



Vehicle Fire Suppression Systems for Solid Waste Management

Dan Rhodes / Ansul Fire Products

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The power behind **your mission**



Mobile and Static Plant Equipment

- Any piece of equipment that has a diesel or petrol engine for either propulsion, electrical generation or powering hydraulics
- Normally Operating in Hazardous Environments
 - Dozers
 - Excavators
 - Haul Trucks
 - Waste Handlers
 - Compactors
 - Forklift Trucks
 - Skid Steer Vehicles
 - Compressors
 - Shredders
 - Standby Generators
 - Locomotives
 - Waste Conveyors
 - Reach Stackers



Key Industries

				
SURFACE MINING	UNDERGROUND MINING	FORESTRY	AGRICULTURE	METAL PROCESSING
				
CONSTRUCTION AND TUNNELING	WASTE MANAGEMENT	PORTS AND HARBOURS	GROUND SUPPORT EQUIPMENT	TRANSPORTATION

Vehicles in Waste Facilities

- Landfill Site



Vehicles in Waste Facilities

- Materials Recovery Facility

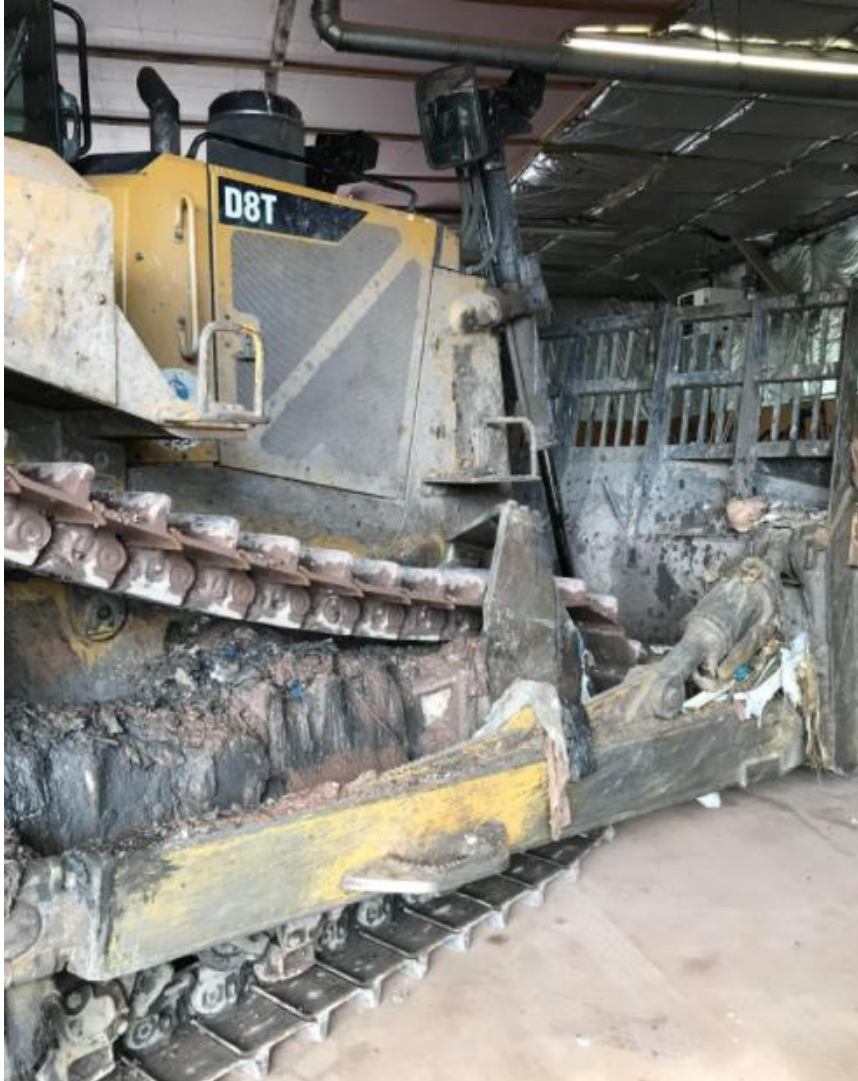


Causes of Fires in Vehicles

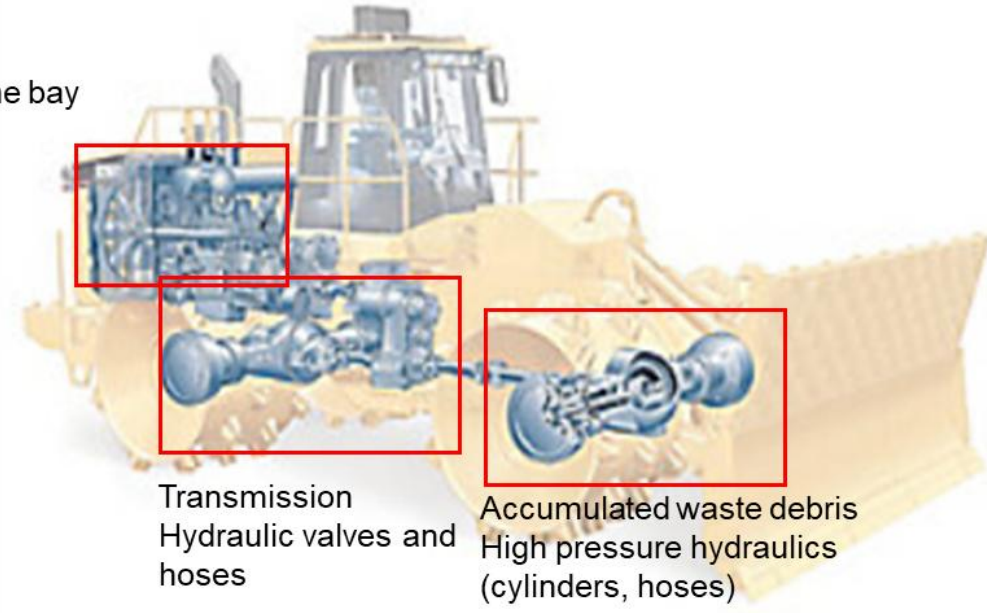
- Class A and B material accumulation
 - Waste material
 - Grease
 - Wood chips
- Defective components
 - Hoses
 - Connectors
 - Filters
- Poor installation
 - Wrong fittings
 - Over/under torquing connections
- Improper vehicle maintenance
- Electrical failure



Waste Material Accumulation



Engine bay

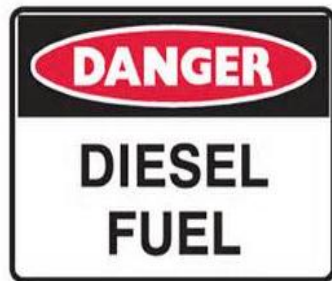


Transmission
Hydraulic valves and hoses

Accumulated waste debris
High pressure hydraulics (cylinders, hoses)

