



Dynamit Nobel Defence

**Fire Protection Systems
from
Dynamit Nobel Defence**



**The innovative
fire protection solutions
for combat and
command vehicles**



Effective fire protection is crucial for the survival of man and machine. Complex vehicle requirements demand innovative, compact and efficient extinguishing systems, which must be integrated into the vehicle. The fire protection concept consists of the functions

- fire detection
- control of the extinguishing process
- efficient extinguishing device

Modern military protected command and multi-purpose vehicles, armoured transport vehicles, personnel carriers and main battle tanks are exposed to a multitude of dangers in international operations. Particularly dangerous for soldiers and vehicles are the effects of explosions and fire in the squad or engine compartment, which can be caused by weapons or incendiaries. In order to prevent this, automatically functioning, high-performing and very fast-reacting fire protection systems are needed.

Requirements for today's fire protection systems

- compact construction
- low weight
- service-friendly
- low maintenance
- versatile adaptation options
- integration in different vehicle types
- retrofittable

A high level of protection and safe functioning of the whole fire-protection solution round off the requirements for modern fire-protection systems.



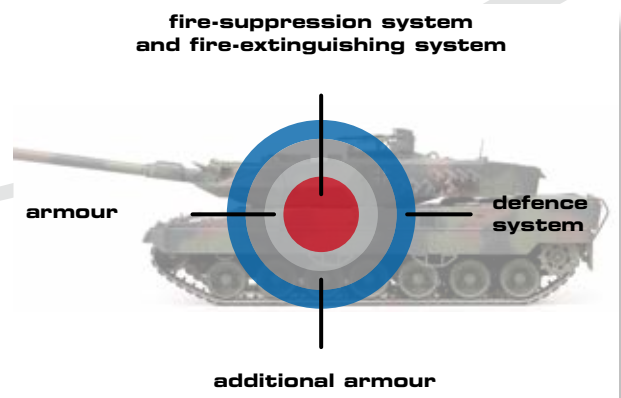
Active fire-protection means detecting fires quickly and reliably and fighting fire risks effectively. The system should always be ready for operation. Simple and safe integration into the already-existing vehicle concept is, however, also necessary.

Threat Situation

Vehicles must be effectively protected against terrorist attacks in asymmetrical ambushes.

The protection must be effective against the following potential dangers:

- incendiaries of any kind, such as e.g. fire bottle
- IEDs, external shelling
- secondary fires, e.g. cable fires from short-circuits and stored materials in the interior, e.g. munitions, medical kit and operating materials



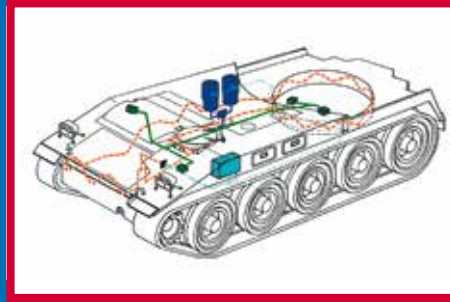
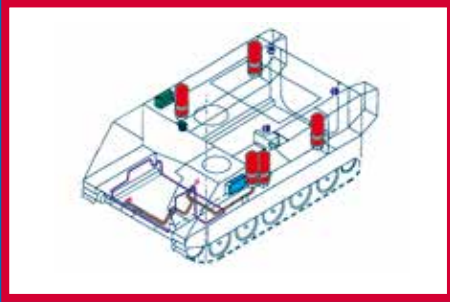
fire-suppression system and fire-extinguishing system

armour

defence system

additional armour

Fire-Suppression System in the Crew Compartment



DND Fire Protection Systems

The fire extinguishing and fire suppression systems can be used in the following vehicles, among others:

- main battle tanks
- protected transport vehicles
- protected command and multi-purpose vehicles
- special-purpose vehicles

FSS Fire Suppression System



Tasks:

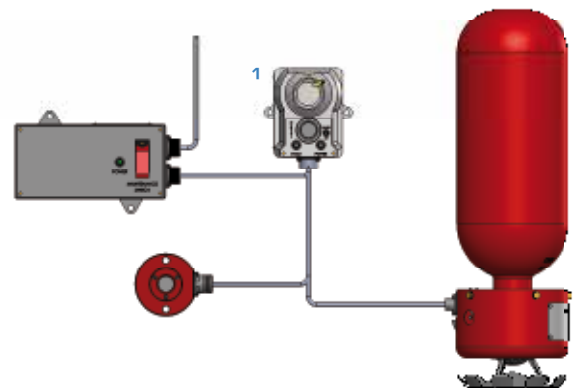
- protection of the crew
- protection of the vehicle
- protection of the systems
- ensuring readiness for action
- increasing survivability

The **FSS fire suppression system** consists of the detector, control unit and extinguishing-agent container. A major advantage of our system is fire detection with the dual UV/IR detectors. With fire detection in the ultraviolet as well as infra-red range, all the different rays of the fire/flames are detected within ~3 milliseconds. Smaller pool fires, cable fires, starting explosions and low-speed detonations are already detected when they emerge.

