

Idle Reduction Technologies for Municipal Vehicles



This is one of a series of fact sheets designed to help rural municipalities reduce fuel usage in their town fleets. For more information, please visit the UMass Clean Energy Extension (CEE) website, <https://ag.umass.edu/clean-energy>.

What is Idle Reduction Technology?

Idle Reduction Technology (IRT) is equipment that can be installed in vehicles and heavy duty machinery to reduce or eliminate long periods of idling. Many IRT systems also provide an alternative source of energy so that on-board appliances, such as lights, heaters, and air conditioners, can still be used when the engine is off.

Types of Idle Reduction Technology Systems:

- **Idle Limiter** – The simplest form of IRT, this mechanism turns a vehicle’s engine off after it has been idling for a predetermined period of time.
- **Electronic Stop/Start System** – An electronic device that monitors vehicle battery levels while the engine is off, but appliances are in use. Once battery levels drop below a certain point, the device turns the engine on for a set amount of time to recharge the battery, and then turns the engine off again.
- **Auxiliary Power Unit (APU)** – A small secondary power source that allows a vehicle’s electronic appliances to be used when the primary engine is not running. APUs can be powered using the vehicle’s main fuel supply, a small separate fuel tank, alternative fuel, rechargeable batteries, or rooftop solar panels.
- **Fuel Operated Heater (FOH) and Battery Air Conditioning System (BAC)** – Small independent heating and cooling systems. FOHs can operate on a range of fuels, including gas, diesel, and alternative fuels. BACs are powered with rechargeable batteries, which can be charged by the engine while it is running, or by rooftop solar panels. These two systems are frequently utilized together.
- **Plug-in Hybrid Systems** – Rechargeable battery systems can be installed to run power take-offs, bucket truck lifts, dump truck hydraulics and other truck equipment, even when the engine is off.

How Can Idle Reduction Technology Help a Fleet?

Due to the versatility of IRT systems, nearly any vehicle can be equipped with some form of anti-idle technology. According to the U.S. Department of Energy, idling a vehicle for 1 hour can burn up to one full gallon of fuel. Over the course of weeks, months, or years, unnecessary idling can have a damaging and costly impact on vehicles. While the exact savings for an IRT system can vary, IRT systems provide 3 main benefits:

- Reduced fuel consumption
- Reduced engine wear - extended vehicle life & reduced maintenance costs
- Reduced vehicle emissions

Choosing an IRT System for Your Fleet

Argonne National Laboratory maintains a list of available Idling Reduction Equipment on its website:

<http://www.anl.gov/energy-systems/downloads/compendium-idling-reduction-equipment-class-1-8-vehicles>

Download the spreadsheet at the bottom of the page, and then filter by the following search terms to find the particular types of IRT you are considering. Where available, the spreadsheet includes estimated fuel use reduction, estimated cost ranges, and links to manufacturers' websites.

Type of Technology	<i>Argonne National Laboratory Spreadsheet Search Terms</i>	
	Technology	Function
<i>Idle Limiter</i>	Idle management systems	Automated idle shutdown timer
<i>Electronic Stop/Start</i>	Idle management systems	Idle management system to cycle engine as needed to maintain battery state of charge and coolant heat
	Idle management systems	Idle management to circulate coolant for heat and allow low power accessories to run from battery
<i>Auxiliary Power Unit</i>	APU (Battery)	Battery APU to provide electric power
	APU (Battery)	Battery APU to provide electric power, heating, and cooling
	APU (Diesel)	Diesel auxiliary power unit for electricity generation
	APU (Diesel)	Diesel auxiliary power unit with HVAC and electricity generation
<i>Fuel-Operated Heater</i>	Fuel-operated heater	Fuel fired air heater
	Fuel-operated heater	Fuel fired heater for cabin air
	Fuel-operated heater	Fuel fired coolant heater
	Fuel-operated heater	Fuel fired heater for coolant
<i>Battery Air Conditioning System</i>	Battery HVAC	Electrically driven air conditioning
	Air Conditioner	Water-based evaporative air conditioning system
	Battery HVAC	Solar panel and controls to provide electrical power for heating/air conditioning/hotel loads for vehicles
<i>Plug-in Hybrid Systems for Power Take-off and Truck Equipment</i>	Idle management systems	Plug-in electro-hydraulic hybrid (battery) system for Boom, Bucket and Material Handling truck equipment
	Idle management systems	Plug-in hybrid (battery) system for vocational truck equipment
	Idle management systems	Plug-in hybrid system for vocational trucks to power truck equipment with electric power (batteries)
	Idle management systems	Plug-in hybrid system for vocational trucks to power truck equipment with electric power (batteries) and optional cab comfort system