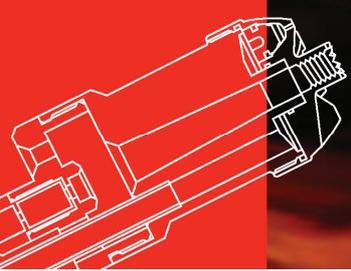


FIREXPRESS®

First Strike Fire Fighting



**Mobile and More Effective
Than Ever Before**

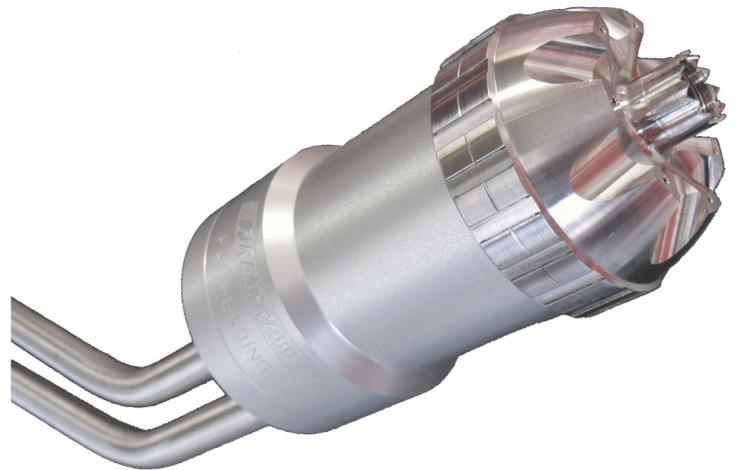


Welcome to Fireexpress

At Fireexpress we produce what we believe to be the best first response fire fighting equipment in the world. Back in 1998, the founder of Fireexpress came up with the idea of converting the standard water mist sprinkling system traditionally installed in buildings into a mobile system.

With his background as a civil engineer, pilot, police officer and firefighter, he knew the technology could be improved. The aim was to invent a piece of equipment that would enable faster knock down of fires, and at the same time, use water more efficiently to reduce the quantity of water required.

After several years of research and numerous tests, he invented the patented Fireexpress dual nozzle. 'Dual' because it actually is two pieces of fire fighting equipment in one and therefore able to fight almost all types of fires.



The patented Fireexpress dual nozzle

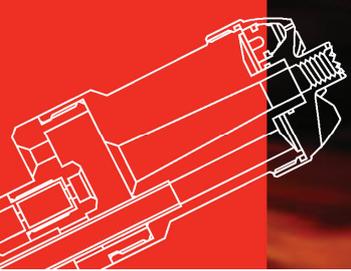


Since then Fireexpress has developed into a global company with distributors all over the world and production facilities in Europe and Asia.

We have in our product portfolio a range of systems able to satisfy any need for mobile and stationary fire fighting equipment. We are constantly improving these systems and developing new ones whenever a customer has a special requirement.

Welcome to the world of Fireexpress, we are quite sure that you will be just as impressed with our products as our many customers already are.

A firefighter can easily break a window with the Fireexpress lance.



Fighting Different Types of Fires

Often, firefighters will face different types of fires at the same incident. In these situations, it is important that the firefighters only have to use one piece of equipment and that they effortlessly can use this equipment to fight all types of fires.

Different techniques are needed to extinguish different types of fires. Fires fuelled by normal combustibles (Class A), combustible gases (Class C) and electric installations (Class E) are extinguished by removing the heat of the fire by spraying it with water mist. Embers in ordinary combustibles (Class A) and fires in flammable liquids (Class B) are extinguished by covering the burning materials with aqueous film-forming foam that seals off the flow of air feeding the fire.



A house fire in Sweden

Fast Heat Absorption

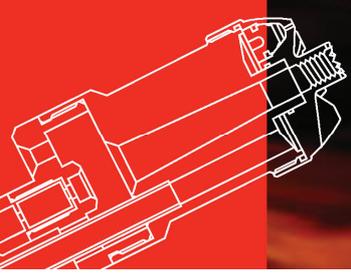


A car fire extinguished with 15 litres of water and foam

The idea behind extinguishing a fire with water is to use the fire's heat to vaporize the water. The energy is removed, and the extent of the fire is reduced. The faster the heat is absorbed, the faster the fire is extinguished.

