DELPHI

POWERTRAIN SYSTEMS

Delphi Evaporative Emissions Canisters

Delphi Evaporative Emission Canisters help limit the amount of gasoline vapors released into the environment by reducing evaporative emissions that occur from fuel storage and delivery in a vehicle's fuel system.

As gasoline vapors from the fuel tank enter the canister through the tank tube, hydrocarbon molecules in the vapors are attracted to and stored on the surfaces of the carbon bed inside the canister. This process is called adsorption. A manifold vacuum draws fresh air through the carbon bed, pulling the gaseous molecules into the intake manifold for combustion. This process is called purging.

Delphi recognizes that a carbon canister is an integral part of an effective evaporative control system. Delphi develops evaporative emissions canisters tailored to specific customer needs. Delphi has an extensive portfolio of canister designs to meet any packaging objective. Delphi offers a range of products to help manufacturers meet a variety of adsorption level requirements for specific engine programs, fuel tank sizes, and emissions regulations.

Delphi helps manufacturers around the world select the proper evaporative emissions canisters to meet specific requirements for emissions regulations, application, and durability.

Benefits

- Delphi's integrated canister modules feature optimized sizing, flexible mounting, and compact packaging to meet vehicle space requirements
- The canister modules also provide low restriction, canister vent solenoids (CVS), and dust filter content to reduce vehicle system connections
- Delphi's LEV II canister modules include integrated on-board diagnostics (OBD), CVS, and an air-inlet dust filter
- Delphi's PZEV canisters feature additional integrated components including a hydrocarbon scrubber

Typical Applications

Automotive

Delphi offers carbon canisters that can help automotive manufacturers around the world meet all gasoline evaporative emissions standards including:

- North American, such as Low Emission Vehicle (LEV II) and Partial Zero Emissions Vehicles (PZEV)
- European (Euro) standards
- Korean Low Emission Vehicle (KLEV)

Delphi also offers evaporative emissions canisters for specialized automotive applications including hybrid vehicles, gasoline direct injection (GDi) programs, and alternative fuel programs.

Non-Automotive

Delphi can help manufacturers of non-automotive gasoline engine products meet anticipated evaporative emissions regulatory standards. Delphi offers its unique expertise and complete technical support for:

- Motorcycles
- Marine engines
- Small gasoline engine products such as lawn tractors and stationary generators

Feature	Emissions Application ECE	Emissions Application KLEV	Emissions Application LEV II	Emissions Application PZEV	Emissions Application Hybrid	Benefit
Partitioned carbon bed	•	•	•	•	•	Increases efficiency by reducing hydrocarbon migration toward the air tube vent
Liquid trap	•	•	•	•	•	Helps prevent condensation from contaminating carbon in liquid state
Active liquid trap purge (optional)	•	•	•	•	•	Purges liquid fuel from the liquid trap area
Volume compensation	•	•	•	•	•	Prevents loss of carbon pack with exposure to moisture, alcohol fuels, and excessive temperatures (300,000 mile [480,000 km] durability)
Flexible mounting and packaging with multiple orientations	•	•	•	•	•	Enhances packaging capabilities
Multi-chambered design			•	•	•	Reduces bleed emissions and further inhibits hydrocarbon migration toward the air inlet (needed to meet bleed emission targets of 40 or 60 mg)
Hydrocarbon scrubber				•	•	Captures low levels of canister bleed emissions and provides deep efficient cleaning with available purge* Delphi provides integrated scrubber and discrete solutions with hydrocarbon scrubber
Impact modified nylon shell material (optional)	•	•	•	•	•	Provides resistance to stone impact and significantly reduces warranty claims due to breakage

*Bleed emissions less than 10 mg on 2- and 3-day test

Performance Advantages

Delphi's ability to integrate components in one canister module provides manufacturers with simplified canister designs and greater packaging flexibility. Delphi can provide an evaporative emissions canister or design and build a complete evaporative emissions system, including:

- Carbon canister
- Hydrocarbon scrubber
- On-board diagnostics (OBD)
- Hoses
- Mounting
- Hybrid valves

Delphi employs an exhaustive analysis, testing, and validation process to verify that an evaporative emissions canister will work properly before it is manufactured. Designing with math data facilitates immediate analysis, while state-of-the-art computer modeling and advanced testing facilities enable Delphi to validate performance through durability and functional testing, California bench testing, and materials analysis. Delphi's vehicle testing also correlates component and vehicle emissions levels. Additionally, Delphi can also customize testing for all emissions requirements.

The Delphi Advantage

Delphi is one of the world's leading manufacturers of evaporative emission canisters, producing millions annually and providing customers with world class quality and warranty performance. Delphi offers the benefits of more than 35 years' experience, and the in-depth knowledge of evaporative emissions canister design and market requirements. Delphi offers low-cost manufacturing in North America, Asia, and Europe. Delphi has full engineering capabilities in North America and Europe to help manufacturers meet evolving evaporative emissions criteria.

As a global leader in engine management systems technology, Delphi can help manufacturers around the world meet emissions requirements, improve fuel economy and enhance performance. Delphi is a source for high value solutions and our systems expertise is built into every product. Delphi's flexible engineering approach encourages collaboration. And, Delphi has a thorough understanding of automotive markets around the world and a global network of resources.