Company Overview

Providing Assurance Everywhere

Ardent®

Contents

Ardent Group Global Presence

Fire suppression, safety and accessibility systems.

We have installed fire suppression and safety systems to over 180,000 vehicles around the world, ranging from double-decker buses to 1,000 tonne excavators.

1993
Over 30 years of innovation in vehicle fire protection and safety.

180k
Vehicles and machines protected by Ardent systems worldwide.

67
Countries connected through our global support network.

1
Dedicated in-house design and manufacturing facility.

We **protect people, fleets and operations** in the world's toughest environments

For over 30 years, we have worked alongside vehicle manufacturers, operators and transport authorities to address real-world safety challenges.

By combining engineering expertise with a deep understanding of transport operations, we develop systems that are reliable, straightforward to service and built to last.

Our solutions help reduce risk, improve accessibility and keep fleets moving, supported by training and ongoing support that our customers trust.

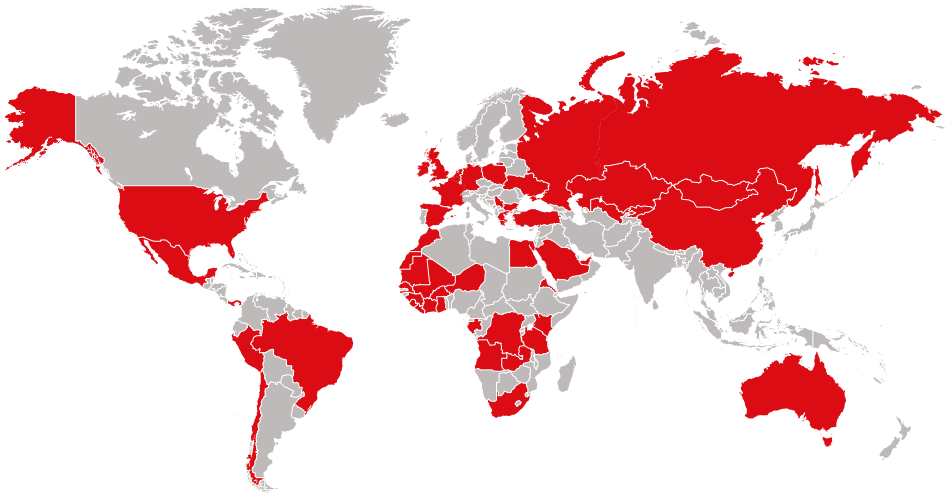
We exist to help people feel protected, valued and connected, wherever they are.

Across the world, our fire detection, suppression, safety and accessibility systems deliver confidence through careful engineering and thorough testing.

