MOBILE AND STATIONARY TRAINING FACILITIES AND RANGES

PTS 'GROT' Training Facility

The PTS "GROT" Mobile Training Gallery is intended for training firefighting and rescue services to use personal protective equipment (breathing apparatus) under conditions, simulating a smoked up ambient atmosphere, fire and other emergency situations. PTS "GROT" allows the trainees to improve their skills:

- in orientating in smoked up premises (atmosphere unsuitable for breathing);
- in withstanding hard ambient conditions during firefighting activities and rescue operations (noise, confined spaces, etc.);
- in carrying out prospecting operations (find and get an injured person out from a smoked up premises) and other missions.

The PTS "GROT" shall be in use in steady-state conditions only.

The mobile training gallery PTS "GROT" is based on a trailer and comprises:

- the orientation module (including the roof of the trailer - an additional training area);
- the exercise room;
- the control room (equipped with the first aid set).

The Exercise Room. During the training, a blood pressure and pulse of each participant is supervised by the Cardio Control System (CCS). The information can be displayed and saved on a computer, allowing to track behaviour and adaptation of every trainee.

The room temperature is set within the range of +20... 40°C (± 2°C) from the control room.

The exercise room can be fitted out with all kinds of training equipment (each is continuously controlled and monitored from the control room):

- horizontal treadmill;
- ergometer;
- endless ladder, etc.

To monitor the exercises, there is a watch window (by

the size 1x1m) in the wall separating the exercise room from the control room.

The obligatory condition of exercises is the strict observance of periodicity and sequence.

The Orientation Module. The aim of the orientation module is a formation of psychological readiness of trainees for actions in extreme situations. During trainings, they improve their professional skills, study to apply correctly their knowledge in practice.

Trainings are as much as possible approached to real conditions of firefighting and rescue work which includes danger, risk, long maximal physical and emotional loadings. All this allows to achieve from trainees a full pressure, mental faculties and will.

The orientation module is equipped with:

- labyrinth (path orientation);
- smoke generator;
- communication system;
- video monitoring and a path-tracking (tracing) system;
- special audio effect system;
- ventilation system.

The labyrinth is designed in three levels, allowing to creep, walk and climb. The following imitating objects are applied to carry out trainings in a labyrinth:

- hatches and narrow manholes of various configurations;
- an inclined site with gradually varying height;
- automatic self-closing "doors & windows" (operate from the control room);
- inclined and vertical ladders;

- a pipe for movement through;
- a dummy.

The labyrinth has three entries-exits which are used for various routes of movement. A special installed smoke generator is used to create a smoke. A smoke does not cause a poisoning or burns in case of the user's presence without respiratory protection inside the labyrinth.

The monitoring of training and site is carried out by video surveillance and path-tracing systems from the control room. The display indicates the exact position of each firefighter inside the labyrinth.

The instructor is able to issue verbal instructions and to receive reply by the communication system. The special audio effect system creates an additional psychological loading on trainees, allowing to simulate:

- construction collapse;
- explosions; noise leaving the pipeline under pressure of gas;
- shouts of "victim", etc.

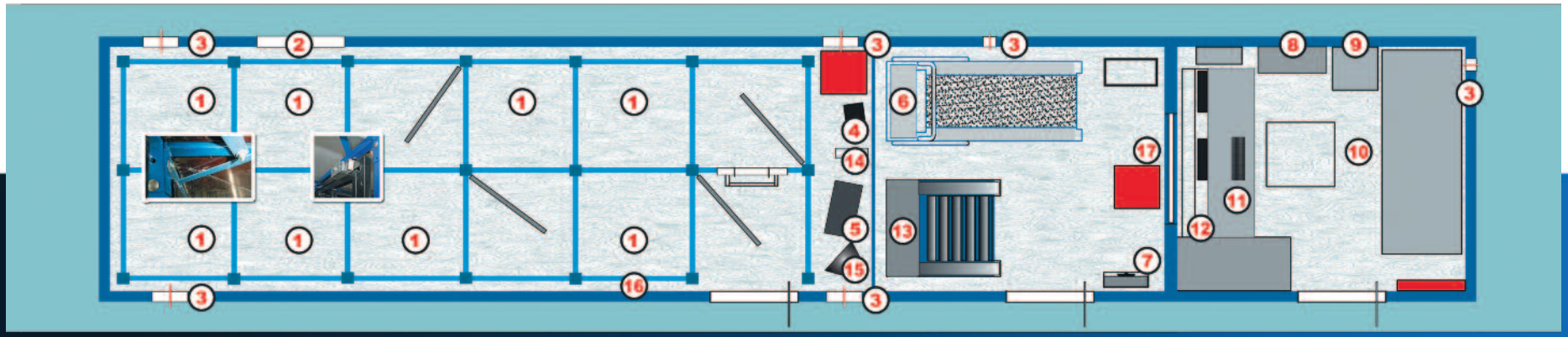
The forced-air and exhaust ventilation system is used to remove a smoke from the orientation module.

The Control Room. The control room enables the instructor to monitor the training, to conduct the trainees through the labyrinth, to issue verbal instructions and to receive reply by communication system, etc. The training can be video recorded for further analysis.