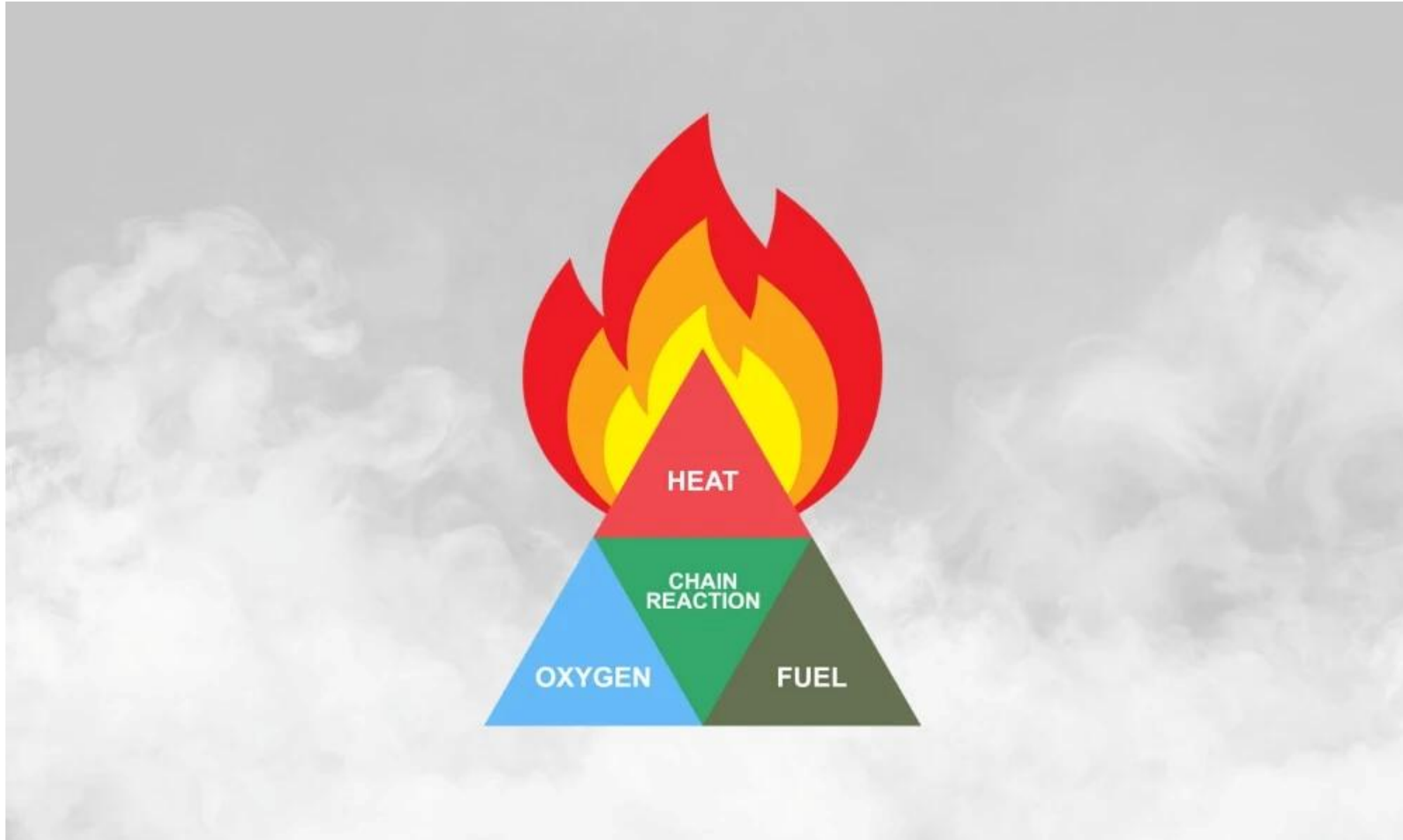
Fire Elements on Vehicles

- Oxygen
 - Vehicles move and operate in open areas
 - Cooling fans increase the supply of oxygen in engine areas
- Fuel sources
 - Diesel fuel pipes, filters and pumps
 - Lubricating oil pipes, filters and pumps
 - Hydraulic fluid pipes, filters and pumps
 - Class A material build up
- Heat sources
 - Turbo chargers
 - Exhaust manifolds and pipe work
 - Diesel Particulate Filter (DPF) Systems



Waste Site Fires

Fire Tetrahedron / 4 Vital Components

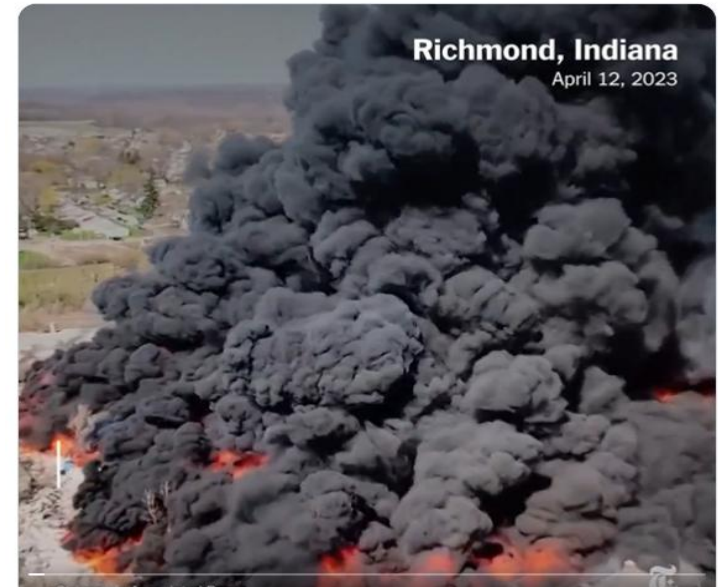


Waste sites fires

Fire incidents increased at waste, recycling facilities in 2022
TIME 2022



Massive recycling yard fire in West Phoenix triggers 'largest response' in fire department's history



Landfill Catches Fire . . . Again



Industry Vehicle Fires



Vehicle Fires: A Serious Risk to Profits and Safety



Major Causes of Fire in Solid Waste Processing

Lithium-Ion Batteries



Class B Liquids













Hot Waste



Vehicle



		<p>Ordinary Combustibles</p>	<p>Wood, Paper, Cloth, Etc.</p>
		<p>Flammable Liquids</p>	<p>Grease, Oil, Paint, Solvents</p>
		<p>Live Electrical Equipment</p>	<p>Electrical Panel, Motor, Wiring, Etc.</p>
		<p>Combustible Metal</p>	<p>Magnesium, Aluminum, Etc.</p>
		<p>Commercial Cooking Equipment</p>	<p>Cooking Oils, Animal Fats, Vegetable Oils</p>

Deep Seated Class A Fire:

When a Class-A fire load has a depth greater than 2 in. the fire is classified as a Deep-Seated fire and requires special consideration within the Fire Risk Assessment. The close-proximity nozzle (LVS-9.5W) maximum distance to a deep-seated Class-A type of hazard decreases from 18 in. to 12 in. (457 mm to 305 mm) to get the proper penetration needed for effective suppression. The standard LVS-9.5 nozzle distances remain as stated above.