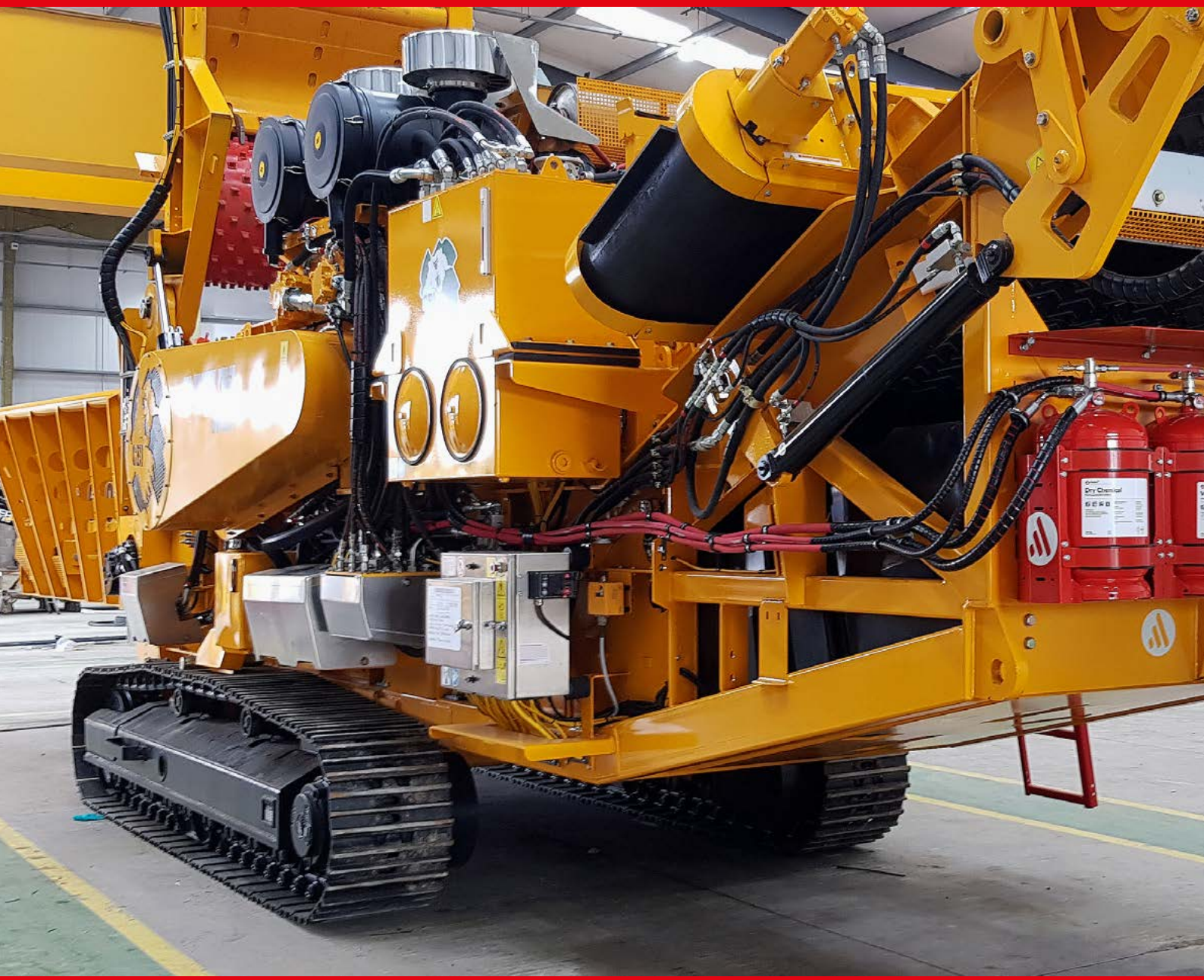
Every product that carries the Ardent name is built on decades of experience and supported by people who understand your industry. From installation to training, we work in partnership with you to ensure your system performs exactly as it should, because attention to detail matters.

When certainty is key, doing the right thing makes all the difference.

Ardent. Assurance everywhere.



Countries supported by Ardent Group



A **complete approach** to fire detection, suppression and fleet safety

Dual Agent

Our **strongest defence** for high-risk machines

The Ardent Dual Agent Fire Suppression System is designed to protect demanding off-road equipment, including mining trucks, loaders, excavators, telehandlers and forklifts.

Our *Dual Agent System* combines fast-acting dry powder and cooling liquid suppressant to address intense fires in large engine bays and high-temperature environments.

Designed for heavy mining trucks, dozers, wheel loaders and other high-risk plant, it provides effective protection where the impact of fire is greatest.

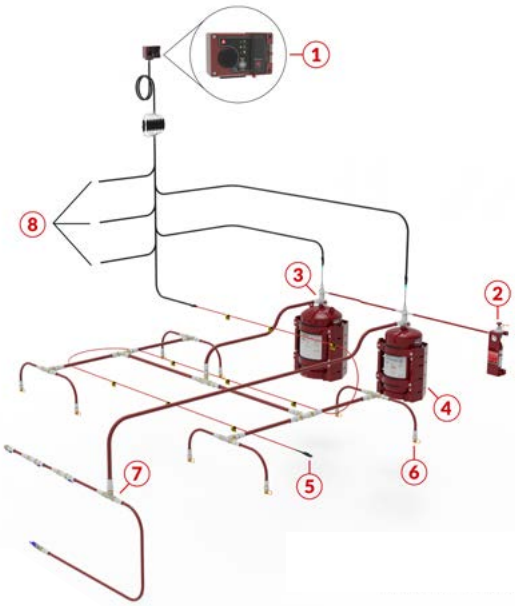
Built with durability in mind it offers multiple activation options, and has proven performance across many applications. It gives operators confidence in demanding environments where equipment works hard and conditions are challenging.