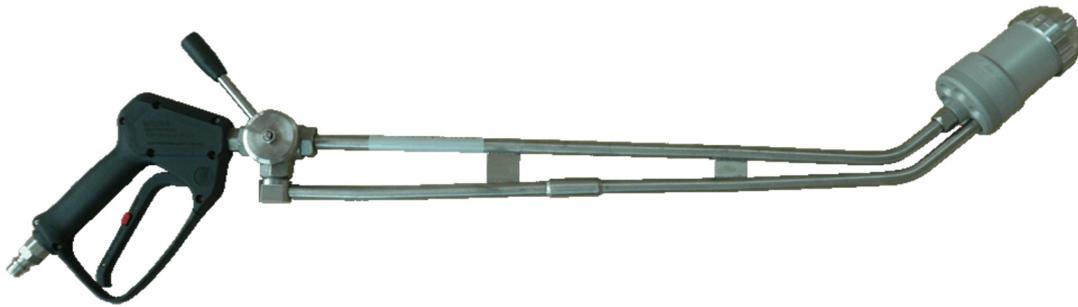
One sure way to enable really fast heat reduction is to make the water drops very small. The smaller the water drops, the faster the fire can turn all the water in the droplets into steam.

The water drops produced by the Firexpress nozzle are so small that they are called micro-drops. This is the key feature of the Firexpress systems. The Firexpress systems can reduce the temperature of a fire much faster than traditional fire fighting equipment including fog and mist equipment.



The Lance with the Dual Nozzle

Micro-drops ↔ Foam jet



The Fireexpress lance with its dual nozzle makes it possible to use two different methods of extinguishing fires. One, by spraying the fire with water micro-drops to absorb the heat, and two, by spraying a concentrated jet of foam to extinguish embers in fibrous materials and to seal burning liquids. By operating the selector handle, the firefighter can immediately change between water spraying micro-drops and a concentrated jet of foam.



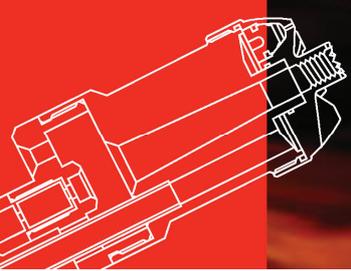
With the selector handle in the forward position, a concentrated jet of low expansion foam is produced, which is highly effective on embers in fibrous materials and fires in flammable liquids. The volume can reach 150 litres per minute (pump driven units).



With the selector handle in the backward position, a long-range cloud of micro-drops is produced. The micro-drops are highly efficient on most classes of fires. The volume can reach 30 litres per minute (pump driven units).

Micro-drops the Fireexpress Way

The patented Fireexpress dual nozzle produces micro-drops that are so small and light, that they will hang in the air for a relatively long time and easily are drawn into the combustion area of the fire. They are in fact so small that 1 litre of water produces a surface area of more than 100 m². Due to the large surface of the micro-drops, they are instantly converted into steam, thereby absorbing the heat of the fire very fast.

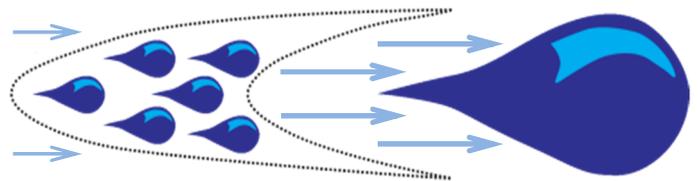


A 500 litres jet fuel fire extinguished with 38 litres

The pressure of the created steam reverses the airflow and reduces the amount of air flowing into the fire, literally starving the fire of oxygen. The cooling process is hereby further sped up.

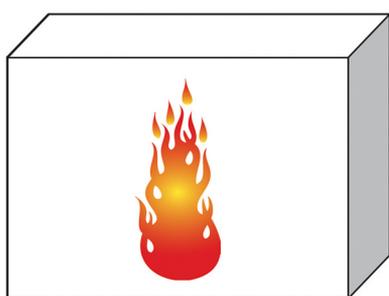
By producing micro-drops in different sizes, it is possible to use the aerodynamic effect of a moving water drop to propel the smallest micro-drops out to a range of up to 15 metres.

The largest micro-drops, although still small will create a vacuum behind them as they travel through the air. The smallest micro-drops will enter the vacuum and will be dragged along with the larger micro-drops, so that they also achieve a long travel distance.

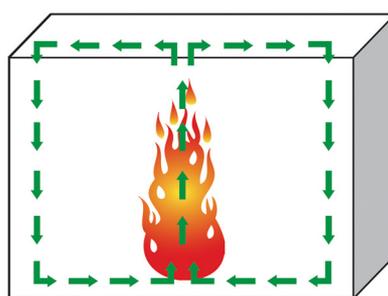


Because the nozzle pressure of the Firepress systems is very low, the micro-drops travel very slowly. As they at the same time are extremely tiny, the amount of entrained air created and drawn into the fire is minimal.

