume protected with total lack of mechanical impurities.
- 5) GGFE cartridge is actuated from electrical impulse of low power.
- 6) GGFE fixed operation life is 10 years without routine maintenance.
- 7) There is no kickback force during GGFE actuation therefore there's no need of special measures during device installation in the object.
- 8) The possibility of premises protection, the volume of which is higher than GGFE firefighting ability, by means of simultaneous launch of several GGFE devices (till 20 items inclusive) without any need of piping.
- 9) Gaseous firefighting substance does not have any bad effect on electronics workability; it is confirmed by internal full-scale testings.
- 10) The ability of GGFE application as an autonomous firefighting mean together with widely used, reasonably priced electronic launching units purposed for autonomous fire-extinguishing sets, electric launching parameters of which are not lower than the value of GGFE operating current.
- 11) Temperature operation range: -30...+50°C.

GGFE-1.0

Overall dimensions:

diameter – 106 mm,
height – 340 mm

Total weight, not more than – 5.5 kg.

Protected volume for extinguishing fire of A2 subclass, B class in premises with nonhermeticity parameter 0.044 m^{-1} – 1.0 m^3 ;
Protected volume for extinguishing fire of A2 subclass, B class in case of simultaneous launch of 20 GGFE items – 20.0 m^3



GGFE-3.0

Overall dimensions:

height – 110 mm,
length – 360 mm,
width – 240 mm

Total weight, not more than – 7.8 kg

Protected volume for extinguishing fire of A2 subclass, B class in premises with nonhermeticity parameter 0.044 m^{-1} – 3.0 m^3 ;
Protected volume for extinguishing fire of A2 subclass, B class in case of simultaneous launch of 20 GGFE items – 60.0 m^3



GGFE-7.0

Overall dimensions:

height – 315 mm,
length – 350 mm,
width – 302 mm

Total weight, not more than – 20 kg;

Protected volume for extinguishing fire of A2 subclass, B class in premises with nonhermeticity parameter 0.044 m^{-1} – 7.0 m^3 ;
Protected volume for extinguishing fire of A2 subclass, B class in case of simultaneous launch of 20 GGFE items – 140.0 m^3



AGFES

Automatical gas fire extinguishing set is designed

for suppression of fire sites class A (solid substances), B (liquid substances), and E (electrical equipment under tension).

Fire extinguishing is performed by volumetric method.

AGFES is an autonomous set of gas fire extinguishing on base of two generators of gas fire extinguishing GGFE-1.0, mounted inside 19" frame having a height of 2U.

The set is purposed for automatical detection and fire suppression by means of launching of two (one) GGFE-1.0 devices depending on the volume to be protected. AGFES is designed for fire protection of electrotechnical communication frames, floor-based or wall-based cabinets and other equipment providing a possibility of the set mounting inside it.

Temperature range of AGFES operation is from -30 to +50°C when relative humidity is not more than 90% (under 25°C).



WATER SPRAY FIRE EXTINGUISHING MODULES MUPTV-13.5-GZ-V MUPTV-13.5-GZ- ZH

Purpose

Modules are designed for localization and suppression of fires class A and electrical equipment under tension with voltage up to 1000 V.

Firefighting Substance

MUPTV-13.5-GZ-V - drinking water GOST R 51232-98, filling volume is 13.5 dm³.

MUPTV-13.5-GZ- ZH - firefighting liquid "PTZh-KD" TU 2149-002-69806886-2012, filling volume is 13.5 dm³

Temperature range of operation

MUPTV-13.5-GZ-V - from +5 to +50°C;

MUPTV-13.5-GZ-ZH - from -10 to +50°C.

MUPTV Modifications

MUPTV devices have the following constructive makings:

- With different frame overall dimensions (two makings differ in height and diameter);
- For different heights of installation to provide fire protection: from 2.5 to 4 m, and from 4 to 6 m.



Besides MUPTV can be supplied with electronic launching unit with which MUPTV acquires a status of autonomous modular set, providing automatically functions of fire detection and suppression without usage of external power supply units and control systems.

Examples of designation: MUPTV(S)-13.5-GZ-V, MUPTV(S)-13.5-GZ-ZH

FIREFIGHTING ABILITY OF MUPTV MODIFICATIONS

MUPTV Designation	Height of installation (H), m	Diameter of zone protected, m	Square to be protected, m ²
MUPTV-13.5-GZ-V	from 2.5 to 4	5.4	22.9
	from 4 to 6	5.6	24.6
MUPTV-13.5-GZ-ZH	from 2.5 to 4	5.8	26.4
	from 4 to 6	6.2	30.2

POWDER FIRE EXTINGUISHING MODULES MPP

The modules are purposed for automatical and autonomous fire-extinguishing of fire sites of A (solid substances), B (liquid substances), C (gaseous substances) and E (electrical equipment under tension without taking into account the value of firefighting powder discharge voltage) classes.