The control room is also equipped with the first aid set. In an emergency, the instructor is able to shut down all special effects, activate ventilation to clear up the smoke, turn the lights up, open the doors.

PTS 'GROT' Smoke and Heat Training Facility

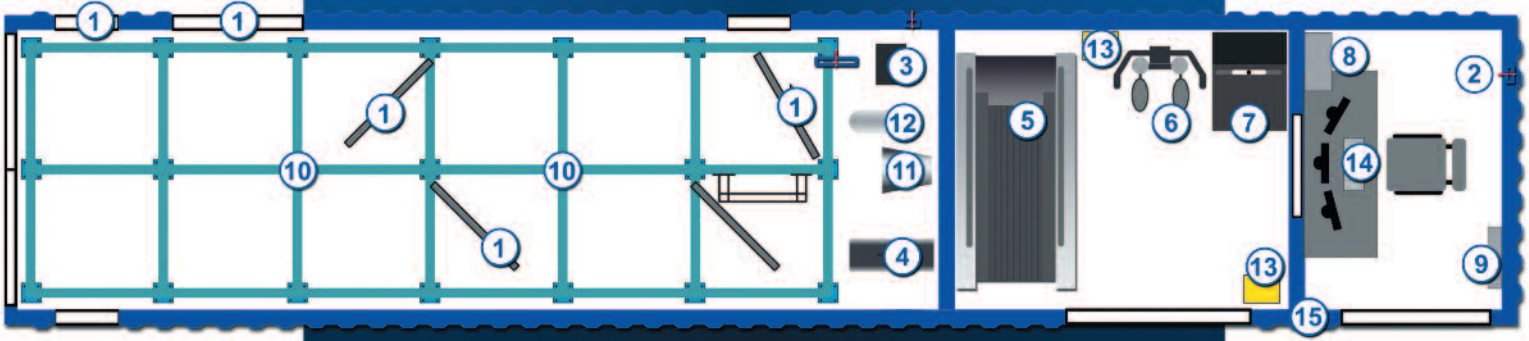
1 'Labirint' Smoke chamber
2 Hatch
3 Ventilator
4 Strobo-scope
5 Smoke generator
6 'Treadmill' training equipment
7 'Power ergometer' training equipment
8 Distribution board
9 Wardrobe
10 Medical supervi-sion station



17 Outdoor lighting (mobile)
16 Outdoor speaker and external sur-veillance (mobile)
15 Speaker box
14 Thermal camera
13 'Endless lad-der' training equipment
12 Heat pump
11 Control panel

PTS 'Grot' Scheme of stationary smoke and heat training facility

Hatches | Ventilator | Stroboscope | Smoke generator | 'Treadmill' training equipment | 'Stair stepper' training equipment | 'Power ergometer' training equipment | Distribution board | Heater



Labyrinth | Speaker box & Loudspeaker | Thermal camera | Thermal camera | Heat pump | Control panel | Container

PTS ‘LAVA’ - mobile gas-fired training simulator

This mobile gas-fired training simulator has been designed to prepare all kind of professionals who engaged in firefighting and rescue activities for dealing with real-life fire operations in hazardous areas and emergency situations while assuring the highest safety standards.

PTS «LAVA» enables to teach trainees how to assess the risks posed by different types of fire and how to tackle the fire itself.

The simulator helps to improve the professional skills such as:

- orientating in smoked up premises;
- withstanding hard ambient conditions during firefighting activities and rescue operations (noise, confined spaces, etc.);
- carrying out prospecting operations (find and get an injured person out from a smoked up premises) and others.

It also provides a range of entry options to enable various realistic scenarios to be simulated, for example, go downstairs from a roof, climb through a hatch or fight the fire from outside through the doors.

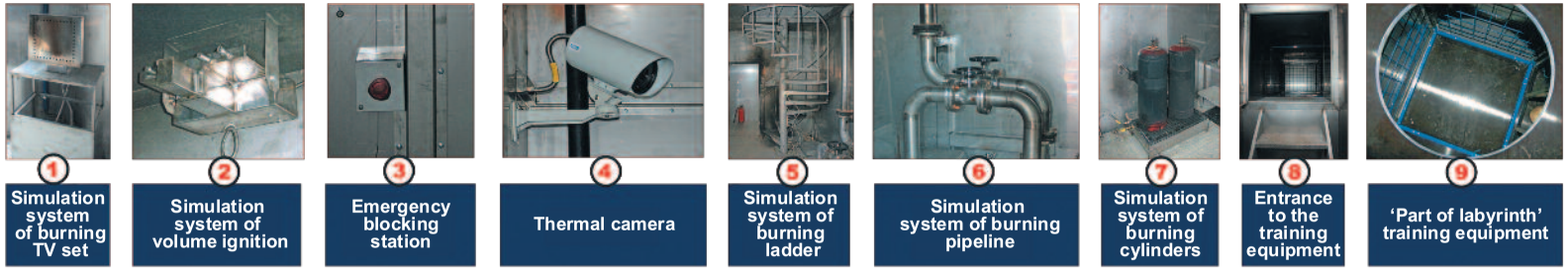
PTS «LAVA» is based on a trailer and comprises:

- three exercise rooms: orientation area, industrial zone, residential area, of which last two are fire rooms,
- a passageway between fire rooms for additional training options
- the roof of the trailer as an additional training area,
- and the control room.

