PROPANE
EXCEPTIONAL ENERGY®

PROPANE AUTOGAS

REPAIR AND MAINTENANCE FACILITY REQUIREMENTS

PROPANE EDUCATION & RESEARCH COUNCIL

INTRODUCTION

For more than 80 years, vehicles fueled by propane autogas have been a popular choice in countries around the globe. Approximately 17 million propane-autogas-fueled vehicles are in operation today, making propane autogas the most widely used alternative transportation fuel in the world.

Many organizations, including government agencies and private and public companies in the U.S., are discovering the economic and environmental benefits of these vehicles. Because of the recent, rapid growth in propane autogas vehicles, there is an increasing need for garages and facilities across the country that can repair and maintain propane-autogas-fueled vehicles.

This booklet will explain in easy-to-understand terms the general design, safety, and code guidelines for constructing or modifying repair and maintenance garages for propane-autogas-fueled vehicles including passenger cars, vans, buses, and trucks.

Although this is not a technical document that will explain all specific code requirements, it is a booklet that will highlight many of the differences and similarities of a propane autogas facility compared to a gasoline or diesel-fuel facility. This booklet is intended to help fleet managers, operators, and private garage owners understand the basic requirements of a propane-autogas-fueled vehicle repair or maintenance garage.

FOR PURPOSES OF THIS BOOKLET, ONLY SPECIFIC PROPANE-AUTOGAS-RELATED REQUIREMENTS BEYOND THOSE REQUIRED FOR GASOLINE AND DIESEL VEHICLE REPAIR AND MAINTENANCE FACILITIES WILL BE DISCUSSED IN DETAIL.

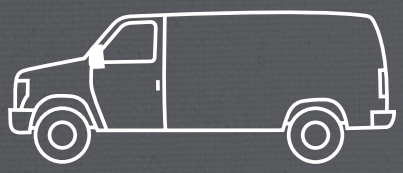
A PROVEN TRACK RECORD OF SAFETY

Propane autogas is a safe fuel when properly stored, dispensed, and used. This is due to several factors: propane autogas' natural properties; stringent codes and regulations; and the industry's extensive education, training, and safety-awareness programs.

Vehicles fueled by propane autogas have a long history of performing safely under all operating conditions. In fact, propane autogas offers several safety advantages compared to other fuels:

- Propane autogas in its natural state is non-toxic with no defining natural odor. An odorant is added to aid in leak detection.
- Propane autogas is classified by the Environmental Protection Agency (EPA) as a non-contaminant of air, land, and water resources.
- Tanks used for propane autogas are 20 times as puncture-resistant as gasoline tanks. They can also withstand four times the pressure.
- Propane autogas requires a much higher temperature to ignite. For example, gasoline and diesel fuel will catch fire at temperatures as low as 495 degrees Fahrenheit, whereas propane autogas requires a temperature of at least 920 degrees Fahrenheit to ignite.
- Among alternative fuels, propane autogas has the narrowest flammability range. The flammability range is comparable to that of gasoline and diesel fuel.
- Propane autogas engine fuel systems are fitted with safety devices and shut-off valves that function automatically if the fuel line ruptures.

ALTHOUGH PROPANE AUTOGAS AND CNG SHARE SOME COMMON FUEL CHARACTERISTICS, THEY HAVE DIFFERENT REPAIR AND MAINTENANCE FACILITY REQUIREMENTS. FOR EXAMPLE, A CNG REPAIR AND MAINTENANCE FACILITY NEEDS ADDITIONAL GAS DETECTION AND VENTILATION EQUIPMENT THAT A PROPANE AUTOGAS FACILITY DOES NOT NEED. CONTACT THE LOCAL AHJ FOR MORE INFORMATION ON CODE REQUIREMENTS FOR VARIOUS FUELS.



GENERAL CODE REQUIREMENT OVERVIEW

Several national codes such as the National Fire Protection Association (NFPA) Code for Motor Fuel Dispensing Facilities and Repair Garages, International Building Code (IBC), and National Electric Code (NEC) help outline the detailed requirements for building or modifying a vehicle repair or maintenance facility. These codes, for the most part, give the requirements for traditional liquid fuel facilities that service gasoline and diesel-fueled vehicles but do not directly address alternative fuels such as propane autogas.

There are two national codes that cover the requirements for propane-autogas-fueled vehicle facilities:

- NFPA 58 Liquefied Petroleum Gas Code.
- NFPA 30A Code for Motor Fuel Dispensing Facilities and Repair Garages.

It is important to note that all national codes are adopted voluntarily by states. Always contact the local Authority Having Jurisdiction (AHJ) for applicable codes regarding the building or modifying of a propane-autogas-fueled vehicle repair or maintenance facility. In some cases, the AHJ may have other requirements in addition to those cited in national codes. The AHJ is the organization, office, or individual responsible for enforcing the requirements of the code.

VENTILATION REQUIREMENTS

Ventilation requirements for propane autogas are the same as those for gasoline and diesel fuel. This includes ventilation for all workspaces including floor areas, pits, below-grade areas, and subfloors. There is no need for modifications to the building or building design.

GAS DETECTION REQUIREMENTS

Propane gas detection equipment is not required for repair garages and maintenance facilities that service propane-autogas-fueled vehicles.