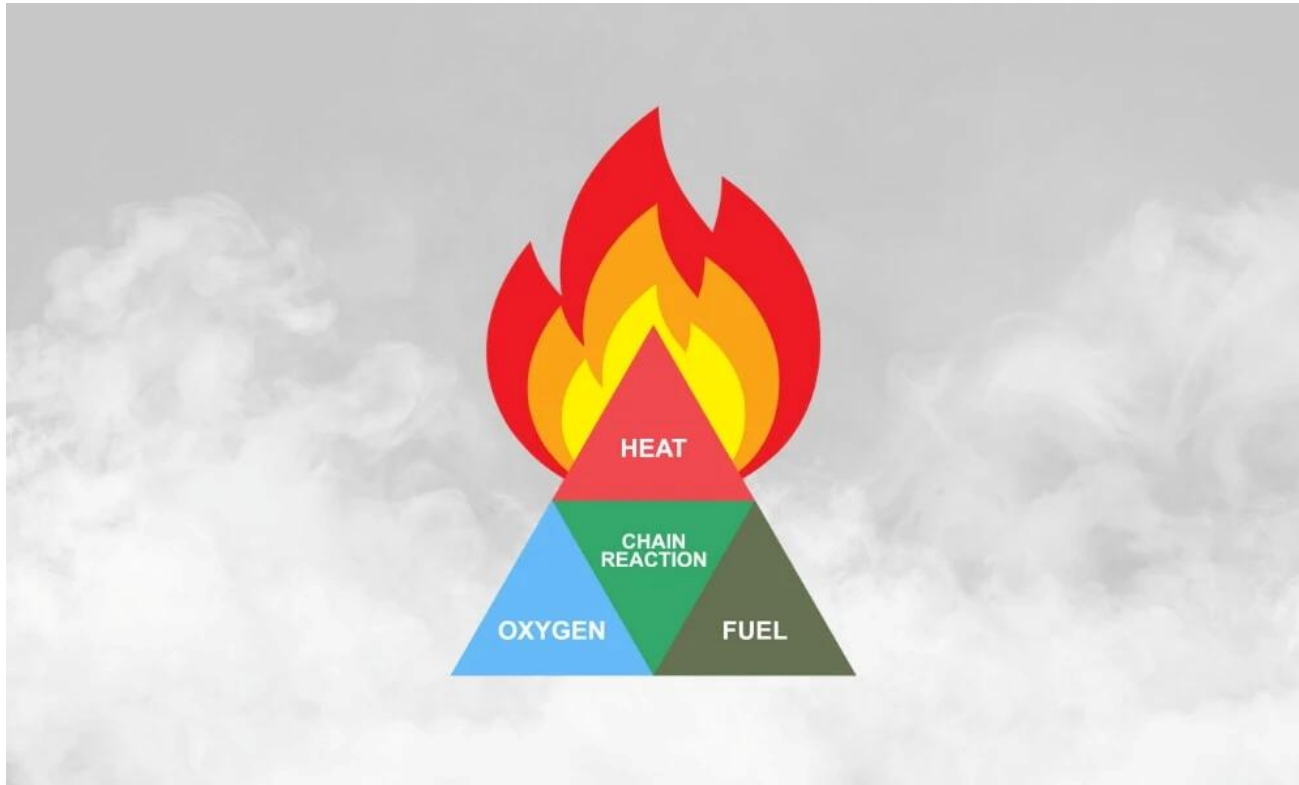
Deep-seated fires are known to occur within landfills throughout the world. To avoid confusion with surface fires, refer to the term 'hot spot' or 'deep seated' when referring to exothermic reactions below the surface of a landfill.

DEEP SEATED FIRE

When a Class-A load has a depth greater than 2 inches the fire is classified as a Deep-Seated Fire"



Review



Defined Fire

Identified the Risk

Discussed Causes

Show Most Plausible Type of Fire

Means of Fire Suppression

Let's Put It Out



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Ansul Test Field / Loader Fire