The Orientation area also known as ‘the labyrinth’ allows to build up psychological readiness of

trainees to withstand real-life scenarios such as poor visibility and enclosed space.
The labyrinth consists of sections, hatches and narrow manholes of various configurations.
The Industrial zone provides a practice of fire extinguishing in an efficient manner at the industrial projects. It features three fire seats: “Gas bottle fire”, “Flange fire”, “Spiral staircase fire” as well as an electric switchboard cabinet to simulate switching off the mains supply, a water-supply with fire-cock and a smoke tender unit.
The Residential area allows simulate many different scenarios to give trainees the best possible real-life fire and rescue operations in living accommodation. This fire room including a passageway have three fire seats: “Bed Fire”,” TV Fire”,” Hot Fire Door” and a flashover simulator as well as a smoke extractor.
The control room enables the instructor to monitor and to control the training, to issue verbal instructions and to receive reply by the communication system. The training can be recorded by heat-resistant video cameras for further analysis. During the training, a blood pressure and pulse of each participant is also supervised by the Cardio Control System (CCS) from the control room. After training it is possible to define the used quantity of extinguishing agent which allows in real conditions to carry out fire extinguishing with minimal consumption.
In case of emergency, the training process can be stopped by pushing an emergency stop button either in the control room (by instructor) or in all three exercise rooms (by trainee). Th e training also stops automatically when gas concentration or temperature limiting values are exceeded. These important values are controlled by integrated sensors in all exercise rooms. When emergency alarm is activated the following procedure is triggered simultaneously and automatically: alarm sounds, lights turn on, all fire simulators and gas flow shut off completely and exhaust ventilation begins.