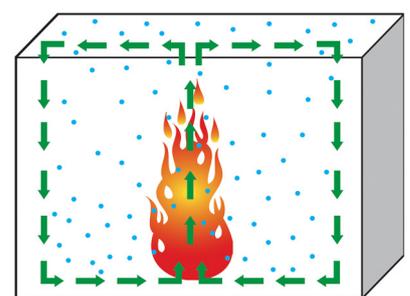
Because of their low weight, the micro-drops are drawn into the heart of the fire by the airflow in a confined space and virtually all the water is used for extinguishing the fire.



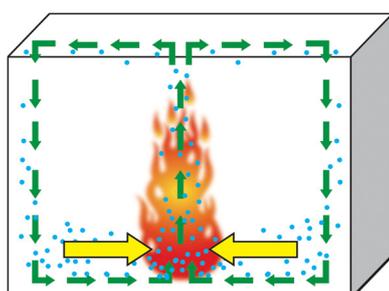
Room fire



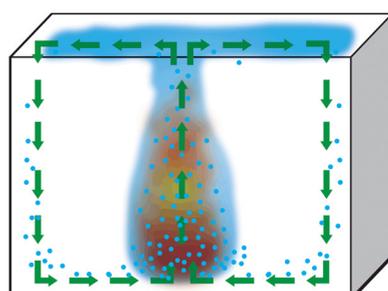
Circulating airflow



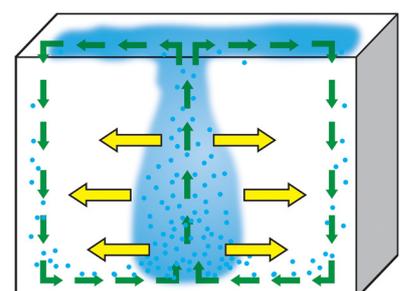
Micro-drops with long hang time



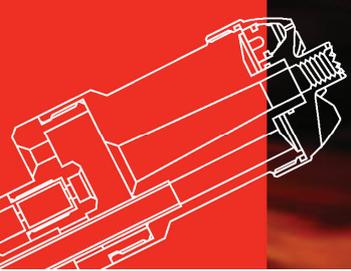
Micro-drops transported by the airflow into the combustion area



Micro-drops instantly absorb heat and generate steam



Steam pressure prevents oxygen feeding the fire - cooling hot combustion gases



Unique Advantages of the Firepress Systems

The Firepress systems offer several unique advantages that no other system can match. Most importantly, Firepress eliminates all the drawbacks of high-pressure systems.



The Firepress systems can achieve an amazing spray range of micro-drops of up to 15 metres.

Maximum utilization of water - Because the micro-drops are exceptionally small, virtually all the water sprayed into a fire is used to reduce the heat of the fire.

Fast temperature knock down - Because of the instantaneous evaporation of the micro-drops, the temperature of the fire will drop immediately, even when the initial temperature of the fire is low.

Minimum use of water - Because of the highly efficient use of water, considerably less water is needed with the Firepress systems than with other systems for extinguishing a fire.

Minimum water damage - Because virtually all the water is vaporized, there is minimal damage caused by excess use of water.

Reduced air intake - Because the evaporation process generates high pressure steam, oxygen in the surrounding air is prevented from getting to the fire.

Low pressure - Because of the design of the dual nozzle, the nozzle pressure is very low.

Minimum entrained air - Because of the low momentum of the micro-drops, virtually no entrained air is drawn into the spray, which prevents oxygen from air dragged along by the water drops from fuelling the fire.

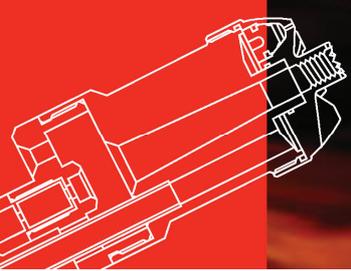
Low recoil - Because of the low nozzle pressure virtually no recoil is experienced by the user, making it easy for the firefighter to handle the lance, even for an inexperienced person.

Safe to use on human skin - Because of the low nozzle pressure, it is safe to spray directly on humans to put out fires in clothing.

Long range - Because of the design of the nozzle, the Firepress systems can spray up to 15 metres for micro-drops and 18 metres for a jet of foam.

Breaking windows - Because of the sturdiness of the lance, it can be used to break windows and penetrate some construction materials.