Fire Suppression / A Key Investment



Applications

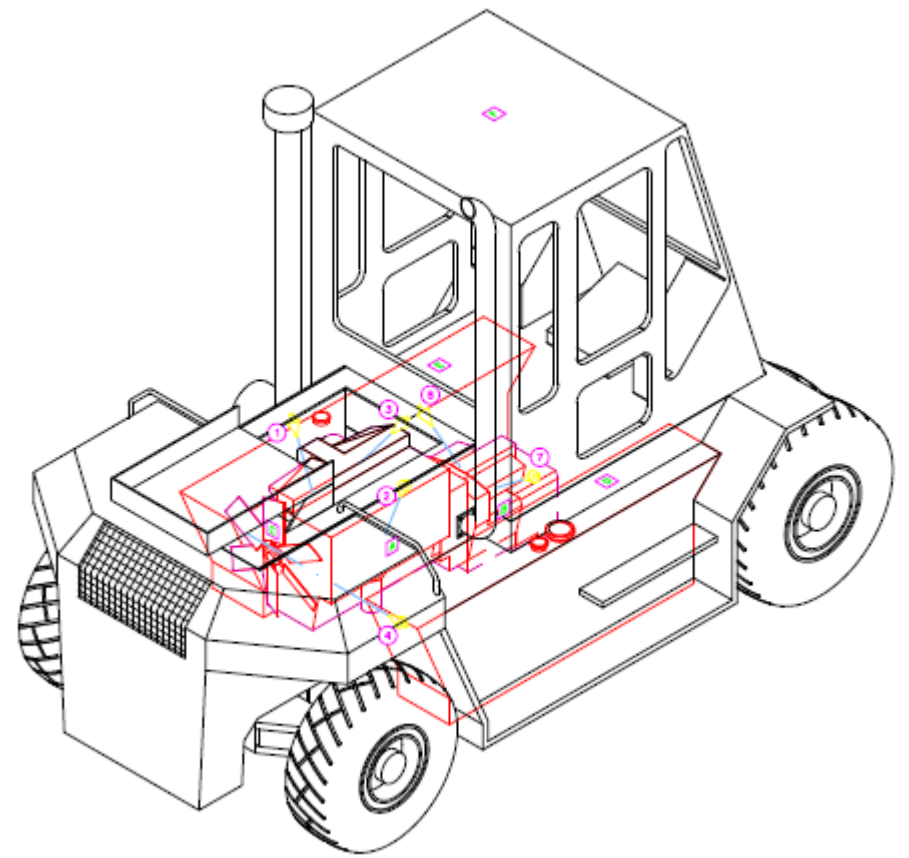
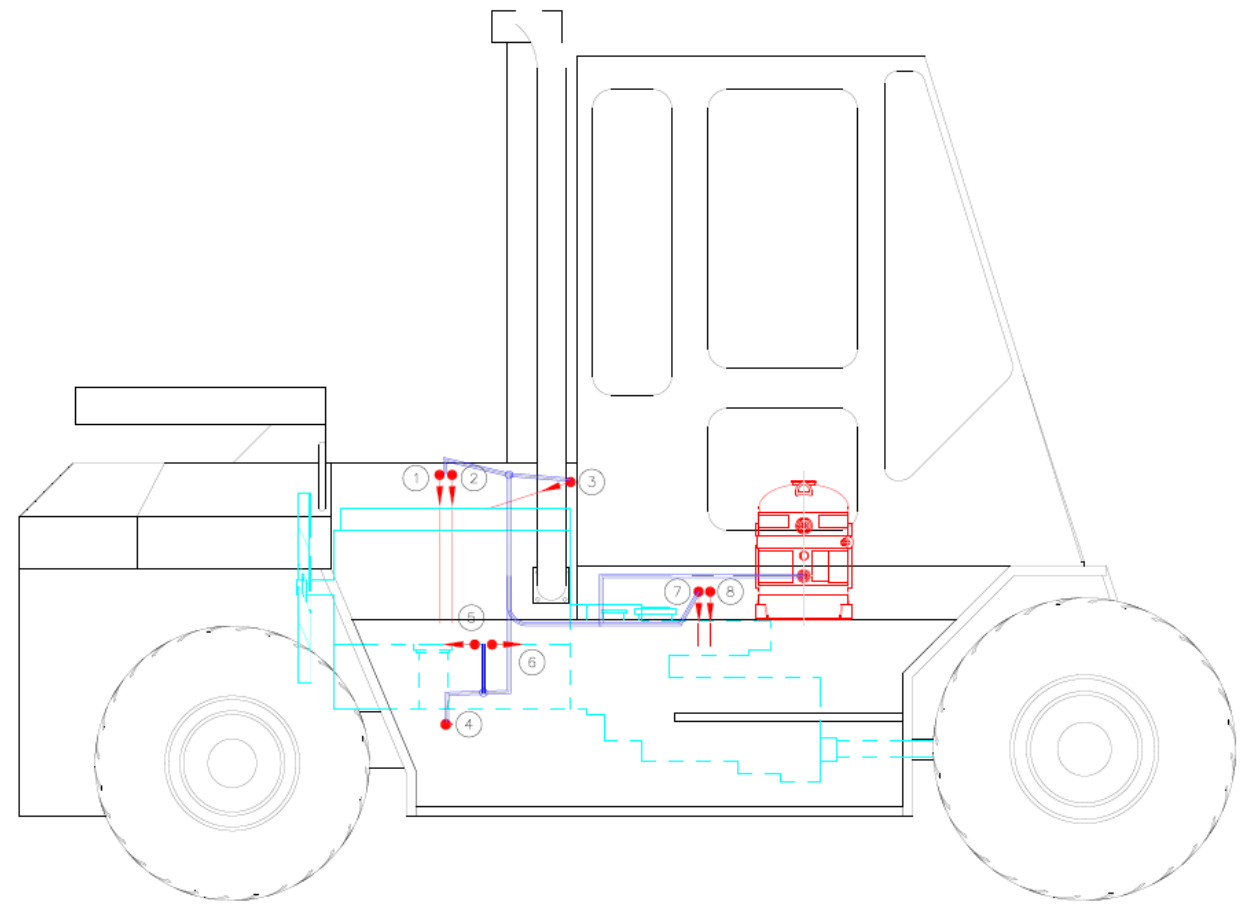
- Skid steer
- Shredders



