

# SAFER TOGETHER - BEST EUROPEAN PRACTICES IN THE FIELD OF TRAINING WHICH RANGE FIRE PROTECTION



Lifelong  
Learning  
Programme

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# Introduction

This publication has been arisen as a result of "Safer together – best European practices in the field of training which range fire protection" project. This project has been funded with support from the European Commission under the Lifelong Learning Programme. The material had been prepared together by the representatives of all institutions taking part in the project and contains chosen solutions used by Swedish, Dutch and Polish fire service units. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



# 1. Report of the Dutch delegation



## Introduction

This part is the contribution of the delegation of Zuid-Limburg to Poland and Sweden. We have learned a lot on several subject. A lot of things work in a similar way, but there are also a lot of things different from our own way when dealing with things. Sweden is like Holland very informal during a “cold” situation. Poland is more strict. For Poland this works fine, for Sweden and Holland this wouldn’t work.

### 1.1. Most interesting aspects from visit in Sweden (Uppsala) 13-17/10/2014

#### Participants

Leon Houben, Michel Zewald, Ger Bodelier, Loek Essers, Constance Jacobs, Lesly Loijens, Ron Peelen, Luc Valent, Roger Verdonk, Thei Weelen.

This group of 10, consisting of a mix of people from the management and from training and education, visited fire services in Stockholm, Uppsala and Järlaså.

## Reports and presentations

given by:	on:
Leon Houben	General introduction on Leonardo project
Luc Valent	Organization of the Swedish fire service
	Use of the Coldcutter (technical innovation)
	Visit to the Uppsala cathedral
Loek Essers	Visit to volunteer fire service Järlaså (Uppsala region)
Lesly Loijens	Fire safety in wooden town houses
	Fire prevention taught in schools
	Fire prevention enforced by law and regulations
Thei Weelen	Visit to fire brigade diving center in Stockholm
	Huge forest fire in Uppsala surroundings (2014)
	Visit to Vasa shipwreck
Constance Jacobs	Pro-activity and external safety
	Command and control
	Women with the fire service
Ger Bodelier	Firefighting in tunnels
	Training in tunnels
Roger Verdonk	Heavy Rescue training
Ron Peelen	Visit to Hazmat vehicles
	Attempts to prevent cancer among firemen
Michel Zewald	Training of professional fire fighters in Sweden

Comments and most interesting facts and findings on different topics:

### Organization of the Swedish fire service

The fire department of Sweden consists of professionals and volunteers. Volunteers are always on call service. This differs from Holland. By law people and companies are responsible for their own safety and are expected to behave this way. Because this and the distribution of population higher numbers of casualties are accepted.

### Use of the Coldcutter (technical innovation)

This could be a useful innovation for Holland. There has been some research on this topic, but at this moment it will not be implemented.

### **Fire safety in wooden town houses**

Legislation is very strict on this matter. The fire department has a lot of “force” to act, which is a good thing.

### **Fire prevention taught in schools**

This could be a very helpful method to maximize awareness and minimize casualties. Further investigations have to be done. The Dutch delegation is interested in this subject.

### **Fire prevention enforced by law and regulations**

The attendants are convinced that Fire Safety Engineering is the future!

### **Visit to fire brigade diving center in Stockholm**

Very different approach than in the Netherlands. Because of the size of the country there are much longer distances that have to be covered. This means more victims. This is accepted. Also divers are responsible for their own safety and not the government.

### **Huge forest fire in Uppsala surroundings (2014)**

Sweden has learned a lot from this incident and is making efforts to be better prepared for this kind of disasters.

### **Pro-activity and external safety**

Individuals are responsible for their own safety. People think in risks and scenarios and not in law and legislation. This is a good thing, which should be incorporated in the Dutch system.

### **Command and control**

From our point of view command and control is not as structured as it should be. On this topic Sweden could/should invest.

### **Women with the fire service**

Before more women can enter the fire department some things and thoughts have to be changed!