Personal protection - Because of the design of the angled lance, the firefighter is able to avoid direct exposure to room fires.



Low pressure makes it possible to spray on unprotected skin. This enables immediately extinction of a car fire with trapped passengers.



With the angled lance, the firefighter does not have to face the fire, but can stay protected by spraying around corners in a building.

The Two Driving Forces of the Firexpress Systems

The Firexpress systems can be divided into two groups depending on how the water supplied to the lance is pressurized. For the first group of systems, water is pressurized by a membrane pump. For the second group, water is pressurized by compressed air from a normal air tank.

Pump driven units

A self-priming membrane pump pressurizes the water up to 40 bars (working pressure). The pump is driven by a petrol or diesel engine, an electric motor (230 or 380 volt) or by a hydraulic pump. The flow is 30 litres per minute.

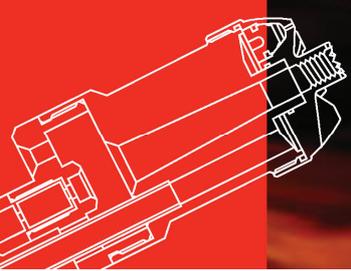
Compressed air driven units

The water is forced out of its container by compressed atmospheric air. The air is stored in a normal air tank at either 200 or 300 bars. The pressure is reduced to 20 bars before entering the water tank. The flow is 22 litres per minute.



A fuel fire with a surface of 60 m² extinguished with 20 litres of water

The pump driven units are the more powerful of the two types and can continue to operate as long as water is available and the pump is driven by the engine, motor or hydraulic pump. The operating time of the compressed air driven units is limited by the quantity of water in the water tank.



Pump Driven Units

Firexpress has several standard systems with pump driven units. The pump driven units have separate water and foam tanks for optimal use of water and foam, which enables refilling during operations. The units are able to suck water from external water sources for continued fire fighting or filling of the water tank.

Pump Driven Unit

The stand-alone pump driven unit consists of a self priming membrane pump driven by either an engine (petrol or diesel), an electric motor (230 or 380 volt) or a hydraulic pump, and has an integrated foam dosing system with a 12 litre foam container. Water is supplied from a separate tank, e.g. the water tank in a fire engine. It is connected to the lance via a discharge hose, which can be up to 100 metres long. A secondary foam dosing system can be connected to the unit, enabling switching between different foam types.



Tank Unit

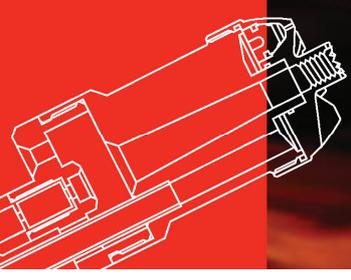
The stand-alone pump driven unit can be integrated with a 300 or 500 (depicted) litre water tank. The unit can be mounted on a metal pallet so that it easily can be moved, for instance inside a factory building by a forklift. The unit is also suitable for placing in the bed of a pick-up truck. It can be fitted with a suction system for sucking up water from external water sources such as lakes, rivers, or the sea. Various types of couplings for fire hoses, e.g. BS 336 and Storz can be mounted on the water tank for fast filling.



All Terrain Vehicle

The Firexpress all terrain vehicle is fitted with a pump driven unit powered by a separate petrol engine, which is mounted on the front rack. Separate water and foam tanks are incorporated into the back of the ATV. It is fitted with a suction system for sucking up water from external water sources such as lakes, rivers, or the sea. The Firexpress fire fighting ATV is built on an American produced Polaris Sportsman X2 (depicted), suitable for one person or a Polaris Ranger XP, suitable for three persons.





Compressed Air Driven Units

Firexpress has three standard compressed air driven units. These units have tanks for premixed water and foam, which is pressurized by compressed air. The designs allow high water to weight ratios and are noise and pollution free. Operating the units is very uncomplicated due to their simplicity.

Fire Fighting Motorcycle

Firexpress has converted a BMW R 1200 RT into a fire fighting motorcycle. It is equipped with two interconnected 25 litre tanks for premixed water and foam. The air is supplied from a normal air tank. The motorcycle is fitted with a 30 metre discharge hose. It is equipped with emergency lights, horn, radiator fan and radio signal interference suppression system. The motorcycle has been tested for structural integrity and riding stability by BMW, Germany, who has approved it and guarantees the warranty.



