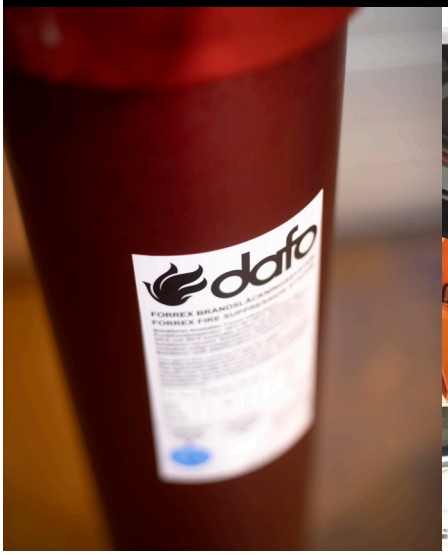
A COMPLETE RANGE OF VEHICLE FIRE SUPPRESSION SYSTEMS



dafo

vehicle fire protection

Dafo has been in business for over 100 years and has always been in the front line of technology engineering and part of regulatory development on a worldwide basis.

Dafo is now backed by Australian Standard certification to AS 5062:2016.

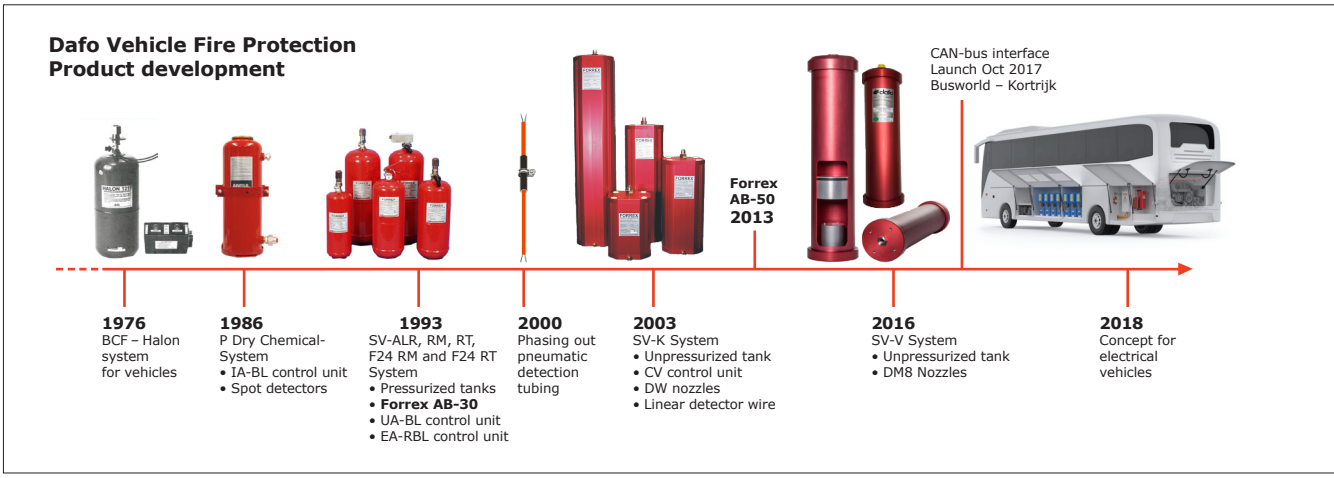
The market leader in Vehicle Fire Suppression

Dafo was one of the first companies in the world which started to develop integrated firefighting solutions for vehicles. Since the startup of this business back in 1976, Dafo has used many different solutions such as Halon, dry powder, pressurized liquid containers, pressurized tube detection etc. The overall objective of Dafo has always been to work with continuous improvements, research and developments to make our systems more reliable, sustainable and innovative. Over the years Dafo has obtained vast experience and knowledge from our end user installations which have been used as a basis for eliminating false alarms and false releases. As a result of the development Dafo can today proudly present two different state of the art reliable solutions both without vulnerable and pressurized agent containers.