PTS ‘LAVA’ Scheme of mobile fire range



1 Simulation system of burning TV set

2 Simulation system of volume ignition

3 Emergency blocking station

4 Thermal camera

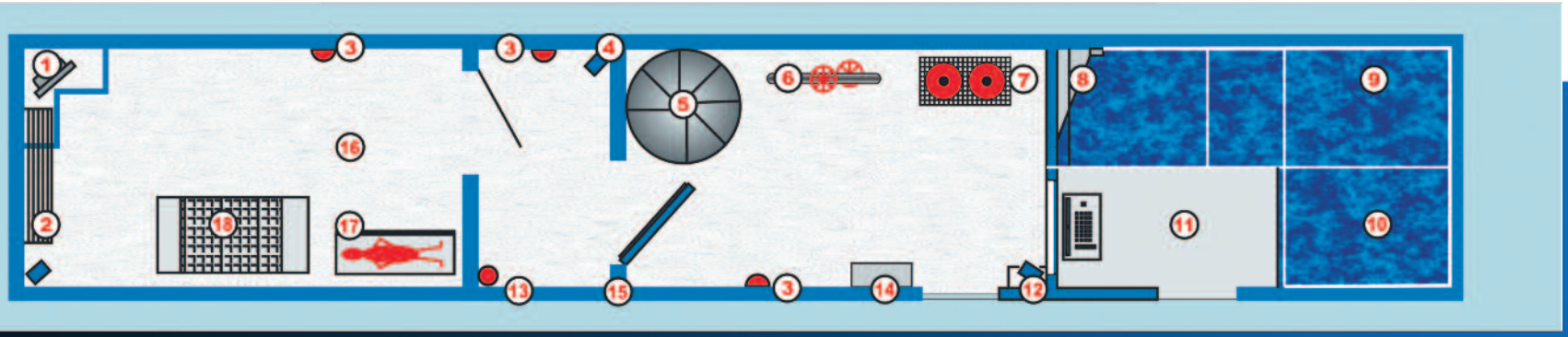
5 Simulation system of burning ladder

6 Simulation system of burning pipeline

7 Simulation system of burning cylinders

8 Entrance to the training equipment

9 ‘Part of labyrinth’ training equipment



18 Simulation system of burning bed

17 Cabinet simulator

16 Temperature sensor

15 Simulation system of burning door

14 Knife switch

3 Emergency lights and blocking

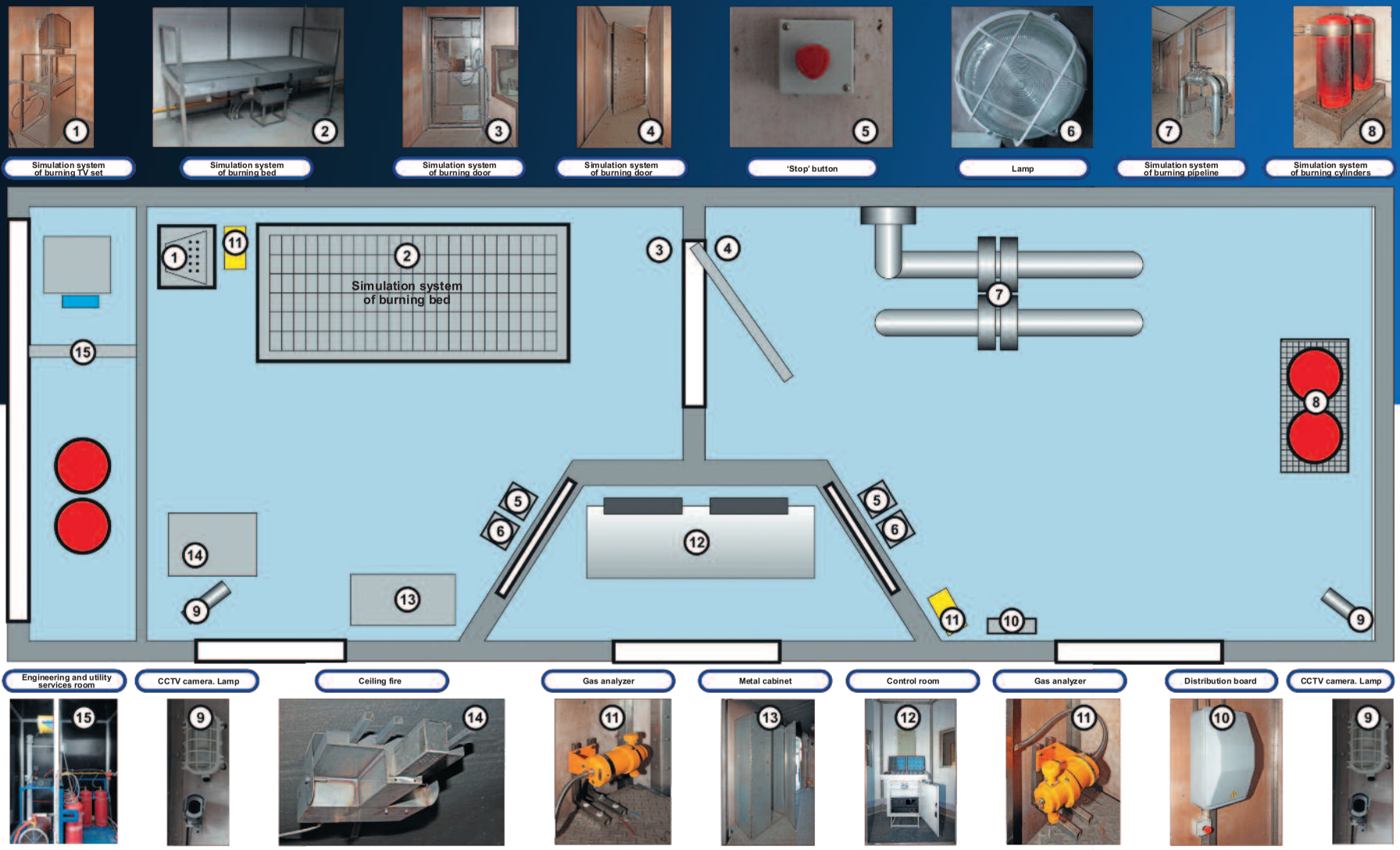
13 Fire extinguishers

12 Fire hose station

11 Control room

10 Simulation dummy for training ‘MITya’

PTS ‘LAVA’ Scheme of stationary fire range



“Fire-House”

“Fire-House” Automated Educational and Instructional Fire Facility (Fiery House) is designed for practical training of smoke divers (rescuers) to work with different types of personal protective equipment in a smoked up ambient atmosphere, being exposed to fire and high temperatures and practice firefighting tactics and rescuing people.

This is the end product that does not require any additional options and financial expenses, accordingly.

The complex includes 8 block-modules:

- Control module and medical supervision station
- Classroom
- “Industrial area” module.
- “Collector-cellar” module
- “Apartment and roof” module
- Heating module
- Pump room and wastewater treatment facilities
- Gas storage facility.

“UTMK” Educational and Training Simulating Facility

“UTMK” Educational and Training Simulating Facility is designed to develop skills of using new facilities and firefighting technologies, as well as to train firefighters to work in extremely severe and aggressive conditions.

The facility consists of:

- control block-module, consisting of the console compartment with a classroom for constant monitoring of the training progress, maintenance of voice communication, as well as management of all systems and equipment industry;
- technical systems block-module, consisting of the heating systems and water supply compartment and flammable substance storage and distribution compartment;
- orientation block-module for training firemen’s endurance and stamina in confined spaces and challenging obstacles;

- transportation of hazardous chemical substances block-module, intended for practical training of firefighters to work with hazardous chemical substances using leakage simulators;
- transport emergency containment block-module, consisting of two simulators: railway tank and car tank simulators.

- fire block-module designed for practical training of fire fighters' to work with different types of personal protective equipment in a smoked up ambient atmosphere, being exposed to fire and high temperatures and practice firefighting tactics;
- chlorine emergency containment block-module, which allows to simulate several typical chlorine emergencies;
- refrigeration unit emergency containment block-module, a model of the manufacturing room with equipment, which allows to simulate several typical accidents dealing with gas and liquid freon leaks;

PTS “UGOLEK” Training Fire Facility

This facility is designed for firefighters and rescuers to have training exercises under the conditions of fire hazards (smoke, heat, open flame, heat radiation), which are simulated by burning solid fuel in the furnace.

