

## ENGINE SHUTDOWN PACKAGE

### THE NEXT LEVEL OF SAFETY

If a vehicle fire is fueled by a ruptured hydraulic line or failure of a fuel line component, a running engine will continue to feed the fire with fluid or fuel. To limit damage from fires intensified by hydraulic fluids or fuel, the Engine Shutdown Package automatically powers down the vehicle engine and radiator fan as the fire suppression system discharges, reducing or eliminating the fire's fuel source. In turn, the chance of re-flash after initial suppression is significantly reduced.



#### 1 What is an engine shutdown?

This feature is an add-on for fire suppression systems and interfaces with the machine being protected, shutting down the engine when the system is activated. In certain scenarios, engine shutdown is a requirement by the National Fire Protection Association (NFPA), specifically Standards 120 and 122.

#### 2 How does engine shutdown factor into a fire suppression system?

Engine shutdown is especially useful in helping to limit damage from fires intensified by hydraulic fluids or fuel. If the fire was ignited by a ruptured hydraulic line or the failure of a fuel line component, a running engine will continue to feed the fire with fluid or fuel. This can turn a small fire, which initially is easy to extinguish, into an uncontrolled blaze.



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This feature also shuts down the radiator fan. A fan can exhaust dry chemical agent from the engine compartment, reducing the fire suppression system's efficiency. A fan that continues to run may also provide enough oxygen to fuel the fire and intensify it.

### **3 Why is it important?**

When there's a fire, the equipment operator's first instinct is self-preservation. In his haste to escape, he often fails to turn off the engine. Automatically shutting down the engine as the system discharges can reduce or eliminate the fire's fuel source, increasing the probability of complete extinguishment of the fire.

### **4 How does it work?**

Functionality depends on the equipment. Typically, a normally closed pressure switch is spliced into the positive (+) electrical line of the equipment's fuel pump. The switch is also piped into the actuation line of the fire suppression system. When the system is actuated, pressure from the nitrogen gas cartridge opens the switch, interrupting the electrical circuit to the fuel pump. This shuts down the pump, stopping the flow of fuel, which shuts down the engine.

Often, there are other electrical circuits that the pressure switch, either normally open or closed, can be spliced into to shut down the engine. It is recommended that the system installer consult a service technician for the equipment before splicing into any of the equipment's circuits.

### **5 How fast does it work?**

The speed of shutdown depends on which circuit is being used to power down the engine. If spliced into the fuel pump, it generally takes five to eight seconds from system actuation.



## 6 Does the operator have control over the shutdown feature?

Since the engine shutdown feature is engaged upon fire suppression system activation, it can be avoided by delaying system activation or if the alarm condition ceases to exist.

Both AFEX control panels have the ability to delay the activation of the system. The Circuit Monitor Panel (CMP) has a timer and "System Reset" button that allows the operator to override the discharge indefinitely. The Control Unit, a more advanced detection panel, has a "Latching" setting that sets a maximum delay timer. Regardless of the number of times the "System Reset" button is pressed, the system will eventually discharge at the end of the delay timer.

## 7 Factors to consider before installation

The most important factor to consider with an Engine Shutdown Package is operator safety. Sudden engine stoppage may cause an operator to struggle to maintain control of the machine. An abrupt halt in hydraulic power once the engine stops can also cause additional operator safety hazards.

Rubber-tired equipment is generally highly mobile and requires a thorough evaluation to determine usage of the engine shutdown feature. Should engine shutdown occur while maneuvering over combustible materials or operating at higher speeds, a sudden loss of control could jeopardize the safety of the operator. The CMP with the delay timer and "System Reset" button gives the operator an opportunity to prepare for the shutdown and also allows him to delay it until he is ready.

### Engine Shutdown for Heavy Equipment

#### Stationary Equipment - Little or No Mobility

- Drills
- Excavators

#### Wheeled Equipment - Medium Mobility

- Wheel Loaders

#### Track Equipment - Low Mobility

- Dozers
- Excavators

#### Wheeled Equipment - High Mobility

- Haul Trucks