QUESTIONS TO ANSWER BEFORE BUILDING OR MODIFYING A REPAIR GARAGE OR MAINTENANCE FACILITY

- Does the existing garage or facility meet current code requirements for traditional liquid fuels (such as gasoline or diesel)?
- Will the facility provide minor repairs, major repairs, or both?
- If the facility provides both minor and major repairs, will the major repair area be separated from the minor repair area?
- Will the facility include an indoor or outdoor propane autogas fueling station?

SOURCES OF IGNITION REQUIREMENTS

There are no specific requirements beyond existing standards for traditional liquid fuel repair garages and maintenance facilities.

ELECTRICAL REQUIREMENTS

There are no specific requirements beyond existing standards for traditional liquid fuel repair garages and maintenance facilities.

PARKING, SERVICING, AND REPAIR OF VEHICLE REQUIREMENTS

There are no specific structural requirements beyond the existing standards for traditional liquid fuel repair garages and maintenance facilities. However, there are several code requirements that apply to the propane-autogas-fueled vehicle when parked, serviced, or repaired inside buildings:

- The fuel system must be leak-free.
- The fuel tank or container must not be filled beyond the limits specified for the equipment.
- The tank or container shut-off valve must be closed when the vehicle or engine is being repaired, except when the engine is required to operate.
- The vehicle should not be parked near sources of heat or open flames (or similar sources of ignition), or near inadequately ventilated pits.

MODIFICATIONS TO EXISTING GARAGES OR MAINTENANCE FACILITIES

A review of compliance to existing codes (for liquid fuels such as gasoline or diesel) may be necessary before modifications to allow the servicing or repair of propane-autogas-fueled vehicles can begin. Since the existing facility may have been built under older editions of the codes, any new propane autogas modifications may require bringing the facility up to code for traditional liquid fuels as well.

TYPES OF REPAIR GARAGES

Repair garages are placed into two different categories for code purposes. Each type of garage has a specific set of code requirements.

- Major Repair Garage. A major repair garage is defined as a building or portions of a building where major repairs, such as engine overhauls, painting, body and fender work, and repairs that require draining of the motor vehicle fuel tank, are performed.
- Minor Repair Garage. A minor repair garage is defined as a building or portions of a building used for lubrication, inspection, and minor automotive maintenance work, such as engine tune-ups, replacement of parts, fluid changes (oil, antifreeze, transmission fluid, brake fluid, air conditioning refrigerants, etc.), brake system repairs, tire rotation, and similar routine maintenance work.

REPAIR GARAGE GENERAL REQUIREMENTS

If the facility is planning to have a major repair area for propane-autogas-fueled vehicles, this can be accomplished by having a separate building or a separate area within the facility. Minor repair areas do not need to be separated from other activities in the facility.

If part of the facility is being used for major repair activities, there are certain requirements that need to be followed to separate the area from minor repair and other servicing activities. They are the same requirements as those for gasoline and diesel-fuel vehicle major repair areas. There are no special requirements for propane-autogas-fueled vehicle repair areas

INDOOR VEHICLE FUEL DISPENSING STATIONS

Indoor refueling of propane vehicles is permitted where the building is constructed in accordance with the requirements of NFPA 30A and NFPA 58, and any other codes that are adopted by the jurisdiction where the building is located.

PROPANE AUTOGAS FUEL STORAGE

Above-ground tanks storing propane autogas must be separated by at least 15 feet from devices that dispense liquid or gaseous motor vehicle fuels. If the facility has aboveground compressed natural gas (CNG) or liquid natural gas (LNG) tanks, the propane autogas tank must be separated by at least 20 feet.

In addition, the tanks must have physical and security protection in accordance with the codes.

Consult NFPA 30A and NFPA 58 for exact conditions and requirements.

VALUABLE RESOURCES TO HELP UNDERSTAND PROPANE-AUTOGAS-FUELED VEHICLES AND FACILITIES

Several online resources are available that provide users with information such as code requirements for propane-autogas-fueled vehicle facilities, characteristics of propane autogas, and case studies on how companies are converting their fleets to run efficiently on propane autogas.

www.nfpa.org
The NFPA website provides information on codes and standards related to motor fuel repair garages and maintenance facilities. You can view, download, or acquire printed copies of all NFPA codes including NFPA 58 and NFPA 30A from this site.

www.autogasusa.org
This PERC-sponsored website provides information on the several different types of propane-autogas-fueled vehicles (and other types of propane equipment), fueling with propane autogas, adoption incentives, and propane autogas webinars.

www.cleanfuelusa.com
The CleanFuel USA website provides information on the many benefits of using propane autogas, including emission savings and tax incentives. It also lets visitors explore different types of propane-autogas-fueled vehicles.

www.collinsbus.com
The Collins Bus Corp website provides information about the many buses it manufactures, including the first-developed Type A Nexbus school bus fueled by propane autogas.

www.roushcleantech.com
Calculate your emissions savings with propane autogas, view products, and learn why propane autogas is the fuel choice for progressive companies such as Roush CleanTech.

www.blue-bird.com
The Blue Bird website contains information about the different types of buses it manufactures and the affordable green solutions its propane-autogas-fueled buses offer.

www.thomasbus.com
As one of the country's leading bus manufacturers, Thomas Built Buses Inc., offers a full line of school, childcare, activity, green, and specialty buses including propane autogas models.

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