The design of the fire facility allows for conducting exercises under reproducible and controllable conditions, their safety ensured by the means of controlling gas flow in a complex with the help of extinguishing agents.

PTS “Ugolek” (Ember) is mounted inside shipping containers; it includes training, technical and console compartments.

PTS “PROMETEY” Mobile Training Fire Facility

PTS “Prometey” (Prometheus) is a mobile facility (fire bath) of modular design, which can be equipped with different fire-simulating modules, depending on the training requirements.

Various scenarios of fires are simulated by burning propane under constant supervision.

PTS “Prometey” is designed to develop skills of using fire extinguishers before the arrival of fire brigade.

Modes of module control: manual or automatic.

Main Features:

- mobility and ease of use;
- environmentally friendly owing to the use of propane gas;
- can be deployed almost anywhere;
- has different fire simulation scenarios;
- is used with all types of hand-held extinguishers, from compressed air foam to powder and carbon dioxide ones;
- easy to maintain due to modern modular design;
- requires low maintenance and training expenses.

Burning Oil

Monitor

Wastepaper Basket

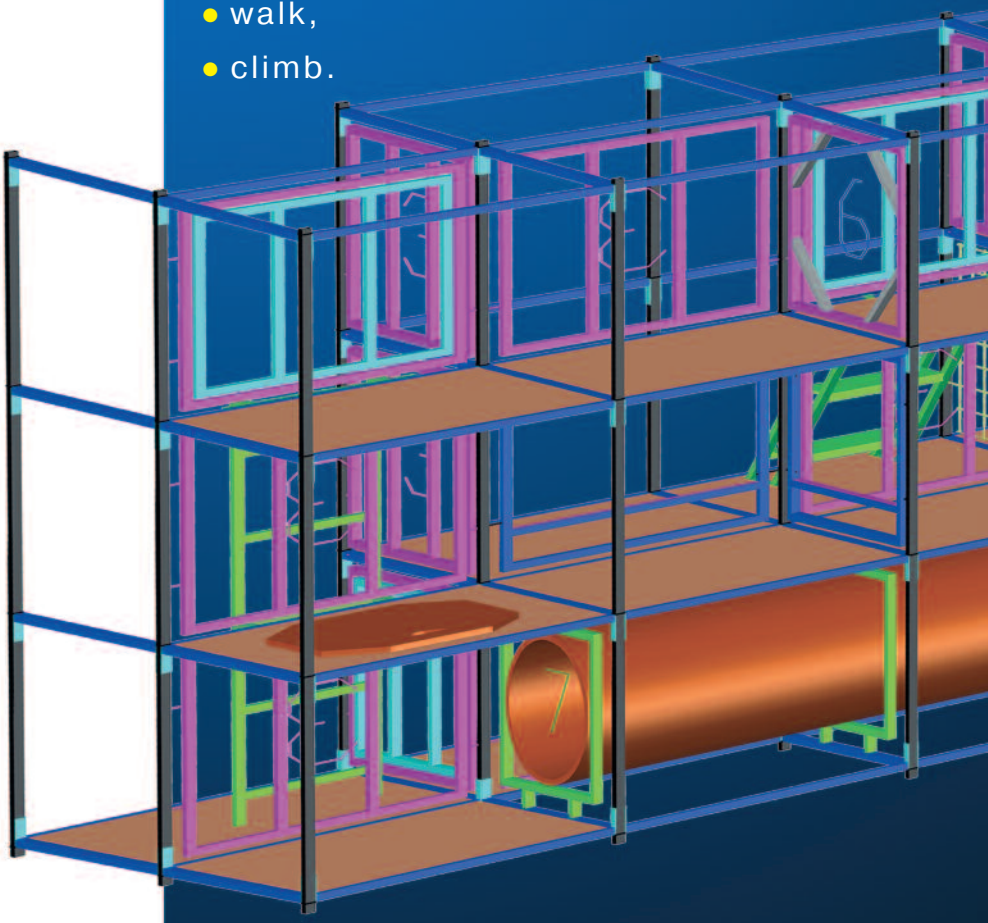
Electric Motor

Electricity Closet

Training Equipment for Training Facilities and Range

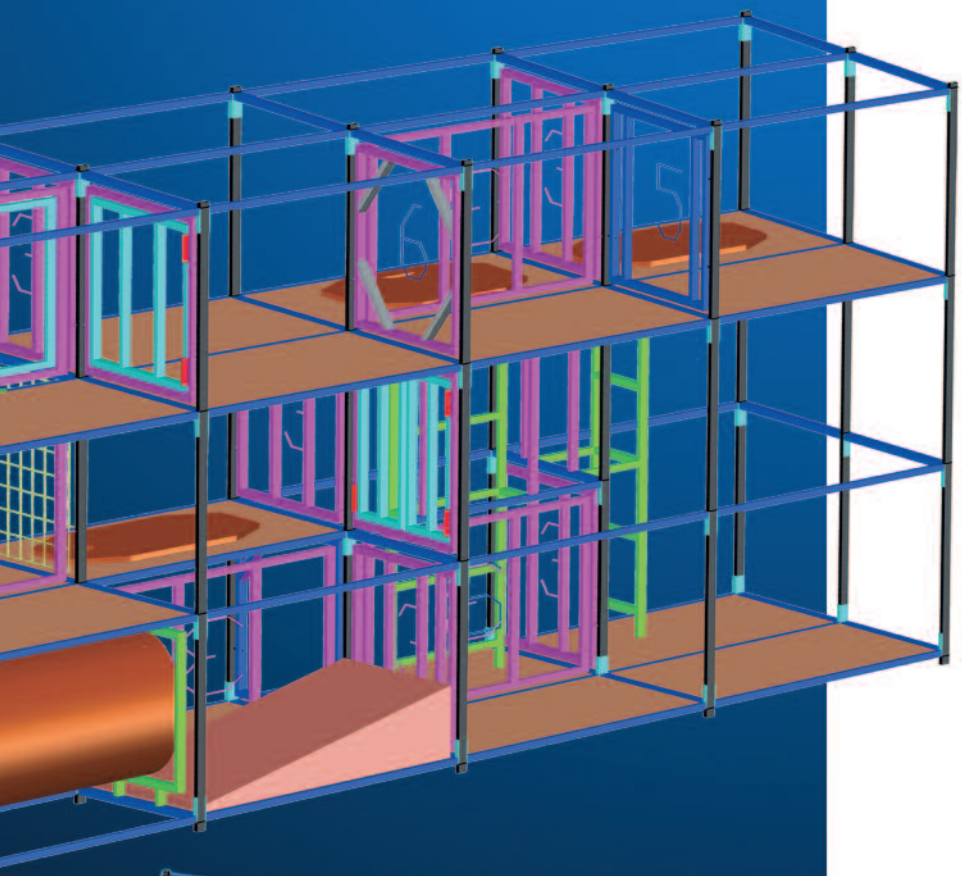
"Labirint" Orientation Training Equipment designed in three height levels allows you to:

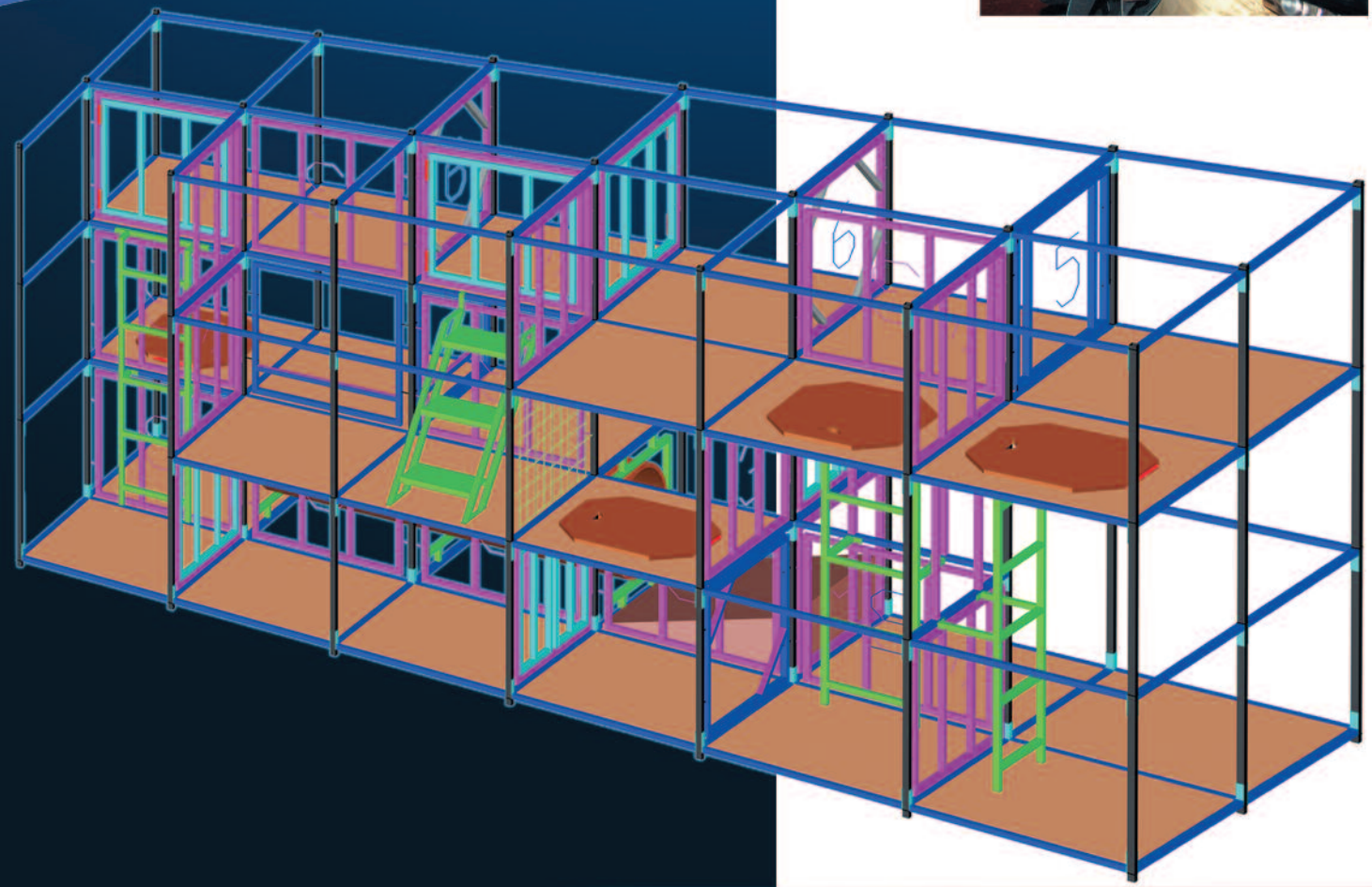
- crawl,
- walk,
- climb.



