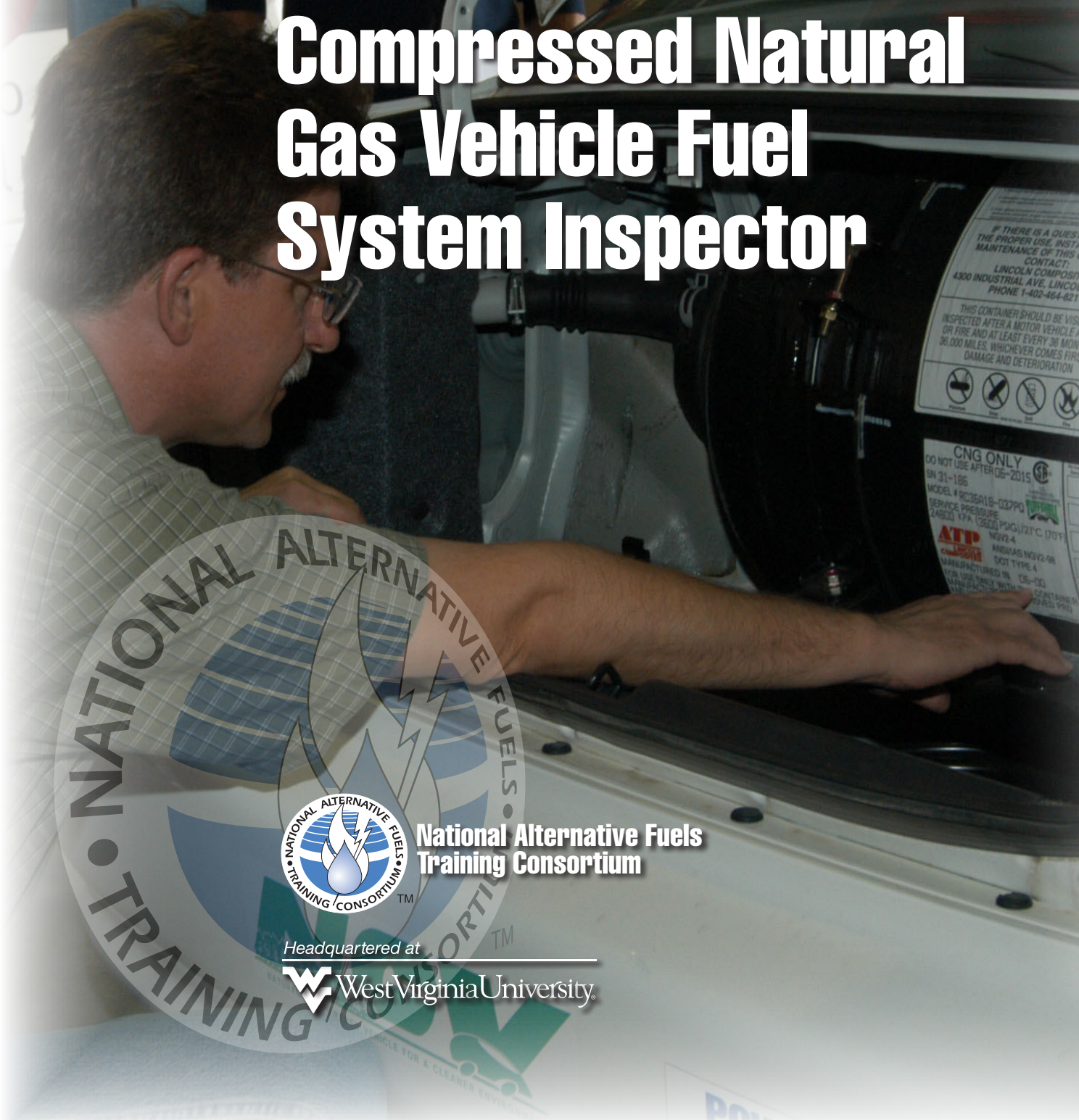




Compressed Natural Gas Vehicle Fuel System Inspector

Compressed Natural Gas Vehicle Fuel System Inspector



National Alternative Fuels Training Consortium

Headquartered at
West Virginia University





Compressed Natural Gas Vehicle Fuel System Inspector





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Letter from the Director

Compressed Natural Gas Vehicle Fuel System Inspector

Letter from the Director

Energy consumption is increasing at a dramatic rate everywhere in the world. The extent of this consumption is directly proportional to each society's economic and industrial development. It is a well-established fact that petroleum is one of the most widely-used fuel resources in the world today. As more and more countries grow and prosper, we will see accelerating depletion of the traditional energy sources used for transportation.

Energy independence is becoming a critical factor affecting homeland security in the U.S. and all other developed countries. An adequate and reliable fuel supply is a critical component of any strategic plan for economic development and national security. In every nation, the choice of fuel has assumed serious economic and environmental consequences in the forms of budget deficits caused by oil imports and ecological degradation caused by pollution.