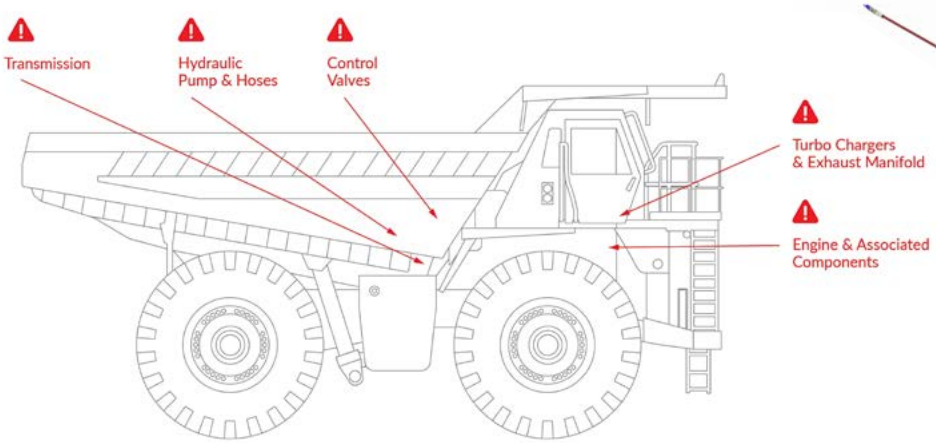
Alongside Dual Agent, we also offer single wet and clean agent systems. This allows us to work with you to select the most appropriate solution for your equipment, operating environment and risk profile.

- Proven, certified fire suppression performance
- Reduced downtime and asset loss
- Integrated safety + monitoring
- Global expertise, local installation
- Full lifecycle support:
  design / install / service / training / audit / renewal

Dual Agent System Layout

1. Ardent VCM Control Module
2. Manual Actuator
3. Dry Chemical Agent Tank
4. Wet Chemical Agent Tank
5. Linear Heat Detection
6. Discharge Nozzles
7. Interface with vehicle's e-stop, battery isolator and optional external power
8. Distribution Network





Single Agent, Dual Agent & other solutions

Our **simpler solutions** where required

Ardent offers single agent solutions as well as dual agent fire suppression systems, to suit a wide range of applications and environments. This range allows us to work closely with customers to select the most appropriate system based on risk, equipment type and operational requirements.

In dual agent systems, dry and wet suppressants discharge together through carefully positioned nozzles, for fast fire control, wide area coverage and a reduced risk of re-ignition. The dry agent delivers rapid suppression across hazard zones and the wet agent cools high-temperature components like turbochargers and exhaust manifolds to help prevent restart fires.

Fire detection is provided by a Linear Heat Detection cable routed around key hazard areas. When exposed to heat, the polymer layer melts and activates the system. Electronic, pneumatic or combined actuation provide flexibility and redundancy, while pressure-monitored tanks, IP68-rated components and a vibration-resistant design support dependable operation and reduced downtime in harsh mobile plant environments.

Control Module

The Ardent Control Module (VCM), manages the operation of the fire detection and suppression system. It gives the user clear visibility of system condition, with live status information and simple, intuitive controls.

The VCM is engineered to perform in environments where vibration, impact and demanding duty cycles are everyday requirements. Designed for applications across mining, quarrying, recycling, waste management and construction.

The module continuously checks system health and records activity through an Event History Log capable of storing more than 4,000 time-stamped events. A configurable time delay allows equipment to be moved to a safer location before system discharge when operating conditions permit.