With more than 165000 vehicle systems sold worldwide knowhow and experience ensure our customers to have the latest technology combined with proven reliability. The current solutions are being used worldwide as integrated solutions at the OEM production lines as well as retrofit installations at the end user.

Dafo Vehicle Fire Protection supplies fire detection and suppression systems for:

- buses and coaches
- mining and construction equipment
- forestry and waste handling equipment
- material and cargo handling (ports included)
- agricultural equipment



Vehicle Fire Suppression Systems for Buses and Coaches

Most bus fires start in the engine compartment and surrounding areas. A tested and certified Vehicle Fire Suppression System in combination with a reliable fire detection system is the best first line of response in case of an emergency such as at a thermal incident.

Buses operate in various surroundings and climate types such as desert, tropic, arctic, on highways and in mountain terrain. These environments are very challenging also for fire suppression systems. Dafo Vehicle's fire suppression systems are thoroughly tested for fire performance ability and environmental durability such as Electromagnetic Compatibility (EMC), vibration, corrosion and temperature extremes according to international vehicle standards to ensure the highest performance.

Dafo Vehicle's fire suppression systems are approved as a component with regard to UNECE Regulation No. 107 and P-marked in accordance with SPCR 183.

Many of the world's leading bus manufacturers install Dafo Vehicle's fire suppression systems in their assembly line. Our engineers understand the importance of modern lean production and find solutions that conveniently integrates our system in the manufacturing process.

A low total cost of ownership (TCO) is an important key factor for every bus operator. Dafo Vehicle's fire suppression systems, with its superior low maintenance frequency and reliability, contributes to increased profitability through less downtime for the operator.


APPROVED
UNECE R107


CATERPILLAR
CAT
795F
CAT

Vehicle Fire Suppression Systems for Heavy-Duty Mobile Equipment, HDME

Most of the world's goods are transported through ports and are being handled by machines. Mines all over the world have heavy duty vehicles transporting ore. The common factor of all these machines is that almost everyone needs to operate 24/7 under challenging and demanding conditions in environments with many potential fire hazards as the HDMEs often carry a lot of flammable liquids in pressurized fuel lines close to hot engines and transmissions. In addition, the environmental damages can be overwhelming if a fire would spread in a recycling plant or in the forest.

Have you considered how much equipment downtime would cost you?
Dafo Vehicle offers the most reliable and effective fire suppression systems for HDME designed to survive challenging working environments and secure safety of operations. The systems are designed to mitigate losses due to fire and reduce the impact on investment as well as reducing downtime and increasing the productivity of the end users. Dafo Vehicle's robust system not only protect individual hazards within the vehicle such as leaking fuel, hydraulic fluid, and/or lubrication, built up flammable deposits, but it is also a system with low life cycle costs.

Dafo Vehicle is continuously working with OEMs for smooth integration of our systems into their HDME products by delivering pre-bended pipes for easy installation at the assembly line, as well as integration of our systems into the OEM's communication protocols for increased connectivity and serviceability.

Our system

The basis of Dafo Vehicle’s system is the suppression agent Forrex which is specially developed to suppress fires in combustible engines. Forrex is highly effective on flammable liquid fires like petrol, diesel and hydraulic oils. The system combines the features of liquid and dry chemical, includes unique and propriety tailormade solutions and offers outstanding flame knockdown and unique protection against re-ignition as it will cool down the overheated engine parts in case of a thermal event.

Dafo Vehicle’s system includes a non-pressurized cylinder which minimizes the risk of injury as well as potential leakages that normally comes with pressure vessels.
The non-pressurized system can be installed independently in any direction.