### **Firefighting and training in tunnels**

Sweden has a lot of tunnel and underground infra. Normally a sprinklers system is incorporated, but there is little knowledge about a real fire in a tunnel or underground parking space, because there haven't been a lot of incidents. It's important to practice every year and precautions must be taken to prevent blockage of the tunnel entrances.

### **Heavy Rescue training**

The use of materials is very similar to the materials that are used in the Netherlands. When handling accidents with busses, the colleagues in Sweden often use modern buses to practice on. In the Netherlands we have to work with old buses.

### **Visit to Hazmat vehicles and attempts to prevent cancer among firemen**

Materials are about the same as in our country. The distribution of the materials and procedures are a little bit different.

Because we learned about the dangers of smoke as a hazard for development of cancer and other diseases we are making new procedures to prevent contamination of people at our training facility. In 2016 our training center will have a "clean area" and a "contaminated area".

### **Training of professional fire fighters in Sweden**

The system differs from the system in the Netherlands because professional firefighters have a 2 year's course. After that they have to do an interview for a job and after that they are tested. The level of education is very high.

## 1.2. Most interesting aspects from visit to Poland, Krakow 20-24/04/2015

### Participants

Joost Botterweg, Michel Zewald, Guido Leenders, Jordi Rohs, Rene Boosten, Ger Kitzen, Jos Loijens, Jos Hanssen, Frank Vinken (9 persons)



### Mobile Indoor firefighting module

Interesting construction with a mobile facility for indoor firefighting heat exercises.

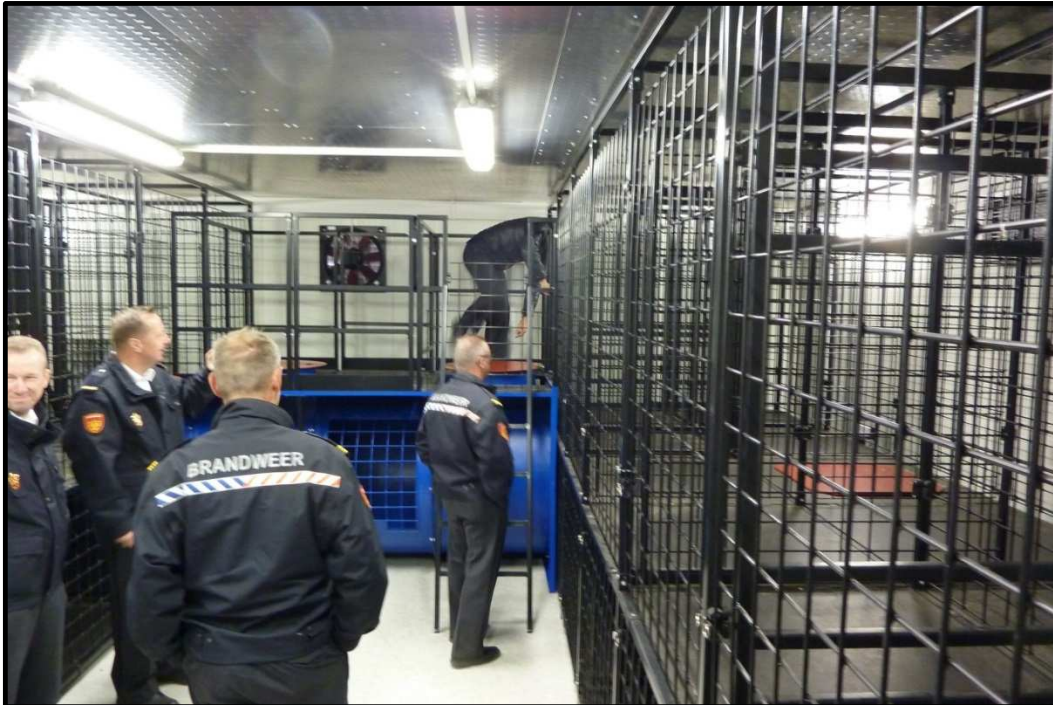
The unit runs with propane with possibilities to move the inside walls to create new challenges for the training fire fighter. This type of equipment could be useful for us to train our volunteer personnel in an easier way. However this unit will not be able to replace the traditional practices with extinguishing included to search and rescue training.