In order to try out certain exercises in the course of training the following simulation objects are applied in the labyrinth:

- hatches and narrow manholes of different configurations;
- slope areas with a gradually varying height;
- self-closing doors and windows (controlled from the operator panel);
- slope and vertical ladders;
- pipe for crawl passing;
- dummy.

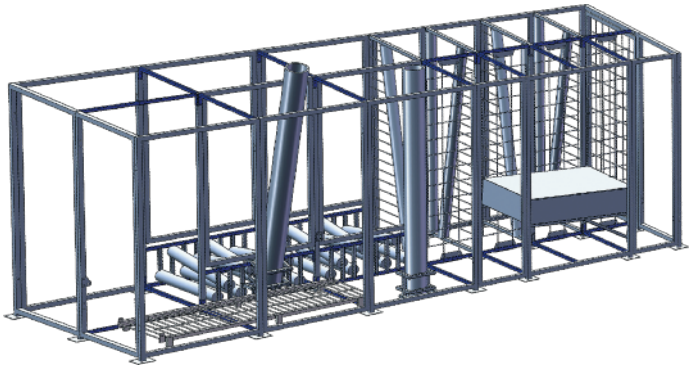




“Uzkyi Laz’” (Crawlway) **Simulation System** is a construction with a varying angle of joints’ slope, which ensures the effectiveness of the training process in accordance with modern requirements for training specialists.

Joints of the simulation systems:

- Vertical module with a ladder;
- Horizontal module;
- Sloping module with a ladder.



“Zavaly” (Debris) **Training Equipment** is represented by a range of obstacles that allows for practicing skills of orientation, passing crawlways and obstacles and rescuing a man using a special tool. Moreover, with the help of rocking floors and crashing of pipe segments included in the construction of this training equipment, firefighters develop their vestibular apparatus, agility, alertness and quick response.

Elements of the training equipment:

- crashing constructions;
- rocking floor;
- crawlways;
- simulation system of a crashed concrete floor panel;
- simulation system of a rough surface;
- simulation system of a locked metal door;
- simulation system of a metal lattice.

“Rezervuar” (Reservoir) **Training Equipment** is designed for preparing professionals to conduct rescue operations and save people from the tanks and special containers using respiratory protective equipment and special protective clothing.
The training equipment contains the following elements:

- three cupola-shaped elements with a window opening and two partitions;
- two hatches;
- two external ladders;
- two internal ladders;
- platform;
- handrail.

Size: 3707x2000x2690 mm

The training complex **PTS “Nautilus”** is designed for practicing skills in the use of technical means and elimination of consequences of accidents involving gas and liquid leaking rail tank cars and tank trucks.

Fire training modules

Burning Ladder Simulation System is a spiral ladder with handrails, consisting of 12 steps. Six lower steps are evenly spaced with fixed burners. Steps ignition happens consequently, in a certain period of time.

Flame intensity is regulated by the gas volume supplied to the burners.

In order to control fire extinguishing the simulation system is equipped with sensors

Burning Door Simulation System ("Burning Door") consists of a door frame, door and a handle. Burners are fixed in the door frame and the door.

If the door is closed, it is heated from the inside.

When the door is opened, it is ignited together with the door frame, simulating the effect of reverse thrust. When the door is closed, the flame goes out.

In order to control fire extinguishing the simulation system is equipped with sensors.

Burning Bed Simulation System (“Burning Bed”) consists of a steel net bed one hundred and sixty-by-ninety cm.

Fixed on a horizontal bed surface burners create a low flame that gradually increases and covers the entire surface of the bed.

The simulation system is equipped with sensors to control fire extinguishing.

Burning TV Set Simulation System (“Burning TV Set”) is represented by a monitor with fixed burners mounted on the nightstand.

The simulation system is equipped with sensors to control fire extinguishing.

Cableways Simulation System ("Burning Cable Tray") is designed for fire simulation in cableways and tunnels. It is made of heavily alloyed metal and fixed on a wall. Temperature sensors are fixed on the working floor.

Oil Spill Simulation System ("Fire Bath") is represented by a netted fire module with fixed burners producing flame over the surface and maintaining it on the given level of combustion.

Volume Ignition Simulation System ("Ceiling Fire") simulates the ignition of gas-air mixture and is located at the end of the living area.

Compared to other simulation systems this one has a stronger psychological impact on trainees and makes is possible to train the skills of extinguishing the similar combustion.