Recommendations

- CHECKFIRE 110 Detection and Actuation System
- LVS 3 & 5 gallons

Fork Truck Protection



Fire Suppression Recommendations for Waste Site Vehicles



Applications

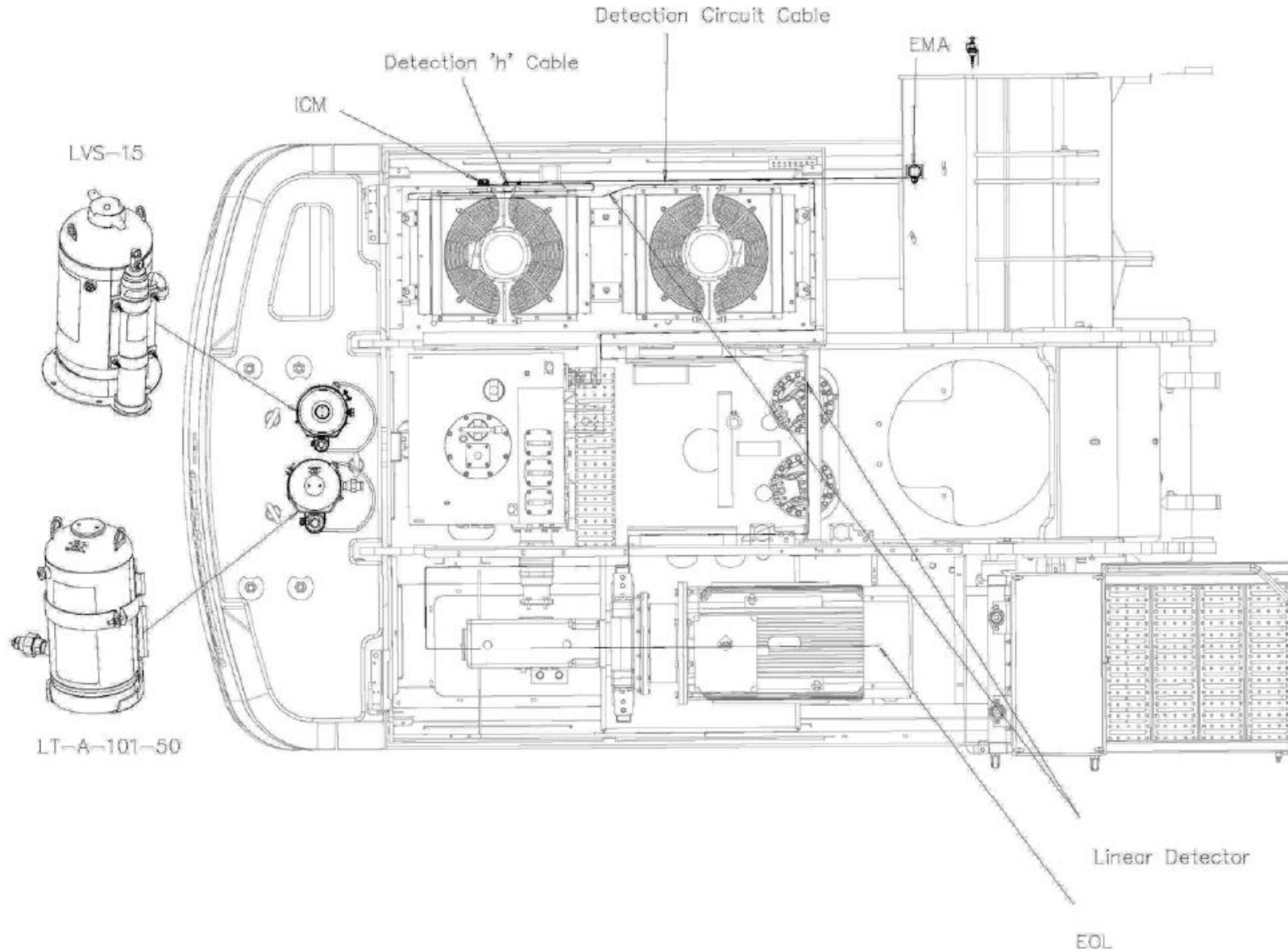
- Landfill Compactor
- Materials Handler
- Wheel Loaders



Recommendations

- CHECKFIRE 210 Detection and Actuation System
- LVS - 10, 15 & 30 gallons