To support servicing and routine maintenance, the VCM includes an Isolate Mode that temporarily suspends automatic detection. This helps minimise disruption, avoids unnecessary system discharge and reduces the cost and downtime associated with recharging.

Ardent Track Record

The Ardent Group is an established global provider of engineered safety systems for high-risk and mission-critical environments. With more than thirty years of experience across multiple sectors, Ardent has built long-standing relationships with leading OEMs including Caterpillar, Komatsu, Liebherr and Volvo, as well as mine owners, operators and distribution partners. Ardent Ghana is a key and fundamental regional distribution partner and Ardent also enjoys key and ongoing relationships with Barrick Mining, Fluiconnecto, Panafrican and Southwest Global.

These relationships are built on technical capability, dependable performance, trust and value creation. We help reduce your risk, protect critical assets and add long-term value, always placing customer first. This approach underpins our ethos of *Assurance Everywhere*.

Our partnerships reflect not only our ability to deliver proven fire detection, suppression and transport safety solutions, but also a shared commitment to safeguarding people, equipment and operations worldwide.

With headquarters in UK, France and Africa and a global presence, we support customers across defence, energy, industrial machinery, mining, mobile plant, passenger transport and specialist OEM manufacturing. We have been recognised through multiple export awards, reflecting sustained excellence in international delivery and customer confidence to deliver safely and consistently.

> "We thank Ardent for their commitment to both HQ staff and customer facing engineers... we are astounded by Ardent's turnaround time, and look forward to future business."
>
> ZB, SMT Volvo

A selection of companies we work with

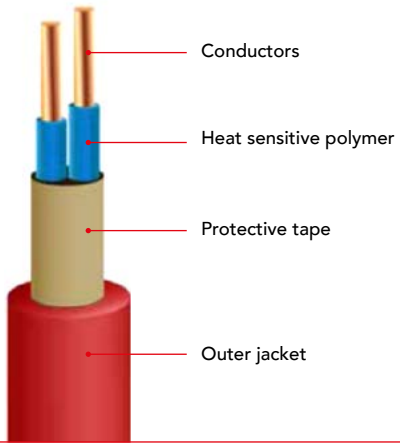
AngloGoldAshanti · ArcelorMittal · Barrick · Caterpillar · digIG · fluiconnecto · Komatsu · Liebherr · Panafrican Equipment Group · Volvo

Ardent Detection Types

Electronic Detection

Uses linear detection cable that sends an electric signal to the system when reaching a certain temperature, activating the system.

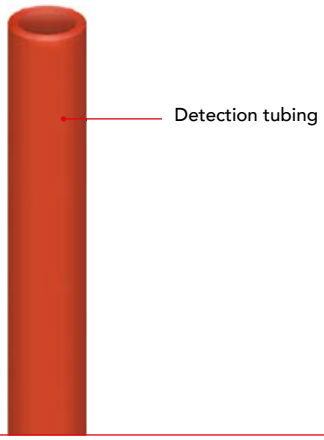
- Significantly reduces potential false discharges
- 24/7 monitored system able to communicate any damage to the detection or actuation lines – increased reliability



Pneumatic or Loss Of Pressure

'LOP' uses pressurised detection tubing that bursts when reaching a certain temperature, activating the system.

- Does not require any external energy / power supply
- Suitable for simple / budget installations



Infra-red Flame Detection

- High Performance and reliability
- Ultra-fast detection, less than 5 milliseconds

R&D, Manufacturing, Installation, Service and Support

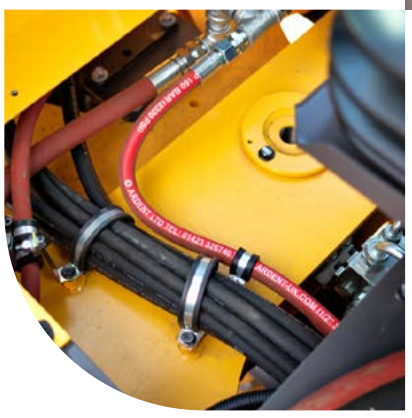
Systems installed **with pride**

Fire detection, suppression and transport safety systems installations play a critical role in performance over time. Good installation supports system reliability, delivers a professional finish and helps reduce the need for repair work and unplanned downtime.