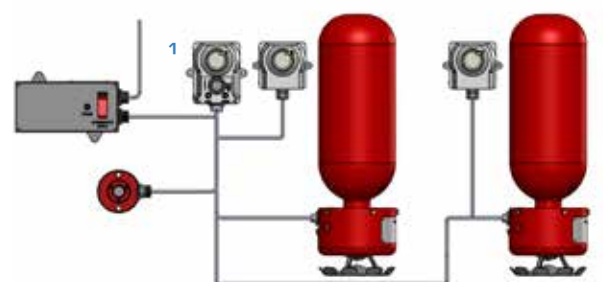


The control unit of the FSS fire suppression system is the decisive interface and thus "the brain" of the system. The microprocessor controls all processes and ensures permanent monitoring of the whole fire protection system and activates the fire-extinguishers.

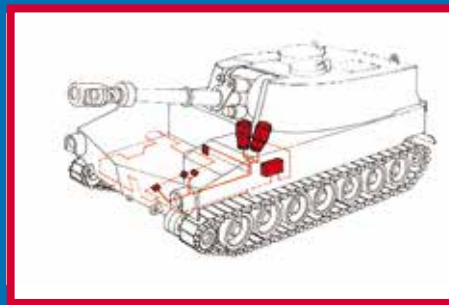
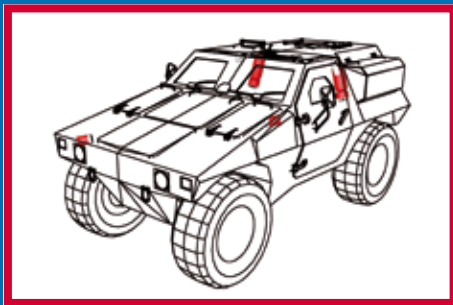
A special advantage:
detection and control unit in one device¹



Example 1: FSS - basic system for crew compartment



Example 2: FSS in combat vehicle for crew compartment



The **fire extinguisher** is made of seamlessly drawn special steel and has a valve head with triggering unit. The distribution nozzle ensures an even concentration of the FE36 extinguishing agent in the squad compartment in less than 200 milliseconds.

FES Fire Extinguishing System

A fire in the engine and technical compartment can have a very wide range of causes, but usually the cause is damage to the operating fluid lines. The leaking operating fluid comes into contact with hot components. This can cause a fire to occur almost instantly, presenting a continuing risk to the vehicle and its crew. These potential sources of danger must be automatically detected as quickly as possible and fought with the extinguishing agent.

Dynameco Fire Extinguishing System

On-board integrate system consisting of fire detection, for example with temperature sensors, a high-performance control device and efficient aerosol extinguishing agent. The activation temperature of the temperature detector is software-controlled and can be set to meet individual requirements



FES Dynameco

- fire fighting: fire in the engine and technical compartment e.g. hydraulics system
- fire detection: thermal and/or optical detectors
- extinguisher: aerosol
- extinguishing time: approx. 5 seconds
- extinguisher is not pressurised

Advantage:

Due to direct installation in the danger area, no additional piping systems are necessary. This also means that no further space is occupied in the squad compartment. The pressureless Dynameco extinguishers with NSN 4210-12-372-6613 are also distinguished by their low weight and compact design.

Aerosol Extinguisher

- simple, direct installation in danger area
- small size and low weight
- no additional piping system
- environmentally-friendly and non-toxic extinguishing technology "green technology"
- energy-withdrawal through binding of free radicals, causing no oxygen deprivation
- high extinguishing concentration prevents reignition

DND Fire Extinguishing System

With this conventional fire-extinguishing system, the extinguishing-agent containers are installed in the squad compartment and the extinguishing agent, e.g. FE36/HFC236F is fed to the engine and technical areas via a piping system. Fire detection is carried out by thermal and/or optical detectors.



Fire extinguishing systems from DND

DND fire protection systems are innovative, fully thought-out and modular solutions incorporated into an overall safety concept for the vehicle and above all for the occupants.



System Solution DND Fire Protection

Fire Recognition: optical detectors with UV/IR signature recognise small, slowly spreading fires in the squad compartment as well as explosive combustion. The temperature detectors in the aggregate areas detect fires quickly and reliably as they develop.



Controls: Control unit for installation and/or integration into the existing onboard electronics of the vehicle; controls and activates the extinguishing device; is interface between fire-detection, extinguishing device and onboard computer; constantly checks the whole system for possible faults; in the event of a fire, ensures necessary switching-off in order to hamper the cause of the fire and the occurrence of further fires. The controls are fitted with appropriate bus interfaces for the storage and processing of data.

Other modular components:

- **emergency triggering switch** for manual activation by the press of a button
- **emergency electricity supply:** power backup system for the reliable supply of energy to the system even in standby mode and/or with motor switched off



The fire protection system of a vehicle ensures efficient readiness for action, supports the fighting morale of the crew and ensures sufficient mobility for fulfilment of the mission.

The DND quality claim

„Our strengths lie in the development of modern fire protection systems, production with the highest level of vertical integration and professional advice and service and thus guarantee safe and efficient extinguishing systems.“

DND Fire Protection Systems

Product Advantages and Customer Benefits

- increases the ability to survive and protects the vehicle
- saves people's lives and limits injuries
- limits damage to the vehicle to a minimum
- availability of the crew and increased of combat capability
- no damage, but support of morale
- safeguards mobility and readiness for action
- reduces downtime
- supports operational reliability of the systems built into the vehicle

With the fire-suppression and fire-extinguishing systems, DND makes a substantial contribution to the increasing of mobile staying-power/assertiveness, mission fulfilment and survival ability of soldiers and is now, and will continue to be, a strong and reliable partner for the safety of the forces in action.

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