Materials Handler Protection




FRA – Fire Risk Assessment

Risk Assessment and System Design Process


Fire Risk Assessment Report

VEHICLE FIRE SUPPRESSION SYSTEMS



FIRE RISK ASSESSMENT REPORT

Reference No.



030000

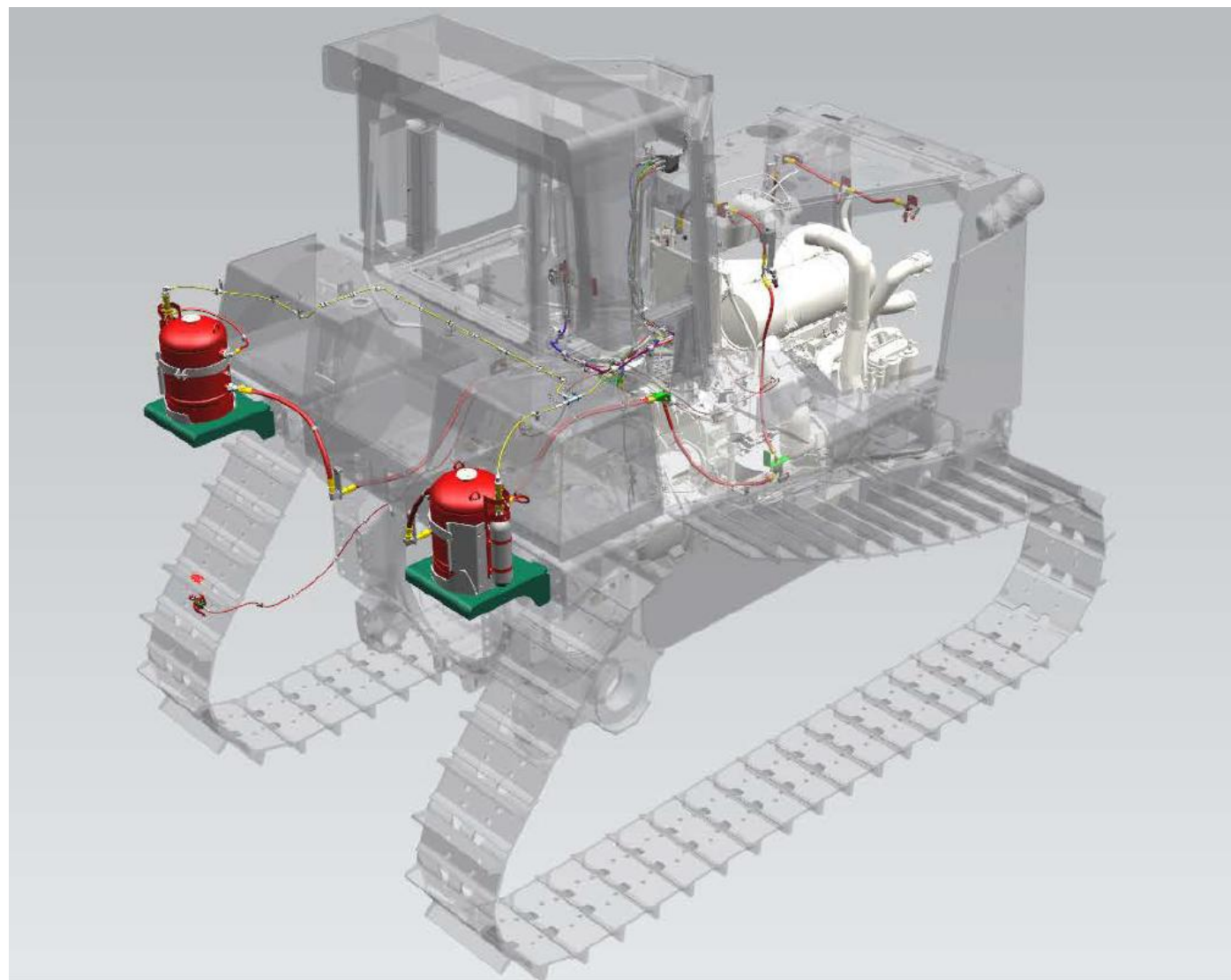
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Risk Assessment and System Design Process