## Exercise facility

We have seen a new facility for exercises. A new facility was built, designed for different types of tests. At the moment we have a similar facility, but in time we will replace it by a new one. This exercise facility might be a good example.



## Preparedness for floods

During the winter of 1993 we had a major flood in Zuid-Limburg, with 12.000 evacuees and a damage of about €100.000.000. Our rescue service has been updated since then, but we lack the special equipment and heavy materials they have in Poland. We think we don't need this equipment anymore because we have deepened our river Maas. Though it would be a good idea to have an amphibious vehicle like they have in Poland.



## Heavy rescue

Holland has a lot of heavy equipment material at the different fire departments, but the materials aren't as big as they are in Poland. We use a lot of targeting hydraulic equipment and lifting cushions like they have in Sweden. If we need more "power" we just hire the equipment from commercial sources. We were therefore impressed by the materials they have in Poland, but at the same time we are concerned about the logistic nightmare of checking all the different kinds of vehicles.



## USAR

In Holland we have integrated the USAR within the rescue service just as they have in Poland. We have a lot of materials too, but if we have a big collapse or a big train accident, we need more help from commercial sources. We don't have special units like they have in Poland. Our government has chosen for this way of USAR and they will not change because we would need an extra service, which would be unaffordable. Though in some cases it would be very good to have a service like they have in Poland.



## Hazmat resource

Poland has a lot of chemical industries and has invested a lot in Hazmat. The materials and the procedures were impressive and differ from our procedures. In Zuid-Limburg we work closely with Sitech (a major but private company) if we have a big chemical incident or spill. Our own staff is leading and the fire department of Sitech is put under authority of this staff. We also do a lot of training together. For both parties it's a win-win situation. In some areas in Holland we have special units for chemical incidents. Some of the materials we don't have, but we have seen materials which could be very helpful, e.g. the hexacopter and the water hose screen. We are investigating the use of the hexacopter, but we have to await final legislation on this matter.



## 2. Report of the Swedish delegation



# Brandförsvaret

UPPSALA

### Introduction

This is the contribution including the most interesting aspects from Uppsala Fire brigades' point of view during our visits in Maastricht and Krakow. Delegations from us with different tasks depending on the program have experienced some interesting areas for development in our Fire service.

### 2.1. Most interesting aspects from visit in Suid Limburg

#### Participants

Patrik Kullman, Annika Brandelgård, Christer Byström, Per Nilsson, Anders Nilsson



### **Indoor training facility**

The training ground in Margraten is very flexible with a very big indoor hall for many types of exercises. This level of standard for the training site is very impressive and we wish we could have this type of facilities during the Swedish winter.



### **Virtual training studio**

This software is very well adapted to the needs of training command and control. The participant interacts in a very lifelike environment and is forced to decide in real time how to stop or minimize the damage in the accident. We find this studio very attractive and hopefully we will find the necessary resources to fund this type of equipment in our fire brigade as soon as possible.

### **MDT mobile command and decision support system based on iPad**

Brandweer Zuid Limburg has developed this very user friendly iPad system mostly with local resources. They use existing official software and add them to local developed software and the result is a lot of adequate information for the commander available in the iPad. We are very interested in this system and we brought one of our technicians to explore the system.

### **SITECH**

The visit on this huge site for chemical industries showed how smart it is to locate this type of production in a concentrated area. The Fire service on the site runs by the company Sitech and the fire personal is integrated with the overall safety and security system. This private fire service is connected to the public fire service by 112 and has a function as hazmat resource for the whole region. The fire personnel work all days as experts all over the site for example when some kind of equipment needs to be replaced or repaired. This means that they are very familiar with their equipment and also well aware of all the different risks on the site.

We believe that this way to run a specialized fire service is very effective and that the quality of the service they produce is very high.



### **Web based National examination program**

All Dutch fire fighters do the same national decided tests at least once a year included all commanders. We had the opportunity to get a glance in the system and we agreed that this is something we really miss in Sweden. The system guarantees that all personnel have basic knowledge in firefighting and commanding. Unfortunately we were not allowed to take photos or film this program. It would be a very good improvement if the authority in Sweden MSB could embrace this way of securing the quality in knowledge by the personnel.