Ardent installs are carried out to clearly defined standards. We focus on using appropriate equipment, approved components and completing each stage of the installation with consistency. This approach helps ensure systems perform as intended from day one and throughout their service life.

Attention to detail is central to how we work. By taking the time to do the job properly, we support long-term reliability and give customers confidence in their fire protection system.

- Improved system reliability
- Significantly reduced remedial work and downtime
- Use of P-Clips rather than plastic ties to mount hoses and detection lines
- Use of spiral wraps to protect hoses from sharp edges
- Use of rubber grommets to protect hoses from sharp edges



Ardent Servicing

Complete **Peace of Mind**

Our servicing contracts and packages deliver proactive protection and operational continuity for your fleet, backed by robust agreements and technical expertise.

Lifecycle Support: Multi-year strategies, scheduled upgrades, and machine-specific risk-reviews under comprehensive framework agreements.

Rapid Response: Minimise downtime with guaranteed SLAs and fast turnaround for mission-critical equipment.

Embedded Expertise: On-site Ardent specialists for audits, training, and technical reviews.

Training & Onboarding: Comprehensive operator training via the Ardent Academy, supported by manuals and refresher modules.

Retrofit Solutions: Extend protection to older assets and integrate with third-party systems.

Interface & Integration: Ability to create and offer interfaces aligned with SLAs and framework agreements for seamless fleet management.

Technical, R&D and Testing

Innovation **at Our Core**

Ardent's technical team combines design, invention, and programming prowess to create systems that set industry benchmarks.

CAD Engineering: Advanced CAD tools for precision design and rapid prototyping.

Programming Excellence: Expertise in C programming and embedded systems for control logic and telematics.

Transport Protocols: Full compliance and integration with J1939 transport programming protocol and others, ensuring inter-operability across heavy-duty vehicle networks.

Innovation & Testing: Rigorous testing regimes for reliability, safety, and compliance with global standards.

Custom Development: Bespoke solutions tailored to client specifications, including software and hardware integration.

Team Strength: A multi-disciplinary R&D team driving continuous improvement and future-proofing.

Manufacturing

Precision and **Scale**

Ardent's UK-based production facility is a state-of-the-art operation spanning over 3,000 sq metres, designed for high-volume, high-quality output that meets stringent international standards.

Advanced Robotics & Automation:
Our assembly lines feature collaborative robotic arms and automated CNC machining for precision component manufacturing. Robotics handle repetitive, high-tolerance tasks, ensuring consistency and reducing human error while freeing skilled engineers for complex builds.

Lean Manufacturing & Efficiency:
We operate under Lean principles and continuous improvement frameworks, supported by an Integrated Business Management System (BMS). This system drives data-led decisions, optimises workflows, and ensures rapid scalability without compromising quality.

Production Methods:

Modular Assembly for flexibility and faster turnaround.

In-process inspection protocols embedded at every stage, governed by ISO 9001:2015 and ITAF 16949 standards.

Traceability systems for full accountability from raw material intake to final product dispatch.

Quality Assurance & Compliance:
Certified to ISO 9001, ISO 14001 and ISO 45001 with BSI-aligned auditing and continuous improvement programs. Rigorous FAIR (First Article Inspection Reports), CMM (Coordinate Measuring Machine) capability, and digital NCR root-cause analysis ensure repeatable performance and zero-defect delivery.

Dedicated QESH team with aerospace and rail quality backgrounds, driving world-class standards.

Capacity & Global Reach:
Capable of producing thousands of systems annually, supporting OEM factory-fit programs and aftermarket retrofits.

Over 180,000 vehicles protected worldwide at any time, backed by a global distribution and service network.