System Design



Approvals and Supply

ANSUL vehicle approvals and standards

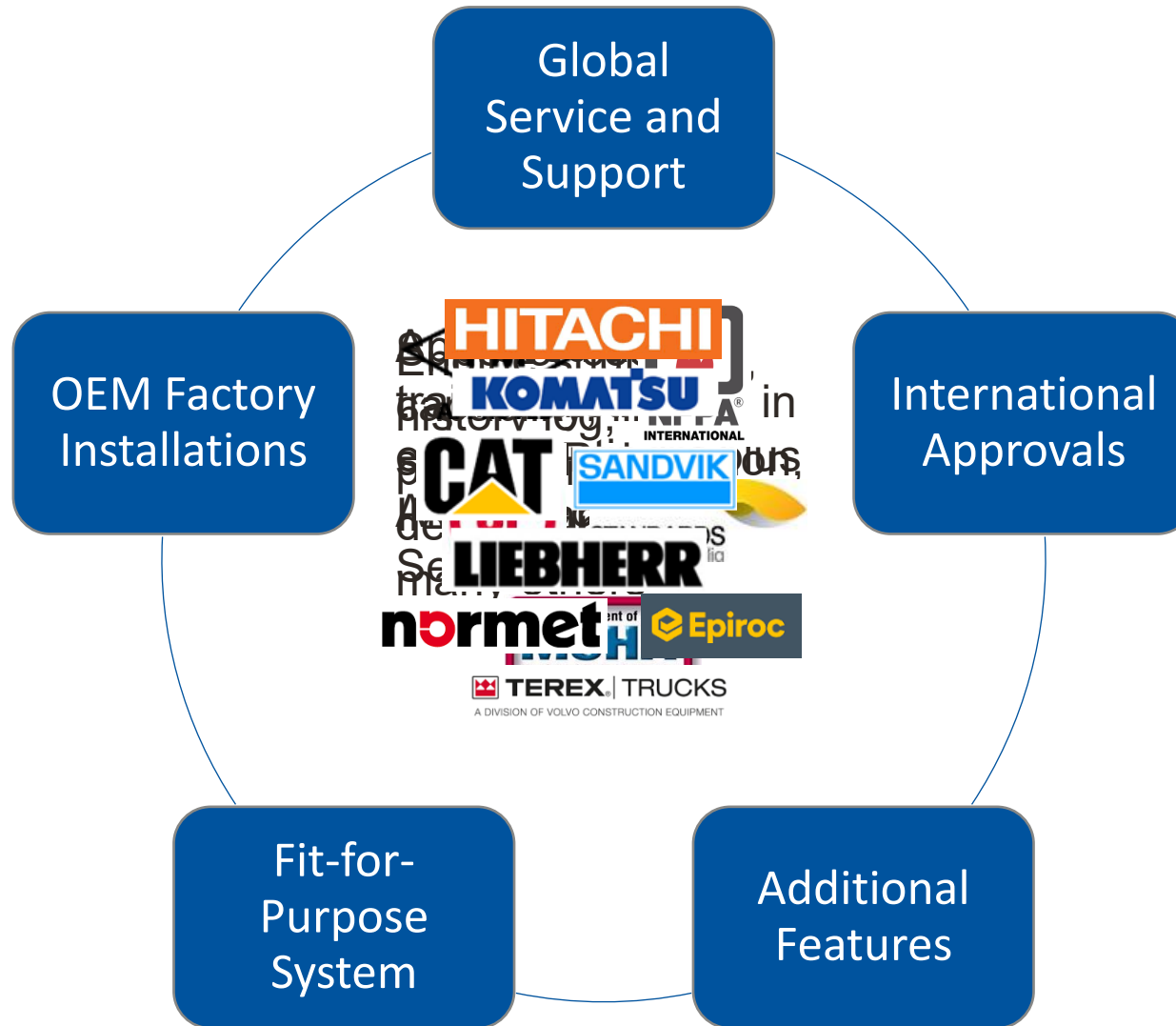
- Factory Mutual
 - Approval standard for Heavy Duty Mobile Equipment
- AS5062
 - Australian standard for mobile and transportable equipment
- NFPA 17 and 17a
 - 17 Standard for Dry Chemical Extinguishing Systems
 - 17a Standard for Wet Chemical Extinguishing Systems
 - 120 Standard for Fire Prevention and Control in Coal Mines
 - 122 Standard for Fire Prevention and Control in Metal/Non-metal Mining and Metal Mineral Processing Facilities
- MSHA approved
- CE approved