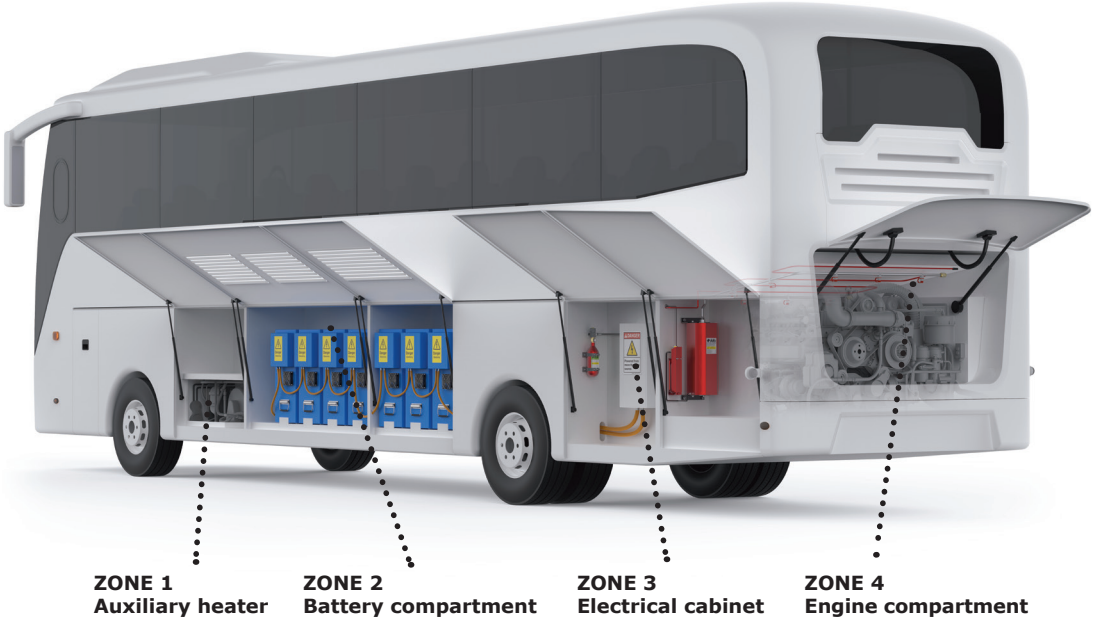
Dafo Vehicle’s systems are easy to maintain and refill on site which reduce downtime and operational costs when machines many times operate in remote places.

In case of discharge it is easy to clean off with water and it is also non-corrosive and biodegradable.


FORBEY
MAKES THE DIFFERENCE

Fire Protection of Electric and Hybrid Vehicles

Currently there is no comprehensive solution for fire mitigation available on the market for electric (EV) and hybrid vehicles (HEV). However, Dafo Vehicle Fire Protection has developed a full coverage interim multi-zone fire protection solution in response to the urgent need. The suppression agent Forrex is used as one part of the complex system solution and it provides effective cooling capacity to slow the fire development for allowing safe evacuation of passengers. In order to cover all risk areas in an EV or HEV bus the main risk scenarios are divided into four protection zones.



The different protection zones are then protected in various ways by robust detection and suppression systems – both liquid based and gas-based solutions.

Li-ion batteries are still a relatively new technology and Li-ion battery safety is a recent research area. Regulations and standards are to some extent lagging behind. Dafo Vehicle Fire Protection is in the forefront of the development as by participating in several research projects on how to deal with fire hazards of Li-ion batteries in vehicles in order to provide solutions for to reducing the risks and consequences of a thermal incident in or in connection with Li-ion batteries in heavy commercial HEVs and EVs such as buses and trucks.

Dafo Vehicle Fire Protection is leading one of the most advanced research projects called Li-IonFire® funded under the EU Framework Program for Research and Innovation – H2020 – under the SME Funding Scheme.

Dafo worldwide

Dafo Vehicle works extensively with a competitive network of partners and service providers all over the world which are trained and have special authorizations and approvals. This ensures that installation and servicing capacity is never far away.

The Dafo group today consist of several subsidiaries and Dafo dealers – Dafo Oy (Finland), Dafo US, Dafo Deutschland, Dafo Russia, Dafo Asia, Dafo Spain, Dafo UK & Ireland, Dafo Brasil, Dafo Middle East, Dafo Australia & New Zealand & Dafo Chile.

