YOUR VEHICLE EXHAUST REMOVAL SOLUTION

FOR A HEALTHIER WORK ENVIRONMENT

PLYMOVENT®

clean air at work

PLYMOVENT EXHAUST REMOVAL SYSTEMS

Designed to protect your people...and your facility

Exposure to vehicle exhaust emissions can cause serious health problems for your employees. The most efficient way to combat that exposure is to capture the exhaust fumes at the source, eliminating ingestion of harmful pollutants. With over 25 years of experience, PlymoVent® Source Capture systems remove the hazardous emissions at the source, providing a healthy and safe working environment.

As a proven industry leader, PlymoVent focuses on capturing emissions at the source, and provides solutions to properly ventilate your facility.[1] Our energy management solutions minimize the energy required to run air handling and ventilation systems, saving money on operating your facility. When working with PlymoVent, you can be assured that our user-friendly systems meet or exceed the highest standards for health and safety codes worldwide.

AN EPA STANDARDS ALLIANCE

As the EPA regulatory emissions standards are continually being tightened, PlymoVent and our strategic partners have formed an EPA Standards Alliance to carefully monitor the changes being made by the agency. This alliance will maintain a high level of regulatory awareness, thus enabling PlymoVent to bring to market new and innovative solutions that meet the ever-changing vehicle performance requirements. We have made it our business to understand the changes within the markets and how source capture solutions should be used under the new guidelines.

KNOW THE DIFFERENCE

PlymoVent knows one system doesn't fit all. Whether installing a system into an existing facility or building a new one, our full-time engineering staff is ready to develop a custom-tailored system that meets process and building requirements specific to your facility. Our team will work one-on-one with your architects and construction managers to ensure the right system is in place and the safety codes have been followed.

As an experienced industry-leader, PlymoVent has provided over 50,000 installations for source capture and ventilation systems for many industries including those listed below:

Military facilities

Automobile plants

DOT facilities

Motorcycle/ATV

Emergency vehicles

Repair bays

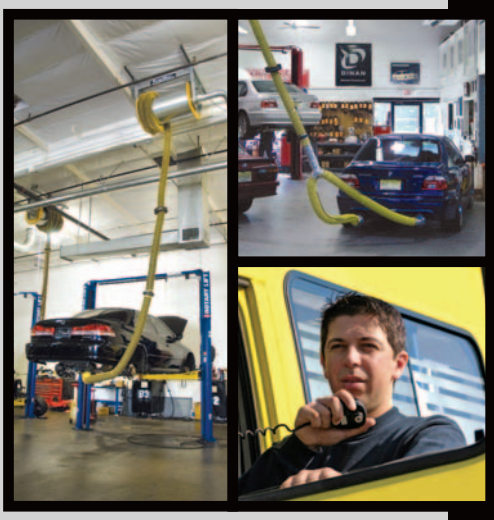
Agricultural equipment

Train facilities

Bus depots

For more information about our solutions, please contact PlymoVent or visit our website, www.plymovent.com

BENEFITS OF A HEALTHIER WORK ENVIRONMENT



For over 25 years PlymoVent has been providing solutions for a healthy and safe work environment. PlymoVent engineers look at the long and short term needs of your facility to make proper design recommendations. Attention to detail and adherence to codes have made PlymoVent a proven leader that provides:

- Unique source capture systems that remove virtually 100% of exhaust emissions
- Experienced engineering staff to provide custom-tailored systems
- Energy management solutions for air and ventilation solutions
- A worldwide dealer network for excellent customer service

UNDERSTANDING THE RISKS

At PlymoVent, we know the dangers of exposure to hazardous exhaust fumes. We continuously review safety management guidelines and listen to what the experts have to say:

OSHA – The Occupational Safety and Health Administration has set a permissible exposure limit of 1 part of Benzene per million parts of air (1 ppm) in the workplace during an 8-hour workday, 40-hour workweek. The EPA has classified benzene as a Group A carcinogen.

CDC – The Centers for Disease Control & Prevention reports that exhaust from any improperly maintained vehicle can pose serious hazards. The most common source of carbon monoxide is automobile exhaust vented in confined spaces. Proper ventilation and prevention of carbon monoxide build-up in confined spaces must be assured.

NIOSH – The National Institute for Occupational Safety and Health, states that there can be no safe level of exposure to a carcinogen; therefore NIOSH's Threshold Limit Value is "lowest feasible level."