OEM installations

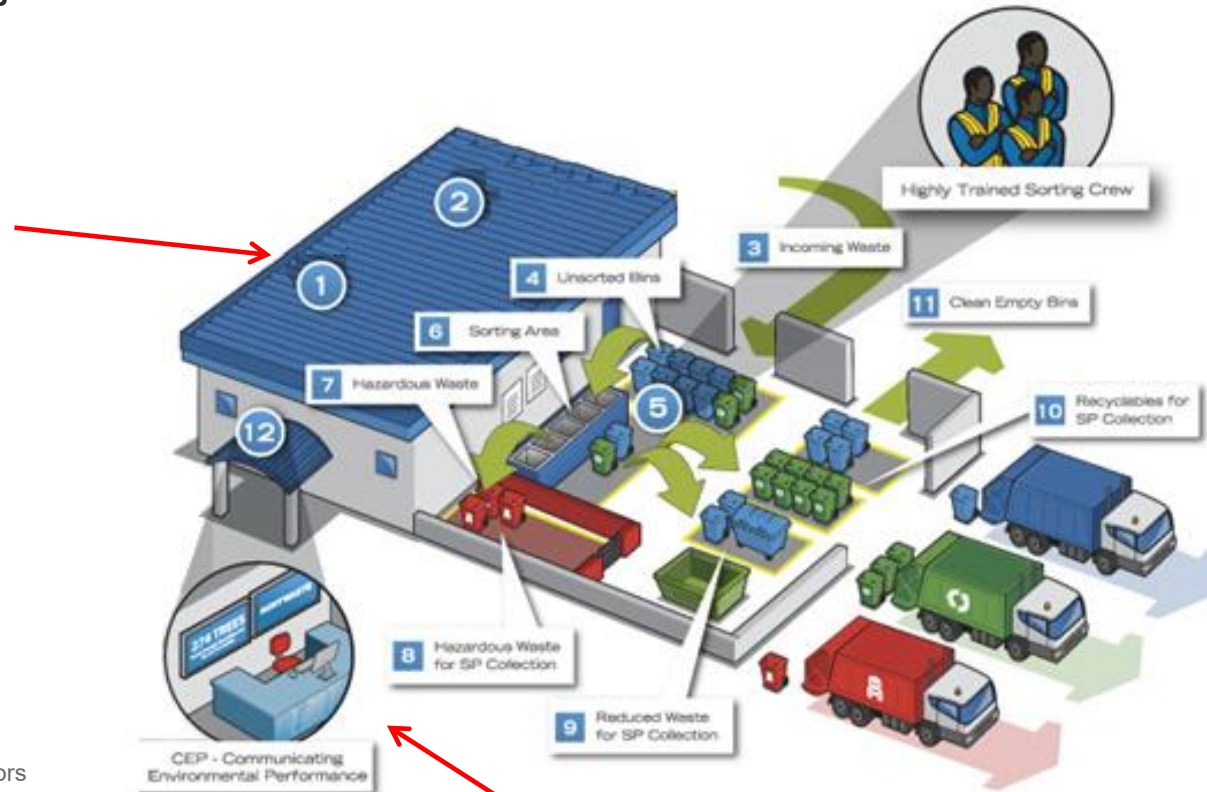


ANSUL Vehicle Benefits



Johnson Controls Solutions for Waste Sites

Waste Bunker or Recycling Area



Automatic detection systems

- Smoke and heat detectors
- Infrared detection
- FLAMEVision visual detection systems
- VESDA aspirating fire detection system

Fire suppression systems

- Sprinklers
- Water spray (deluge) systems
- Water curtains
- Fixed foam monitors (high and low level)

Hand held solutions

- Class A B C D and K Portables
- Li-ion Detection

Integrated detection and foam / water suppression

- Directional Intelligent Fire Suppression System – FLAMEVision & Foam

Office / Reception Area
Automatic detection systems
Portable Extinguishers



Thank You

Questions

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