Roof Ignition Simulation System ("Burning Roof") is represented by a fire module at an angle. As a rule, it is installed on the roof of the training complex, aslope to the edge.

Burning Kitchen Entresol Simulation System ("Burning Kitchen") and Burning Stove Simulation System ("Burning Stove") are designed for practicing fire extinguishing in kitchens. As a rule, not only faulty gas stoves, electric kettles and fryers burn on their own, but they also ignite boxes and kitchen entresols located above them. The simulation system is represented by fire modules with fixed burners and temperature sensors.

“Zadvizhka” (Gate Valve) **Training Equipment** is designed for training specialists to conduct emergency and recovery operations in the petrochemical, chemical and gas enterprises, in the metallurgical industry and community facilities, as well as Russian Ministry of Emergency Situations divisions.

Burning Cylinders Simulation System (“Burning Cylinders”) consists of two vertical cylinders.

Both cylinders are heated from the bottom and inside.

In order to control fire extinguishing the simulation system is equipped with sensors.

Simulators general function

Endless Ladder training equipment is designed for practicing climbing stairs in the heat zone.

It is a general-purpose training machine that makes it possible for trainees to get controlled, predetermined and variable physical load, defined remotely from the operator panel.

Power Ergometer training equipment is designed so that trainees get traction load in the heat zone. It is a general-purpose training machine that makes it possible for trainees to get controlled, predetermined and variable physical load, defined remotely from the operator panel.

With the help of the rope roller, the training equipment provides for loading 25 kg clear of and on ground.

Treadmill training equipment is designed for walking (running) exercises in the heat zone. It is a general-purpose training machine that makes it possible for trainees to obtain controlled, predetermined and variable physical activity, defined remotely from the operator panel.

Traning simulation system

Burning Pipeline Simulation System ("Burning Pipelines") consists of two pipelines with clamping shoulders and stop valve:

Pipeline 1

bottom pipeline gas leak,

Pipeline 2

top gas pipeline leak

Fire is extinguished by turning the stop valve.

In order to control fire extinguishing the simulation system is equipped with sensors.

Gas Leak Simulation Training Equipment is designed for training specialists to eliminate leaks from gas pipe lines during emergency and recovery operations in the petrochemical, chemical and gas enterprises, in the metallurgical industry and community facilities, as well as the State Fire Service of Ministry of Emergency Situations of Russian Federation divisions.

The stand has no analogues in Russia, possesses a number of advantages and ensures the effectiveness of the training process in accordance with modern requirements for training specialists.

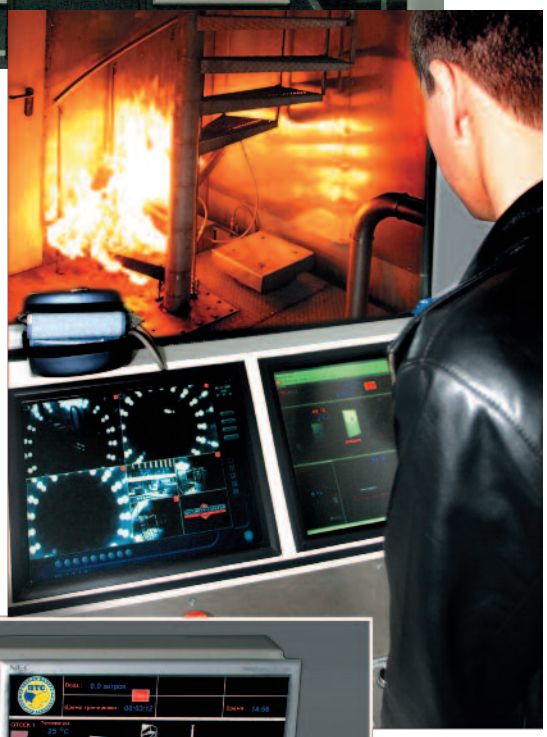
"MITya" Simulation Dummy for Training is designed for practicing search and rescue operations in the emergency area. In comparison with other popular analogues dummy possesses a number of advantages and ensures the effectiveness of the training process in accordance with modern requirements for training specialists.

Dummy weight is 50 kg.

Console Compartment

Console Compartment is a space for a chief instructor. There is a control panel designed for the complete control over the training process:

- training equipment and simulation systems control;
- video recording of training activities for their further analysis;
- constant control over physiological data (heart rate and blood pressure);
- console compartment also provides data on the amount of extinguishing material spent which is convenient for reducing costs on fire extinguishing.



In case of emergency, all data are transferred to the control board, causing fire alarm system to start out, which blocks operation of all special effects and training machines, disables feeding of gas to the fire simulation systems and involves the ventilation and lighting system in the training compartments.

Medical Supervision Station is designed for control of the trainees' physical condition and rapid delivery of pre-hospital medical care in case of emergency.

Health control station consists of a couch, first aid kits and a stand-poster on how to provide first aid.

Training Room is equipped with computers, visual aids and stands with information about self-contained breathing apparatus, rules on their usage and maintenance, methods of calculating work parameters in the unbreathable environment. It is designed for training and performance rating of smoke divers.