- The modules are produced in standard, thermal-resistant, explosion-proof modifications.
- They are launched to work from electrical signal of low power with 120-200 mA starting current; therefore the modules have rather simple construction and reasonable prices.
- The modules have stationary, portable and relocatable, with manual launch, versions.
- High efficiency of the modules is provided because of high firefighting ability of powder and considerable intensity of powder supply into a fire site.
- There is no excess pressure during the operation and storage. Therefore the modules are safe and do not require any technical maintenance.

TUNGUS-0.65



Firefighting powder mass – 0.5 kg.

Protected area, up to:

- A class – 1.2 m²;
- B class – 1.2 m².

Protected volume, up to:

- A class – 2.4 m³;
- B class – 1.2 m³.

Features: the possibility of module mounting at any angle.

TUNGUS-2



Firefighting powder mass – 1.9 kg.

Protected area, up to:

- A class – 25 m²;
- B class – 10 m².

Protected volume, up to:

- A class – 38 m³;
- B class – 13 m³.

The height of installation is from 1 to 4 m

Features: the possibility of module mounting at any angle.

TUNGUS-2.7



Firefighting powder mass – 2.7 kg.
Protected area, up to:
- A class – 32.5 m²;
- B class – 14 m².
Protected volume, up to:
- A class – 65 m³;
- B class – 18 m³.
The height of installation is from 1 to 4 m.

Features: the possibility of module mounting at any angle.

ТУНГУС - 4



Firefighting powder mass – 4 kg.
Protected area, up to:
- A class – 40 m²;
- B class – 18 m².
Protected volume, up to:
- A class – 100 m³;
- B class – 27 m³.
The height of installation is from 2 to 9 m.

Features: the compact module size affords its mounting behind the hung ceiling.

TUNGUS-5



Firefighting powder mass – 4.4 kg.
Protected area, up to:
- A class – 78 m²;
- B class – 31 m².
Protected volume, up to:
- A class – 100 m³;
- B class – 40 m³.

Features: the possibility of module mounting at any angle; firefighting powder emission is carried out through annular slot.

PORTABLE MODULE WITH MANUAL LAUNCH

TUNGUS-5R

Portable into a fire site the firefighting device TUNGUS-5R with manual launch and unbreakable frame is an efficient mean for fire defense before fire brigades arriving to the fire-place.



TUNGUS-6



Firefighting powder mass – 6 kg.
Protected area, up to:
- A class – 50 m²;
- B class – 27 m².
Protected volume, up to:
- A class – 150 m³;
- B class – 40 m³.
The height of installation is from 2 to 9 m.

TUNGUS-9



Firefighting powder mass – 8.6 kg.
Protected area, up to:
- A class – 72 m²;
- B class – 33 m².
Protected volume, up to:
- A class – 216 m³;
- B class – 54 m³.
The height of installation is from 2 to 13 m.

TUNGUS-10



Firefighting powder mass – 9.5 kg.
Protected area, up to:
- A class – 36 m²;
- B class – 18 m².
Protected volume, up to:
- A class – 216 m³;
- B class – 75 m³.
The height of powder jet is up to 15 m.

Features: floor-standing version; vertical upward powder emission; there is no need to attach it to the floor.

TUNGUS-10st



Firefighting powder mass – 9.5 kg.
Protected area, up to:
- A class – 80 m²;
- B class – 36 m².
Protected volume, up to:
- A class – 240 m³;
- B class – 60 m³.

The height of installation is from 2.5 to 16 m.
Features: changeable value of powder emission angle.

TUNGUS-24



Firefighting powder mass – 22 kg.
Protected area, up to:
- A class – 75 m²;
- B class – 58 m².
Protected volume, up to:
- A class – 250 m³;

The efficient distance of fire site extinguishing:
in cable channel – up to 32 m;
onto the open square – up to 21 m.

AUTONOMOUS MODULAR MEANS

TUNGUS-2.7S TUNGUS-4S TUNGUS-6S



On base of modules of common usage (MPP “Tungus-2.7”, “Tungus-4”, “Tungus-6”) principally new devices MPP “Tungus-2.7S”, “Tungus-4S”, “Tungus-6S” with functions of automatical detecting and extinguishing of fires independently from external power sources and control systems. In comparison with combined autonomous modular sets, they have the following decisive advantages expanding the field of their application:

- Autonomous modular device has been certified as a single product that eliminates the difficulties of its introduction in fire protection projects;
- The device is equipped with thermal sensors of fire detecting, and has high speed of response. The time from fire origin to MPP launch is not more than 1 min;
- Autonomous modular device allows providing necessary integrity control of power source and MPP launching circuit;
- The modular device fixed service life is 10 years without carrying out special maintenance works.