Future-Ready Manufacturing:
Investment in AI-driven predictive maintenance, robotic process automation, and smart IoT-enabled production lines to maintain leadership in safety technology manufacturing.

A selection of companies we work with

A.W. Jenkinson Transport Limited · Biffa · DS Smith · Enovert · enva · McGRATH · S. Norton · suez · VEOLIA · Yorwaste

Remote Monitoring

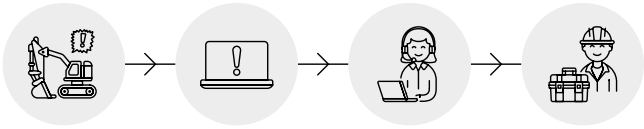
See faults remotely as they happen to **reduce machine downtime** and streamline operations

Ardent's control module uses GPS tracking and live monitoring to provide continuous visibility of fire detection and suppression system status. Ardent can identify faults as they occur, helping reduce downtime and support efficient operation.

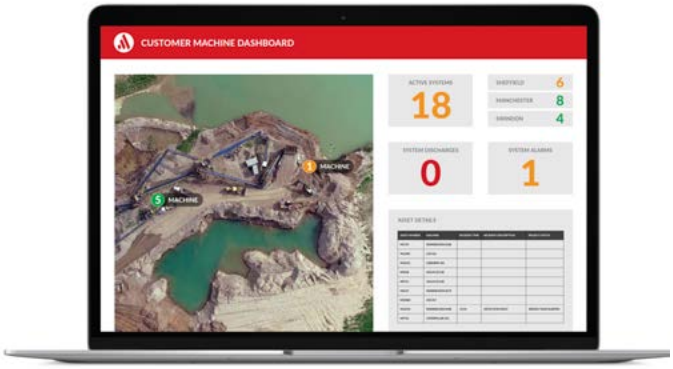
Remote monitoring removes reliance on manual checks by automatically alerting Ardent's support team when an issue is detected. Trained specialists review time-stamped alerts, enabling clear communication with customers and the prompt deployment of engineering support to return equipment to service.

This proactive approach helps identify and address issues early - reducing disruption and limiting unplanned downtime for smooth, reliable operations.

Contact us to learn more about Remote Monitoring and how improved system visibility supports effective fleet management.



1. Ardent remote monitoring detects a fault
2. A live signal is transmitted via 4G cellular
3. Immediately signals our support centre
4. We notify and discuss with our customer



Ardent Academy Training

We have developed the *Ardent Academy* to upskill your workforce and build partnership with your operations. We deliver high-quality training to support safe, confident and effective use of our systems.

Through a structured onboarding process, operators and distribution partners receive technical and practical training tailored to their role. This is supported by clear documentation, hands-on instruction and refresher modules to support ongoing competence.

Training is reinforced by continued support throughout the system lifecycle, from installation and commissioning through to operation and aftersales. Delivered through the *Ardent Academy*, this approach ensures partners remain supported and aligned with Ardent's standards for safety, quality and performance.

Transport Safety Solutions

To ensure every person and every place can feel **protected, valued and connected**

Our products protect...

Drivers
- Safe Assist Module (SAM)
- Pedal Acoustic Feedback
- Assault Alarm

Passengers
- ClearConnect™
- High-Performance Intercom
- Audible Request Unit
- Multi-Message System
- SafeStep™

Vehicle
- R107 Fire Suppression System
- Hydrogen Leak Detection System

Operator
- Electric Vehicle Charging protection
- Telematics

Public
- Acoustic Vehicle Alerting System (AVAS)
- Cyclist Alert System

With our 30 years of experience in fire protection and safety, we work closely with transportation manufacturers, operators and public authorities to address real-world safety challenges.

Combining engineering expertise with a strong understanding of transport operations, we develop systems that are reliable, robust and straightforward to service. Our solutions help reduce risk, improve accessibility and keep fleets operating efficiently. Ardent systems have been installed on more than 180,000 vehicles worldwide. Designed through careful engineering and proven in demanding conditions, operating reliably in a variety of environments.