MEETING THE STANDARDS

PlymoVent systems are designed to meet or exceed the standards of the most exacting health and safety codes—worldwide![2]

USA STANDARDS

- Occupational Safety & Health Administration
  www.osha.gov/SLTC/dieselexhaust
- National Institute for Occupational Safety and Health
  www.cdc.gov/niosh
- American Conference of Governmental Industrial Hygienists
  www.acgih.org
- American Industrial Hygiene Association
  www.aiha.org

CANADA STANDARDS

- Canadian Center for Occupational Health and Safety
  www.ccohs.ca

EUROPE/US STANDARDS

- US-EU Cooperation of Workplace Safety and Health
  www.useuosh.org
- National Toxicology Program
  http://ntp-server.niehs.nih.gov
- American Federation of State, County and Municipal Employees, AFL-CIO
  www.afscme.org

INTERNATIONAL STANDARDS

- Diesel Exhaust Emission Standards
  www.dieselnet.com/standards

[1]The operation of exhaust extraction systems can be affected by various factors including proper design of the system, operating procedures, and service and maintenance. Exposure levels should be checked upon installation and periodically thereafter to ensure that they fall within applicable NIOSH and OSHA exposure limit values.

[2]PlymoVent systems are code compliant when systems are properly designed, operated, serviced and maintained.

PLYMOVENT SYSTEMS FIT ALL OPERATIONS – SMALL TO LARGE

FE – Fixed Exhaust (Fan optional)

SER – Spring Return Reels

Small Working Area

- General working radius 5′ to 10′
- FE – Fixed Exhaust extractor
  - 3″ to 6″ hose diameter
  - Max. 1,200°F exhaust temperatures
  - Special fan required for high temperatures
- FEF – Fixed Exhaust extractor with direct-mount fan
  - 8′ of hose retraction with balancer
- SER – Spring operated Exhaust Reels for 3″ to 6″ hose diameter
  - 40-pound lifting capacity
  - Up to 25′ of spring return length with various temperatures and grades of hose available

Spring Return hose systems are recommended for smaller working areas. Service technician pulls down exhaust hose and attaches nozzle to vehicle. When finished, pull on hose again, and it smoothly retracts the hose.

Light-duty Motorized Hose Reels

Hose Reel on Boom

Medium Working Area

- General working radius 5′ to 20′
- HRB – Hose Reel on Boom allows boom length up to 15′ with spring hose reel on end
- SER – Spring operated Exhaust Reels preferred for longer hose lengths; when hose needs to retract by hand; and for heavier hoses
  - 3″ to 6″ hose diameter
  - 40-pound lifting capacity
- MHR – Motorized Hose Reels (Light Duty) preferred for long hose lengths and heavy hoses
  - 3″ to 6″ hose diameter
  - 40-pound lifting capacity

PlymoVent's Goal: to provide source capture ventilation that fits the vehicle and the application.

PlymoVent does not believe in dragging hoses across working areas.

PlymoVent's Philosophy: Source capture should be brought down over the exhaust point to allow for safe working conditions.

FEB – Fixed Exhaust on Boom

MER – Heavy-duty Motorized Exhaust Reels

Large Working Area

- General working radius 20′ to 30′
- FEB – Fixed Exhaust on Boom has retractable hose dropper on swing arm
  - 3″ to 8″ hose diameter
  - 10′ to 26′ hose lengths
- MER – Motorized Exhaust Reels (Heavy Duty) for long & heavy hoses in large areas
  - 3″ to 8″ hose diameter
  - 77 lb. to 110 lb. lifting capacity
- SER – Spring operated heavy duty Exhaust Reels preferred for longer hose lengths; when hose needs to retract by hand; and for heavier hoses
  - 8″ hose diameter
  - 75 lb. lifting capacity

Proper installation will place the hose drop directly over the point of source capture.

In many cases (for the most demanding vehicle applications), systems can be set-up to service multiple bays for heavy, off-road vehicles.

VSTR – Extraction Rail

VVSR – Vertical Stack Rail

Hose Reel On Rail

Unlimited Working Area

- Working length determined by length of exhaust rail
- VSTR – Vehicle Exhaust Straight Rail system
  - Allows for ventilation of moving vehicles
  - 3″ to 6″ hose diameter
  - Automatic or manual release options
  - Unlimited length
  - Can be configured into a looped rail system with auto return to start point
- VVSR – Modular Exhaust Rail system for vehicles with vertical exhaust stacks
  - System can accommodate HRR – Hose Reel on Rail

These systems provide maximum flexibility. Rails allow for easy future expansion by adding trolleys or additional hose reels.

A single capture drop can service many areas by sliding across rail above vehicles.

Designed for vehicles moving along assembly line or traveling lane.