Why Dafo?

Total risk management service provider:

- Dafo Vehicle Fire Protection has a well proven implementation process in which we work closely with our customers throughout the whole process.
- Dafo Vehicle Fire Protection takes full responsibility for:
  - the risk assessment phase
  - adaptation
  - prototype installation
  - documentation/optimization
  - documentation/validation
  - pre-serial installation/training
  - supply chain management
  - serial deliveries
  - service & maintenance
- Prior to any installation of fire suppression systems, Dafo Vehicle Fire Protection conducts a fire risk analysis in order to identify potential fire hazards.
- Dafo Vehicle Fire Protection always optimize the fire protection solution for the vehicle. Much effort is spent on reducing material consumption but also reducing installation time at serial production. This process also includes ways to establish flawless solutions for the installation e.g. Poka-yoke as well as establishing smarter solutions i.e. in order not to block access to critical components which are part of the vehicle’s powertrain.
- The risk management process includes smooth system integration. Dafo Vehicle Fire Protection offers on-site technical support both for mechanical and electrical integration in order to support OEMs.

Local presence:

- Dafo Vehicle Fire Protection is continuously increasing our geographical proximity by following our OEM customers in their global expansion and supporting their distributors around the globe. Through our local partners Dafo Vehicle Fire Protection is close to our customers in order to assist them with installation, easy access to spare parts and refilling of extinguishing cylinders.

- Dafo Vehicle Fire Protection continues to set up set up hubs/distribution centers in strategic geographical locations. Placing us closer to our markets and reducing delivery times to meet our customers needs.
- The Dafo group today consist of several subsidiaries and Dafo dealers – Dafo Oy (Finland), Dafo US, Dafo Deutschland, Dafo Russia, Dafo Asia, Dafo Spain, Dafo UK & Ireland, Dafo Brasil, Dafo Middle East Dafo Australia & New Zealand and Dafo Chile.

In the front line of technology engineering

- Dafo Vehicle Fire Protection is in the forefront of the development by participating in several research projects.
- Dafo Vehicle Fire Protection is in the frontline of tehnology engineering by continously developing new products and services in order to meet the challanges on the market.
- Dafo Vehicle Fire Protection is currently working with our OEM customers by integrating our systems into their communication protocols.
- Dafo Vehicle Fire Protection is working focused on sustainability, meaning environmental sensitivity without compromising safety. Measuring and mitigating impacts from manufacture to end-of-life is of great importance.
- Dafo Vehicle Fire Protection is in the process of becoming certified in accordance with IATF 16 949.

Dafo Australia

Dafo Australia is excited to present Dafo Vehicle Fire Suppression Systems to Australia and New Zealand, now, for the first time, backed by Australian Standard certification to AS 5062:2016.

The Dafo system provides excellent reliability, and is designed and tested to perform in the harshest environments. The system has been developed over 40 years, has a huge global presence with over 165,000 global installations, is backed by international accreditation and it’s the trusted factory fit option for a number of large OEM's.

Our Australian team is proud to join Dafo US, Dafo Deutschland, Dafo Russia, Dafo Asia, Dafo Spain, Dafo UK and Ireland, Dafo Brazil, Dafo Middle East and Dafo Chilli in bringing our skills and perspectives to the forefront of engineering, technology and innovation in fire suppression systems.

We are the exclusive distributor, service and parts supplier of the Dafo Vehicle Fire Protection Systems for Australia and New Zealand. We have multiple locations across Australia and New Zealand, giving us fast and efficient access to Dafo system parts and the ability to despatch them quickly and cost-efficiently.

Contact us about installing an AS 5062:2016 certified Vehicle Fire Suppression System today.

dafo Australia

Dafo Australia | 30/388 Newman Road Geebung, QLD 4034 | Australia | Tel + 61 7 3148 8790 | info@dafo-australia.com.au | dafo-australia.com.au