We offer solutions that protect vehicles, passengers, drivers, the public and transport operators. These include vehicle fire protection systems such as R107 Fire Suppression, passenger safety and accessibility systems including ClearConnect and High-Performance Intercoms, driver support solutions such as Safe Assist and Assault Alarm, public safety technologies including our Acoustic Vehicle Alerting System (AVAS), and operator-focused solutions covering EV charging protection and remote system monitoring.

A selection of OEMs we work with

ALTAS AUTO · ALEXANDER DENNIS · BYD · DAIMLER BENZ · EVM · HARRIS GROUP · HIGER · Irizar · KLEANDRIVE · Otokar · MELLOR · PELICAN Bus and Coach · Salvador Caetano · VOLVO Volvo Group · WRIGHT · YUTONG

Driver

Safe Assist Module (SAM)
Driver safety and alert system with modular configuration

Pedal Acoustic Feedback (PAF)
Audible pedal feedback for electric or hybrid buses

Assault Alarm
Emergency alert system to protect drivers from on-board threats

Passengers

ClearConnect™
Hearing loop system with next-gen and AuraCast-ready options

High-Performance Intercom
Clear, reliable two-way communication with the driver

Audible Request Unit
Passenger-activated audio signal for stop requests

Multi-Message System
Customisable voice announcements for route, safety, or passenger information

SafeStep™
Sensor-triggered announcements encouraging safe behaviour

Public Safety

AVAS™
(Acoustic Vehicle Alerting System)
External pedestrian-awareness sound alerts

Cyclist Alert System
Directional warnings for vulnerable road users

Vehicle and Compliance

Hydrogen Leak Detection System
Early warning for hydrogen gas exposure risk

PSVAR compliant
In line with DfT regulations, we help our clients make PSVAR compliant vehicles

R107 (UNECE) compliant
Relating to fire detection and suppression

2.6 Compliance (Transport for London)
For fire detection / suppression to support your vehicle 2.6 compliance (R118, SPR183 and SPCR 197 key elements). We help you install to 2.6 compliance levels. Our intercom and induction systems are 2.6 compliant. We support our customers in achieving AVAS 2.6 compliance.

EMC approved
For non-passive elements including - induction loops, intercom, SAM and VMMS

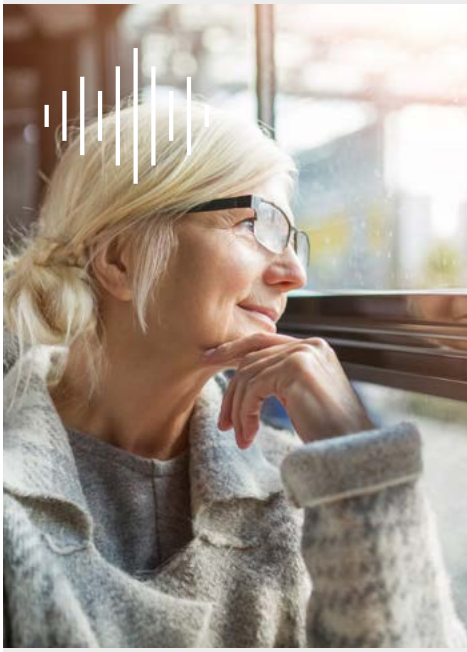
EC RED approved
Key and essential ISO/ILAC-IAF (RED2104/53/EU) certification for our ClearConnect induction loops, unique to the marketplace

SAM (Safe Assist Module)
Now fully USB upgradable

Operator

Electric Vehicle Charging Protection
Fire suppression for EV CHarging Stations, electrical cabinets and other infrastructure applications.h

Remote Monitoring
Real-time monitoring, reporting, and fleet-level insight



A selection of operators we work with

ARRIVA · Cardiff bus bws Caerdydd · eirebus dmc · First Bus · Go-Ahead · Golden Tours · Lothian Buses · Liverpool City Region · McGill's · Metroline · national express · Newport Bus · Nottingham City Transport · Reading Buses · Stagecoach · Transport UK · transdev · Transport for Greater Manchester · Transport for London

Electric Vehicle Charger Protection

Prevent **costly damage** to your EV charging facility

As high-capacity electric vehicle charging is increasing, electrical fire risk also grows. Overheating batteries, wiring faults and power surges affect equipment availability, disrupt operations and create safety concerns for people and assets.