## 2.2. Most interesting aspects from visit in Krakow

### Participants

Holger Petersén, Jonas Glaser, Lars Wahlgren, Christer Byström,  
Lars Bergström och Torbjörn Mattsson.



### Mobile Indoor firefighting module

Interesting construction with a mobile facility for indoor firefighting heat exercises

The unit runs with propane with possibilities to move the inside walls to create new challenges for the training fire fighter. This type of equipment could be useful for us to train our volunteer personnel in an easier way. However this unit will not be able to replace the traditional practices with extinguishing included to search and rescue training.



**Exercise facility**

A new facility is built designed for different types of tests. This new flexible facility is probably a model for us in the future.



**Preparedness for floods**

Here at home, we are spared from major floods and has thus not the degree of readiness of the local rescue services. In Poland, they have over the years had several major floods and after the experience of these after which built up an impressive capacity to manage these.





## Heavy rescue

In Sweden we have well developed methods for heavy rescue, targeting hydraulic equipment and lifting cushions. Some fire brigades in Sweden have cranes for heavy lifting but nothing beats this capacity we saw in Krakow. The reason these were in the fire service was because they performed different types of missions also outside the rescue service, which in Sweden are carried out by external companies.



## USAR

USAR is integrated with the rescue service. They build up broad expertise and united exercises become more efficient when the staff does not need to take time off from regular work to practice this elsewhere. In Sweden, the MSB is responsible for this type of resource, and it can also be used here by accidents in Sweden. Even the search dogs included this activity belongs to the emergency services. In Sweden, this business is driven by NGOs through MSBs without any connection to the emergency services.



**Hazmat resource**

In the region there were major chemical industries. Preparedness to cope with accidents involving dangerous substances was quite extensive with various types of resources. Below there is a powder tank and a decontamination station. The Hazmat station is located in the region where the industrial era was.



### 3. Report of the Polish delegation



## PAŃSTWOWA STRAŻ POŻARNA WOJEWÓDZTWO MAŁOPOLSKIE

#### 3.1. Most interesting aspects from visit in Sweden (Uppsala) 13-19/10/2014

During the visit to Uppsala and Stockholm, we have seen a number of interesting solutions in various planes of functioning (operational, technical, organizational and hardware) the local fire protection units. Considering them by the prism of Polish realities must always remember such things as the Swedish mentality, economic conditions, or the legal system. Unfortunately, for these reasons, many of these solutions we are not able to apply in our country. However, we believe that some of them can be implemented in our mountain rescue units and that these issues drawn our particular attention.

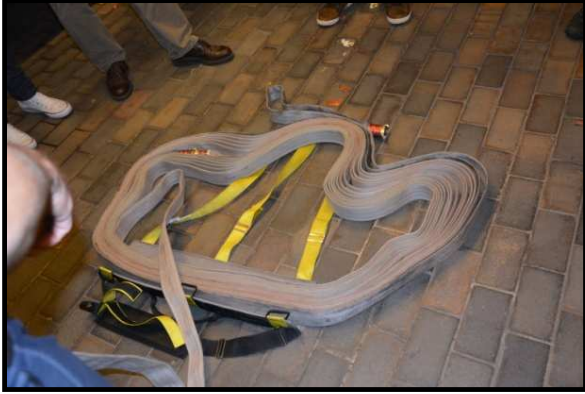
#### Participants

Bogusław Szydło, Bartłomiej Rosiek, Maciej Słodowski, Wojciech Broda, Dariusz Barnat, Andrzej Szlęzak, Krzysztof Chorobik, Dawid Wiktor, Wojciech Grzyb, Artur Szewczyk, Dariusz Ruchała, Mariusz Chomonicik.