POWDER FIRE EXTINGUISHING MODULES OF TRANSPORT MODIFICATION

Field of application - complete mobile product groups of mechanical execution M26 and M31 according to GOST 30631-99 (motor, hydraulic, pump and luggage compartments of vehicles, heavy-duty and road transport vehicles, rail diesel generators, motor cars, locomotives and other motorized vehicles, trailers and etc.).

TUNGUS-2.7(AT)



Firefighting powder mass – 2.7 kg.
Protected volume for fires class A, B, C, E: 13.5 m³;
Temperature range of operation is from -60 to +125°C.
Service life is not more than 5 years.

TUNGUS-10st(AT)



Firefighting powder mass – 9.5 kg.
Protected volume for fires class A, B, C, E:
- Without piping - 54 m³;
- With piping - 27 m³.
Maximal length of piping is 5 m.

Temperature range of operation is from -60 to +125°C.
Service life is not more than 5 years.

TUNGUS-24(AT)



Firefighting powder mass – 22 kg.
Protected volume for fires class A, B, C, E:
- Without piping - 108 m³;
- With piping - 48 m³.

Maximal length of piping is 9 m.
Temperature range of operation is from -60 to +125°C.
Service life is not more than 5 years.

USPAA-1 v4 USPAA-1 v4 fire detector "Pulsar"

TUNGUS-9S2 TUNGUS-6S2 TUNGUS-10S1



Any module from "Tungus" model range can be supplied with signal-and-triggering device type USPAA-1 v4.

MPP "Tungus" in kitting-up with signal-and-triggering device of USPAA-1, USP-101 and "Pulsar" types are autonomous fire extinguishing minutes.

Signal-and-triggering device USPAA-1 v4, in contrast to its analogs with one-channel system of fire detecting, has both optical and heat channels of fire detecting. It provides high operating speed, reliability and eliminates false triggering.

USPAA-1 v4 main features

Response time not more than 20 sec;
Maximal space viewing angle 120°;
Distance of fire site detection - 6 m;
The device is a product of multiple usage;
Service life is not less than 10 years;
Temperature operation range from -40 to +50°C;
Sustained to exposure of temperatures from -50 to +75°C.

Operation Principle of Autonomous "Tungus" modules

When temperature change detecting in the object protected, which is typical for fire origin, USPAA-1 v4 activates an optical control channel, sorts out low-frequency spectral components rates of infrared light oscillation, compares data obtained with preliminary recorded in its memory prior image data and classifies the lever of fire hazard.

In case of fire detection in the object protected (if temperature rises higher than 62°C or an open fire site appears in premises) the device generates a "Fire" signal (intermittent sound and light signals) and with 5 sec (or 30 sec) delay it generates a signal "Launch".

In standby mode with time interval of 2 min an automatical check of module workability is performed.

MPP ADVANTAGES

- MPP are of fast action. Equipped with fire detector they provide detecting and extinguishing of fire sites during the first few seconds from the moment of fire origin;

- Provide extinguishing of fire sites both in enclosed spaces and onto the open areas;

- Have wide thermal range of operation from -60 to +125°C, therefore they can be used in all climatic zones particularly in areas of the Extreme North and in objects with increased thermal range of manufacturing;

- Have ceiling-mounted, wall-mounted and floor-mounted modifications. MPP provide firefighting powder emission in any direction. Thereby there are no shadow zones during modules usage and at the expense of this the reliability of fire-extinguishing increases for premises with complicated geometry. By means of kitting-up of fire-protection system with necessary amount and nomenclature of modules a fire protection is provided for any kind of objects of any destination and geometry: from electrical control units with volume less than 1 m³ to storage rooms with volume of hundreds of cubic meters and height up to 16 m;

- Have long operation life and secure no-failure operation during 10 years without any maintenance;

- Are the devices of multiple usage and can be recharged at any fire-extinguishers service stations;

- Have reasonable prices available for mass consumer;

- Are chemically neutral, don't make any damage for environment, don't contain any toxic substances in their structure and can be used practically in each objects;

- There is no pressure inside the modules during their maintenance. The pressure generates only after starting signal injecting to the module. So the modules are safe during their storage and operation.