Effective protection depends on addressing fire at its point of origin. Ardent direct fire detection and suppression systems provide fast, dependable response at the source, limiting damage - for safe, uninterrupted operation.

Clean, safe extinguishing agents

Ardent clean agents are non-corrosive and non-conductive, providing effective fire suppression with minimal residue, protecting sensitive equipment and reducing the risk of secondary damage.

Independent operation

Systems can operate without reliance on mains power, providing continuous protection. An internal battery supports charger isolation and beacon alerts when the system activates.

Cost-effective protection

Rapid system activation limits cabinet damage and reduces downtime. Systems can be quickly reinstated after discharge, with clear installation and maintenance guidance for long-term reliability.

Trusted experience

With more than 30 years of industry experience, Ardent is trusted worldwide to protect people, equipment and infrastructure.

Rapid detection and suppression

In enclosed EV chargers, fires can develop before they are visible. Ardent systems can detect and suppress fire within seconds, acting at the source to limit damage and reduce the risk of re-ignition.

Technical Overview

- Detection: Linear heat detection tube
- Extinguishing agent: HALI GAS 1230 (FK 5-1-12)
- System sizes: 2kg, 4kg, 6kg, 9kg
- Features: mains isolation, alert beacon

How the System Works

A pressure gauge provides a clear visual check of system readiness, while linear heat detection tubing is installed around identified high-risk areas. When exposed to excessive heat, the tubing ruptures and triggers the immediate release of the suppression agent. The agent suppresses the fire at source, isolates mains power to the charger and activates a flashing beacon to alert operators, all at once.

Applications and compatibility

Ardent systems can protect EV chargers, electrical enclosures and data processing equipment. They are suitable for use with systems from ***Kempower, Nidec, Zenobe*** and other EV charging providers.

Ardent CO_2 Product Range

We specialise in the **design and manufacture of fire protection equipment** for carbon dioxide (CO_2) fixed fire extinguishing systems

CO_2 Valves

Fitted directly to CO_2 agent storage cylinders in high-pressure fire suppression systems, Ardent's valves are engineered for reliable operation across the full working pressure range of CO_2 fire systems and can be interfaced with a variety of actuators.

System Accessories

Fitted directly to the top of CO_2 storage cylinders, as the main control point for releasing the fire-extinguishing gas, the valve keeps the CO_2 securely contained inside the cylinder. Upon system activation, the valve allows the agent to discharge into the protected area.

Ardent CO_2 valves are designed to operate reliably under high pressures used in CO_2 fire suppression systems and can be triggered in different ways depending on the system design. This ensures the agent is released quickly and correctly when needed, while remaining secure during everyday operation.

Valve Actuators & Operator Interfaces

Ardent offers a range of actuator options that fit directly to its CO_2 cylinder valves, allowing the system to be activated in different applications.

Manual and pneumatic actuators provide mechanical or air-operated methods of triggering CO_2 discharge.

Metron actuators are available in standard formats or with conduit options to support connection to control systems.

Multi-cylinder installations - slave actuators activate secondary cylinders using pilot pressure from a master cylinder, for coordinated discharge across the system.

To support correct installation and operation, Ardent also supplies compatible hosing designed to work with the valve and actuator range.

A selection of companies we work with

Carnival · Chubb · CUNARD · DNV · P&O CRUISES · RED FUNNEL · SIEMENS · Johnson Controls tyco · WORMALD

To find out more or to explore how we can help you enhance the safety and security of your vehicles and plant, contact our sales team on +44 (0)1423 326 740 or info@ardent-uk.com

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