Air pollution in some metropolitan areas has reached alarming levels. In response to this pollution, environmental concerns have contributed to the improvement of fuel quality. Over the past decade, the possibility of substituting cleaner-burning alternatives for gasoline and diesel has drawn the attention of the automobile industry, as well as of federal, state, and local governments. Even though it is well known that alternative fuels create less pollution and help states and metropolitan areas to meet stringent environmental requirements, gasoline and diesel remain the most common transportation fuels in the U.S. Additionally, alternative fuels have marked benefits beyond air quality; New fuels in the marketplace offer consumers new choices and can decrease the country's dependence on imported oil.

Alternative fuel vehicles are becoming more readily available to consumers and fleets. Their widespread use in the near future is not only feasible, but necessary. To enable the transition to alternative fuels, technologies must be refined so that vehicles can achieve optimum performance and emissions characteristics. New infrastructures must be developed and supported.

Using less-expensive alternative fuels and advanced technologies—including hybrid-electric, battery-electric, hydrogen, fuel cells, biodiesel, ethanol, natural gas, and propane—has the potential to significantly reduce this country's transportation costs. Using less-polluting fuels will also help meet government-mandated emissions requirements and contribute to a cleaner environment, as well as help to lessen our dependence on foreign oil imports.

These are compelling reasons to educate the general public, government officials, and business executives and to create a pool of properly-trained technicians to service these vehicles. The goal of this course is to meet these needs.

The National Alternative Fuels Training Consortium is pleased to provide this course, *Compressed Natural Gas Vehicle Fuel System Inspector*.

Al Ebron
Executive Director
National Alternative Fuels Training Consortium
Headquartered at West Virginia University



Course Description and Objectives

Compressed Natural Gas Vehicle Fuel System Inspector

Course Description

The Compressed Natural Gas Vehicle Fuel System Inspector course consists of four modules designed to facilitate a diverse audience in the knowledge of compressed natural gas and compressed natural gas vehicles. The design scheme for the modules is a progressive one, in that each module builds on the previous module.

Developed with the assistance of NAFTC instructors, subject matter experts, and industry partners, this course will educate and prepare students in the proper installation and inspection of compressed natural gas vehicle components.

This course sets out to accomplish the objectives by offering students opportunities to learn about compressed natural gas and compressed natural gas vehicles in module one. In module two, students will learn about the specific components of CNG vehicles and the proper installation guidelines for those components. Module three will address the applicable standards for fuel storage cylinders and pressure relief devices. Last, students will perform a physical assessment of a CNG cylinder and associated pressure relief devices in module four.

Course Objectives

This, four-module course addresses the following objectives:

- Understand the properties of compressed natural gas and how it compares to other fuels
- Describe the purpose and function of compressed natural gas vehicle components
- Recognize the proper installation guidelines of compressed natural gas vehicle components
- List, identify, and examine the types of compressed natural gas vehicle component damage
- Demonstrate proper visual and detailed visual inspection techniques

Course Agenda

Day 1 Module 1: Introduction to Natural Gas & Natural Gas Vehicles
Module 2: Natural Gas Vehicle Fuel System Component Requirements

Day 2 Module 3: Applicable Standards for CNG Cylinders and Pressure Relief Devices
Module 4: Physical Assessment of CNG Cylinders and Pressure Relief Devices

Disclaimer

Compressed Natural Gas Vehicle Fuel System Inspector

Disclaimer

The information contained in this training manual was obtained from sources believed to be reliable and is based on technical information and experience currently available at the time of writing.

All users of the information contained herein do so at their own risk.

The National Alternative Fuels Training Consortium (NAFTC) – a program of West Virginia University – and its members make no warranty or guarantee regarding the results of the use of this information and assume no liability or responsibility in connection with the information or suggestions herein contained.

Moreover, it should not be assumed that every acceptable or necessary commodity grade, test, safety procedure, method, precaution, equipment, or device is contained within, nor that abnormal or unusual conditions or circumstances may not warrant or suggest further requirements or additional procedures.

This document is subject to periodic review and/or revision. Users are strongly cautioned to obtain the latest version. Comments and suggestions are invited from all users for consideration by the NAFTC in connection with such review. Please send all comments to the NAFTC Executive Director.

The guidance and information in this training manual are not meant to take the place of vehicle or equipment manufacturer guidelines and are not intended to supersede other information, requirements, or regulations provided by the manufacturers, the

Notice:

CSA America offers the CNG Fuel System Inspector certification exam for those interested in becoming certified CNG fuel system inspectors. While this course will help participants in the preparation for taking this exam, the NAFTC makes no guarantee that after completing this course the participant will be able to successfully pass the CSA Fuel System Inspector certification exam, or other exams related to this training. In addition, the NAFTC will not be held responsible for any unsuccessful attempts in passing the exams. The NAFTC has been diligent in the development of this course, which has included the review by CSA America, with recommended changes being made. To better prepare for the CSA CNG Fuel System Inspector certification exam, the NAFTC recommends additional preparation including obtaining official copies of the recommended publications and thoroughly reviewing and studying them before and after taking this course, and prior to taking any related exams. The recommended publications can be found in the course appendix.

