



Compressed Natural Gas (CNG) System - Installation and Inspection Certification

Compressed Natural Gas (CNG) vehicle conversions have been growing in the passenger vehicle market providing significant reductions in emissions and increase in fuel economy. CNG is domestically abundant and a clear path to a reduced reliance on foreign supplied oil. The high volume passenger vehicle markets have been served by the aftermarket industry and there is only one passenger vehicle in production with a limited supply.

To serve the aftermarket industry an Installation and Inspection standardized certification has been introduced. Due to the complexity of the CNG system, safety related concerns and a need for approved components the installation must be performed to a regulated standard. Once the system is in use a regular inspection must be conducted to ensure proper maintenance has been performed to keep the CNG system functional and safe for the consumer.

- First, a leading aftermarket CNG conversion kit system is examined in detail and understood to the component level for 4, 6 and 8 cylinder gasoline engines.
- Next, standardized installation methodologies are understood outlining key tools and techniques utilized for a specific application. A real hands-on installation will be performed to demonstrate how installations, maintenance and inspections are conducted.
- Lastly, participants are required to pass a written test to demonstrate a detailed understanding of these concepts. Upon successful completion of the course and passing the test they will be awarded the CNG United Systems Installation Certificate and the CSA Vehicle Fuel Systems Inspector Certificate.



Course Syllabus

I IDENTIFYING INFORMATION

Course:	CNG System – Installation and Inspection Certification
Prerequisite:	CNG System – Engineering Vehicle Integration
Time Frame:	40 total contact hours
Instructor:	Minimum 5 year experienced CNG Conversion Vehicle Expert Minimum 10 year experienced vocational instructor CNG United Systems Installation Certified CSA Vehicle Fuel Systems Inspector Certified

II REFERENCE MATERIALS

1. Federal Motor Vehicle Safety Standards
2. Canadian Motor Vehicle Safety Standards
3. CNG United Installation Certificate Program
4. CSA Vehicle Fuel Systems Inspector Certificate Program

III COURSE GOALS AND OBJECTIVES

1. Understand the CNG conversion aftermarket, segments and growth potential
2. Understand the various methods for 4, 6 and 8 cylinder gasoline engines
3. Understand and perform installation methods for a CNG conversion vehicle
4. Understand maintenance protocol for a CNG conversion vehicle
5. Understand inspection protocol for a CNG conversion vehicle
6. Passing a written test that demonstrates knowledge and application of the CNG conversion system
7. Obtain CNG United Systems Installation Certificate
8. Obtain CSA Vehicle Fuel Systems Inspector Certificate



IV METHODOLOGY

This course is a micro view of the various CNG vehicle conversions aftermarket segments and the technical solution to meet specific needs and expectations. Each module will introduce new material that will prepare the student for the projects to be completed.

Lectures

Each detailed subject will be presented in a lecture format outlining the theory and standardized accepted methodology and technical specifications. A PDF file of the lecture material will be provided for the student's personal use as reference material. Lecture note outlines will be distributed to the students for each lecture to help the student capture personal notes. A short video showing the concept covered will be used to facilitate a discussion regarding application.

Specific Industry Examples

Real life industry examples will be covered that detail application of the theory to demonstrate how different companies apply these tools and techniques. This will give the students a clear understanding of how and why these techniques are utilized at different companies and industries in different manners.

In-Class Assignments

Using the theory and industry examples the student will conduct several projects that outline each key principal as in-class projects. A written test will be used to demonstrate competency of each student to ensure they meet the key objectives of the course and obtain certification.

Specific Company Application

We will install, maintain and inspect a CNG vehicle conversion kit to demonstrate the proper use of tools, techniques and methodologies.



V COURSE OUTLINE & ASSIGNMENTS

Module 1

Aftermarket Conversion CNG Market	PowerPoint lecture
CNG Conversions on 4, 6 and 8 cylinder gasoline engines	PowerPoint lecture
In-Class Assignment, CNG System Block Diagram	Complete & present

Module 2

CNG Aftermarket Conversion Methodology	PowerPoint lecture
In-Class Assignment, Aftermarket Conversion	Complete & present

Module 3

CNG Aftermarket Maintenance Methodology	PowerPoint lecture
In-Class Assignment, Maintenance Protocol	Complete & present

Module 4

CNG Aftermarket Inspection Methodology	PowerPoint lecture
In-Class Assignment, Inspection Protocol	Complete & present

Module 5

CNG United Systems Installation Certificate	PowerPoint lecture
Installation Certification Test	Complete & present
CSA Vehicle Fuel Systems Inspector Certificate	PowerPoint lecture
Inspector Certification Test	Complete & present