#### Small diameter of water fittings

Using water fittings on firefighting cars having small diameter (33mm). The system meets expectations with an appropriately high pressures across the fire hose (15 bar). This causes the necessity of using appropriate materials which are the lumber of: cohesive devices (special alloys), the materials of which are made fire hoses - it ensures the durability of these elements during operation at high pressures. Using this solution allows to develop line of fire extinguishing much faster, involving fewer lifeguards than traditional diameters. At the same time we use less water, which in case of fire housing is extremely important.





**Nozzles with varying heads and moving (at different angles) articulated thimble**

The use of nozzles with varying heads and moving (at different angles) articulated thimble. The use of this nozzle allows fast replacement of the head- without releasing the entire nozzle from the line of fighting. The joint lets direct the water flow with minimal effort of the fire fighter



### The method of fixing the equipment on the rescue/firefighting vehicle.

This solution helps totally use the space on the roof of the vehicle making taking equipment quick and easy (e.g. a ladder or an ice sledge) by one rescuer, without entering the roof. Three separate cases are handled with a touch panel on the back of the vehicle inbox (next to auto pump).



### A very practical and useful solutions for special clothes.

Jackets are short and pants are high-waist (no overalls). It actually protects the rescuer and does not impair his movements, e.g. while getting into a car. Additionally jacket has a hood. It is a very effective protection of the lifeguard's head and helmet protecting against heat while firefighting in closed space. In addition, the jacket has an interesting way of fixing functional signs on the scene of action (e.g. an advisor segment militant, head of the rescue operation, the operations officer, etc.).





### The escape apparatus

Another, very interesting solution used by Swedish rescuers is the escape apparatus for people evacuated from the danger zone. The health and safety regulations in Poland consider that such solution is unacceptable.

According to information from the Swedish colleagues, there has never happened any accident while using such equipment. Therefore, in our opinion, the provision prohibiting such solutions in Poland is strongly exaggerated.



### Retractable lanyard connecting the two rescuers

In case of the carried out rescue and firefighting activities related to checking out smoky rooms, there should be entered some exercises for firefighters with using retractable lanyard connecting the two rescuers and after that there should be made an analyze of the needs of its introduction to the PSP actions while firefighting.



#### **In the field organization and operation of fire and rescue units:**

- A very good solution is to create a system such as Swedish, regarding the standardization of basic rescue vehicle fleet. Each Fire Stations has the same cast/same type of fire and rescue vehicle/equipment in each car lockers is located exactly in the same place.
- The impregnation of Nomex - special clothes, is required in Poland.
- The construction of fire stations should be based on the above-mentioned idea of fire trucks and ergonomics - this means that the buildings across the country are designed and manufactured based on max. 3 design schemes. They're not overdoing overinvestment structurally. They meet only all the functions of the optimal functioning of Fire Stations. One project will reduce costs and allows planning your operational and repair budget.
- We should try to improve Fire Stations housing conditions, which means creating the conditions of Swedish model, i.e.:
  - a) Each Fire Station has its own sports hall and gym where are conducted sports enhancing physical fitness of firefighters - classes are adapted to the nature of the work (mostly endurance exercise);
  - b) Each Fire Station has the "wellness" facilities, i.e. a sauna, showers, relaxation rooms to spend leisure time and recreational armchairs. This is to allow rest and recovery after a serious action and significantly affecting the psychophysical health of a firefighter;
  - c) Each Fire Station has a toilet and a kitchen facilities with dining area;
  - d) Each Fire Station has a training room equipped with multimedia and training programs, various teaching aids in the form of mock-ups, simulators, other boards necessary for proper training for both firefighters and civilians - mainly children;



e) Personal protective equipment are all top notch, each Fire Stations also has his own laundry for this type of clothing which affects keeping them in the best possible condition.

- It is worth considering on the central introduction into general use policies, guidelines, procedures, etc. The same for the whole country- there should be given more opportunities in this area to particular HP/KP, which by analysis of the area being under their protection, they know the nature of occurring threats in particular area frequently and this direction and the training and professional development should be emphasized on it. On the basis of its quantity of forces, resources and the operational capacity (number of TSO and other operators who can take emergency action in their area) to develop ways of dealing with emergency situations having regard to the current legislation.
- You should consider the advisability or change norms regarding the amount of a particular equipment in your city, county. Is there really needed such a large number of vehicles and equipment in the area - statistics and analysis conducted for many years show that there is no such legitimacy.