INTELLIGENT CONTROLS OFFER ENERGY-SAVING SOLUTIONS

Micro Switch

Pressure Switch

Radio Control Switch

Auto Start Mechanisms

- Micro Switch – fits external junction box to control damper motors
- Pressure Switch – senses vehicle engine starting

PlymoVent controls can start and stop exhaust ventilation systems automatically. Customers save energy and gain operator efficiency.

Improved air quality keeps operators alert, productive and safe from toxic fumes. Reliable source capture systems streamline operations; making working conditions safer and healthier.

Automated Dampers

ICE-LC Damper Controls

Automated Dampers

- Automated Dampers – various diameters available
  - Heavy-duty construction for high static pressure
  - Low voltage 24-volt control with ICE-LC unit
  - Easy installation; built-in seal
- ICE-LC Controls – includes built-in step-down transformer and timer

Automated dampers and Auto Start controls employ source capture systems as needed. Automated systems maximize effectiveness of operation; minimize operator errors; and save energy.

VFD

Pressure Transmitter

VFD

- Variable Frequency Drives (VFD) – for 1.5 HP to 30 HP; 240 volt and 460 volt systems
  - Built-in set-up provides for manual control
  - Automated control using pressure transmitter
  - Remote start and stop
- Pressure Transmitter – for automated control

VFD-linked systems can include pressure transmitter; automated dampers; and damper controls.

Fully-automated controls will regulate a PlymoVent source capture system to provide the correct amount of CFM at each specific location only when in use.

"Smart" systems can provide the full amount of ventilation when and where needed. At other times, the system can operate as low as 10% of full load. Saves energy!

SA-24 for Kit Operation

ES-90

Other Controls

- SA-24 – is recommended when you require a magnetic motor starter to control the fan for multiple exhaust reels or drops
  - Ordered to match the fan motor KW/HP, voltage and phase
  - Control box comes complete with a step down transformer that reduces the line voltage to 24 volts
- ES-90 – controls an individual fan on individual source capture unit
  - Uses automatic on/off device
  - Manual override is also included

APPLICATION DESIGN GUIDE: Vehicle Exhaust Extraction

TYPE OF VEHICLE

1. Engine size & fuel type
2. Location of tail pipes
3. Number of tail pipes

Displacement of engine affects the CFM required at the nozzle.

Vertical or horizontal pipes affect the type of nozzle used and how it is placed.

Single, dual or other arrangements create the need for Y-tailpipe adapters or more than one drop.

VEHICLE OPERATING CONDITIONS

4. Running condition – high, medium, low RPM
5. Load
6. Duration at running condition (especially high RPM or Load)

As RPM and load increase so do the CFM and temperature requirements.

When tests are short (approx. 2 minutes or less), ductwork and fan components may be able to be rated for lower temperatures.

WORK AREA REACH REQUIREMENTS

7. System flexibility requirements
   a) Always in same location (<5' rad)
   b) Exhaust needs to be available in varied locations (bay to bay)
   c) Source capture needs to move with vehicle while running

A simple drop or hose reel can effectively service an area if a vehicle's tail pipe is consistently in the same location.

Add flexibility by adding a boom, track or rail. This can also allow for shorter hoses.

Rail and track systems allow source capture extraction for a moving vehicle.

SCOPE OF TOTAL COVERAGE

8. What are the total number of areas to require source capture ventilation? Will expansion be required?

INTELLIGENT SYSTEM CONTROLS

9. Consider all the drops, what are the maximum and minimum to be used at any one time?
10. How should system be controlled?
    a) Basic on/off
    b) Manually/variable
    c) Automated with energy saving capabilities

Proper controls provide required ventilation where and when it is needed. This is done with a combination of high quality automated dampers (ICE-LC), pressure transmitters (TG-5000), a variable frequency drive on fan, and a smart main control box.

Larger installations do not always use all drops at the same time. Energy-savings-automated controls can be installed to operate only the drops in use. This significantly lowers total exhaust CFM and lowers required make-up air which lowers facility operating costs.

THE **PLYMOVENT** COMMITMENT

PlymoVent has more than 25 years of experience providing vehicle exhaust solutions. Over 50,000 of our Source Capture Systems have been installed to reduce hazardous vehicle exhaust emissions in a variety of sectors, including:

Manufacturing Plants
Maintenance and Repair Facilities
Emissions Testing Facilities
Terminals and Depots
Emergency Services Facilities

PlymoVent continuously works with its suppliers as well as local, state and federal agencies to design and engineer products that meet or exceed our customers' expectations and needs. Eliminating the hazards of vehicle exhaust emissions from your facility is what we do best.

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clean air at work

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