Mobile Unit

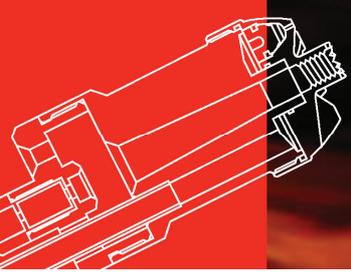
The mobile unit is a fire fighting system with a 50 litre tank for premixed water and foam and is driven by compressed air from a normal air tank. The mobile unit has a 30 metre discharge hose. The unit can, for example, be placed in the back of a forward command car or light rescue vehicle. It is possible to mount various wheel and bracket feet configurations as well as a handle for easy transport over short distances.



Backpack

The backpack makes fire fighting truly mobile. The unit consists of two interconnected 6 litre tanks for premixed water and foam mounted on a back shield. The air is supplied from a composite material air tank also mounted on the shield. A face mask with a breathing apparatus can be fitted onto the system. The lance is a short version of the normal Firexpress lance, but with almost all the same features and benefits. The shorter lance makes movement easier in confined spaces such as staircases.





Customer Segments

Customers from many different sectors have already decided to use Fireexpress systems. These include:

- Fire brigades and civil defence forces
- Municipalities on small islands
- Armed forces
- Police
- Companies in various industries
- Municipalities with congested traffic
- Forest authorities
- Tunnel safety authorities
- Cultural and political institutions
- Commercial vessels

The list continues to grow as new customers from other segments introduce Fireexpress systems.



An all terrain vehicle in action on a fuel fire in Thailand

Approvals

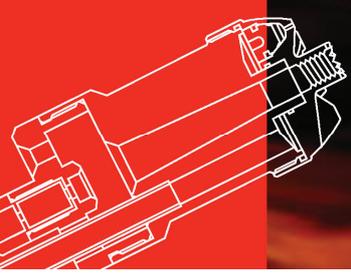
The Fireexpress fire fighting systems propelled by compressed air vessels conform to Directive Number 2014/68/EU concerning design and manufacture of pressure equipment, as well as Directive Number 2010/35/EU concerning design and manufacture of transportable pressure equipment of the European Union.

The Fireexpress mobile unit has an ATEX Zone 2 approval according to Directive Number 2014/34/EU concerning equipment and protective systems intended for use in potentially explosive atmospheres of the European Union.

The Fireexpress systems have been tested against the EN 3-7 standard for fire extinguishers. The tests on Class A (ordinary combustibles) and Class B (flammable liquids) fires were carried out by the Danish Institute of Fire and Security Technology and took place at SP Technical Research Institute of Sweden.

The Fireexpress systems has been tested by the National Yunlin University of Science and Technology on Taiwan and approved for electrical fires of up to 10,000 volts.

Fireexpress is approved as supplier to NATO and has been assigned manufacturer's code R3971 in the NATO Codification System.



Customized Solutions

Firexpress has supplied many end-users with customized solutions. Both the pump driven units and the compressed air driven units are modular and be configured to fit any need for fire fighting equipment installed under special conditions whether it is fixed installation or mounting on a vehicle, e.g. a purpose-built vehicle.

The water tank for a pump driven unit can be made to any size and with any dimensions. At the same time does the pump driven unit not need to be immediately adjacent to the water tank as it is powerful enough to suck water over a distance of 25 metres. The ability to suck water from external water sources makes the pump driven unit very versatile and flexible.

The water tank for a compressed air driven unit can be made in many sizes and it is possible to serial connect several water tanks to increase the total volume beyond the 50 litre of the water tank used for the mobile unit.



Torino Fire Brigade, Italy

A petrol version of the pump driven unit and a 300 litre tank mounted on an all terrain vehicle with caterpillar tread wheels for use in snow covered areas.



Södertörn Fire Brigade, Sweden

A petrol version of the pump driven unit installed in a traditional fire engine using the main water tank of the vehicle for its water supply.



Brezia Fire Brigade, Italy

A standard 50 litre mobile unit installed in a light rescue vehicle. It is mounted on a retractable skid for easy operations and refilling of the unit.



Ministry of Natural Resource and Environment, Thailand

A petrol version of the pump driven unit and a 300 litre tank mounted on a Polaris Ranger XP all terrain vehicle with an external suction system.



Ministry of Defence, the United Kingdom

A diesel version of the pump driven unit with a noise reduction cover, protection roof and a 300 litre tank mounted in a trailer pulled by a Land Rover.



Acapulco Municipality Fire Brigade, Mexico

A 500 litre tank with a petrol version of the pump driven unit with protection frame mounted on a trailer for towing by a first response vehicle.



First Strike Fire Fighting

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