### **Suggestions for modifications to the education system in the State Fire Service based on observation and experience learned while the visit in Uppsala -Sweden.**

Analyzing the training system for firefighters rescuers while a study visit to the training center in Uppsala - Sweden, gives rise to the following conclusions for the analysis and in consequence the possibility of implementing a system of training for Polish firefighters rescuers.

- When conducting theoretical and practical training, we should focus on education system in groups of 4-6 people with the participation of 1-2 lecturers (instructors) in order to increase the level of knowledge transfer given to trainees at various stages of vocational training and perfecting courses.
- In the system of training and professional courses for leaders of the different levels of command at the level of intervention carried out in accordance with the principle of conducting practical training sessions in the living arrangement, hourly -2 T, 6 P;
  - a) the education system of one training group should comprise a maximum of 6-12 people (rescuers), (i.e. the strength of two up to three hosts);
  - b) minimum of 3-4 teachers/instructors in a tutorial group.

Such an arrangement is beneficial to absorb the preferred outcomes, achieving specific goals, to deepen knowledge and practical skills acquired thanks for pursued themes at different levels of training.

In order to achieve the presented solutions it is necessary to increase the number of lecturers (instructors) for the proposed group of participants. This will allow for a much better teaching, control over the correctness of assumptions security when conducting rescue operations and individual draw comments and proposals for individual athletes. Furthermore, the proposed system of training in "small groups" will improve the quality and quantity of knowledge by students.

- Adapting training centers along the lines of "Swedish", where person organizing the exercise provides the whole training logistically. An interesting solution used in the training center is a system of organization of exercises. Training Center provides logistical entirety ranging from uniforms, through a wide variety of instructional positions to the possibility documentation of the analysis conducted assumptions. The training is based on clothing and safety measures being an equipment of the training center. Staff at the center prepare various scenarios of exercise and after exercise restores the position to its original state. In the Swedish system, a lecturer and instructor are engaged in training and for charging logistical preparation of the assumptions, equipment and buildings there are responsible other people.
- Increasing diversity and the possibility of an instructional stations and their multiplication for example. Several buses simulating various traffic accidents. Objects: brick buildings and modular (metal containers) with rapid reconfiguration of space, allowing for realistic simulation of fire behavior in houses or in several rooms even on several floors. The creation of such conditions as an instructional ensures the best possible preparation and establishment of appropriate exercise scenarios taking into account typical and dangerous situations occurring during the action.
- For special attention deserves the organization of social spaces aimed for preparing students to exercise. The system leading through the locker rooms:

- a) Cloakroom so called 'pure' where the student undresses and leaves his things,
- b) Storage space - here the student gets the clothes need to exercise (e.g. Tracksuit, socks, special clothing, gloves, helmet),
- c) A space called 'dirty' where the student dresses up in things taken prior to exercise, and undresses after completing the exercise. Things dirty thrown into the individual baskets for sorting, washing and then prepare for the next group exerciser.



### 3.2. Most interesting aspects from visit in Netherlands (Suid Limburg) 1-6/12/2014

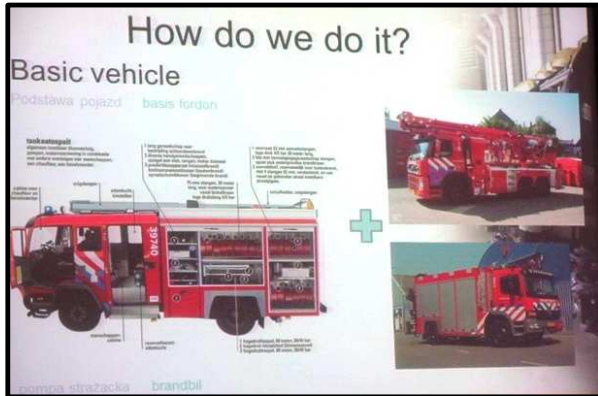
During the visit we had unique opportunity to see and observe a lot of diverse and interesting solutions in terms of wider training and vocational training. Through the most interested and possible to implement In Poland things we described below.