- Powder fire-extinguishing modules "Tungus" are certified by Research Institute of fire protection and Russian certification body in electric-power industry "Ensertiko". There is permission of Rostekhnadzor and RZD, OJSC, for their usage in fire-hazardous and explosive objects of oil-refining industry, petrochemical industry, collieries, mines and mine workings. There are sanitary-and-epidemiologic findings confirming their safety for people and environment.

VOLLEY FIRE EXTINGUISHING SET

TUNGUSKA



The set is designed for fire protection of remote objects of high risk and settlements located out of normative time zone of fire brigades arrival. Particularly the objects can include large industrial enterprises, military and civilian bases, and also fighting against ground forest fires. The set consists of 9 pc. of MPP “Tungus-24” of impulse action mounted on a cartridge.

The set is installed on off-road vehicles - motor cars, tractor trolleys, bulldozers. The amount of sets on a vehicle is determined by its dimensions. Aiming to a fire site is performed by means of mechanical rotation of a cartridge and a vehicle maneuvering.

There is no need to carry out preparatory works for the set launching: modules actuation is performed by a driver directly from a cabin.

Each module provides suppression of fire site on area up to 75 m² with efficient distance of powder emission up to 20 m. The system enables fire sites extinguishing by means of single shots with periodicity not less than 10 sec.

The preparation for departure for a fire site doesn't take any additional time for a vehicle equipped with “TUNGUSKA” set in comparison with other vehicles. Modules replacement is performed during a few minutes. High efficiency of the set is achieved owing to a possibility of its prompt actuation before fire brigades arrival and low costs for its application.

COMBINED SYSTEM OF GAS-AND-WATER POWDER FIRE EXTINGUISHING

GAWPFEV



“Istochnik Plus”, CJSC, in common with specialists from NK “Rosneft”, OJSC, has designed a new combined method of gas-and-water powder fire extinguishing for oil wells.

This method is based on simultaneous supply to a fire site of gas-and-water jet by means of gas-and-water fire-extinguishing vehicle GAWFEV-150, and firefighting powder charge emission in impulse mode by means of MPP “Tungus-24”.

Full-scale tests of combined fire extinguishing system developed on a polygon of “Pravdinskoe” oil deposit own by “RN-Yuganskneftegaz”, LLC, have approved high efficiency of actual oil gushers fire extinguishing.

According to the technical evaluation and full-scale tests results this new firefighting device increases the probability of fire extinguishing of gas, oil-and-gas and oil well gushers with production rate limit increased by 60% approximately. As an example GAWFEV-150 equipped with 4 items of MPP Tungus-24 can provide extinguishing of a compact vertical oil gusher with flow rate up to 7.0. At the same time the reliability of fire extinguishing of weak and medium in flow rate oil gushers is raised considerably.

The method developed has been implemented in NK “Rosneft”, OJSC.

FIREFIGHTING SYSTEM **TROPA-3**



A mobile set on base of transport complex Tropa-3 with application of MPP "Tungus-24" has been developed in common with "Reductor", LLC.

The set is purposed for extinguishing fires without direct human involvement in life-threatening and difficult of access objects.

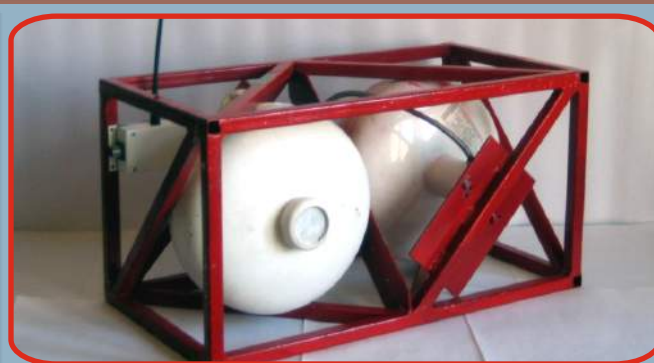
The set is equipped with apparatus of motion and modules actuation remote control.

A video camera set with 360° viewing angle allows the operator to estimate a critical situation and eliminate a fire site promptly.



FIRE SPREADING SLOWDOWN SET

FSSS



Autonomous and automatic fire spreading slowdown sets (FSSS) ZN126, ZN126-1, ZN126-2 have been developed on base of MPP "Tungus" by "Granit-Center", LLC, for fire protection of ammunition depots. These devices have been included in catalogue of supplies of Russian military forces.

Governmental testings have approved their high efficiency when ground fire extinguishing next to and under stacks (diesel fuel burning) in automatical and autonomous mode without external power supply. The efficiency is reached owing to intensive blow of gas-and-powder jet through vertical and horizontal chinks between boxes and in the whole stack volume by means of MPP "Tungus".

FSSS are implemented in wide range of objects of Ministry of Defense in Siberian and Ural federal districts.