#### Participants

Paweł Susło, Jarosław Pozierak, Marcin Kwiatek, Robert Kłósek, Arkadiusz Kielin, Damian Woszczyzna, Krzysztof Kociołek, Artur Luzar, Paweł Błaut, Robert Wolański, Jacek Ambrożkiewicz, Tomasz Kmak.

## Unification

Unification in the types, equipment and staff of the fire and rescue vehicles throughout the Netherlands. Basic vehicle has specified equipment and basic staff - depending on the type of event to what is fit. This allows for quick completion of unit in the existing fire-fighters service – “full-time” and “part-time” (close to the existing volunteer service in Poland).



## The system of training and examination

The system of training and examination of firefighters is based on several centers, where the firefighters are sent for courses and periodic exams. The training is the same for firefighters who work in both systems (full-time, part-time). Centers are equipped inter alia in smoke chambers and the flash-over chambers, which are similar to already existing in Poland. The smoke is based on the burned wood or other organic materials.





### The training centers

The trainings in centers are located “under the roof” – special hangars (properly insulated, unheated by additional sources of heat) which give the opportunity to conduct exercises at any time of year, regardless of weather conditions. However, the disadvantage of exercises in the hangars is the inability to reproduce the real fire and weather conditions situation - as in the case of open ranges in Poland. However, some exercise - especially with rescue equipment, rescue recurrent exercises and practical elements of conducting the activities – can be easily practiced also in our country in similar hangars.





### An aluminum bridges

An interesting solution is to use during exercise and rescue operations aluminum bridges in order to facilitate access to the cut constructions of vehicles and to facilitate the work of the rescuers, causing it more ergonomic.



### Training without a helmet

One of the few things which should be not use in Poland is conducting the exercises in firefighting tactics – in observed case - entrance to the smoky building where is the internal fire, during that exercises firefighters working in firefighter unit are not equipped in helmets and respiratory protection devices. Lack of full protection may result in the real fire situation "forgotten" part of equipment and exposure to risk.



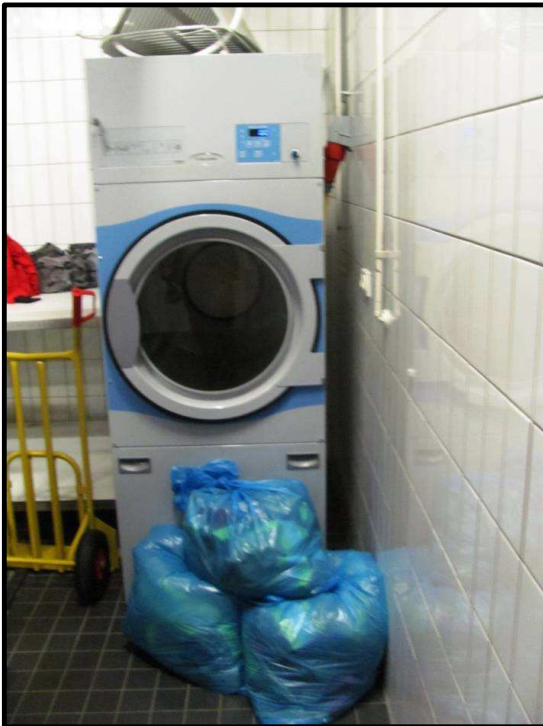
### A nozzle

Another interesting solution is a design of the nozzle which allows to distribute foam and extinguishing powder at the same time. Using this solution is useful in situation of flammable liquids fires, particularly polar liquids. Simultaneously distribution of fire extinguishing foam and powder is familiar with our system, but there are no devices for delivery of these media by only one nozzle.



### Self-sufficient fire stations

Fire Stations in the Netherlands are practically self-sufficient – they have their own laundries, workshops and services for all types of used protection systems and rescue tools. These services are authorized by the manufacturers. This allows for reduction of service costs and shorten deadlines.



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