Gas Practitioner Scope & Competency
Natural Gas Vehicle Application

Revision no: ***14***
Revision date: ***7 July 2022***
To be reviewed: ***6 July 2023***
This revision supersedes: ***13***

Policy

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Address written comments or suggestions to the Board of Directors

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AMENDMENT RECORD			
REV. NO	PAGE	STATUS – CHANGE	DATE
001	N/A	Created the policy	15 Nov '11
002	10	Admin error and changes	25 Jul '12
003	All	Registration categories and changes	3 Nov'12
004	All	Registration categories and changes	21 Nov'12
005	All	Registration categories and changes	3 May'13
006	All	Registration categories and changes	25 May'13
007	All	Change of Company Name	1 Nov'13
008	11/12 & rest	Corrections to CNG registration categories and overall updates to various content	1 Jan '15
009	5 & 6	Domestic/Commercial Registration Categories	16 Sep'15
010	All	Registration categories and changes	22 Dec '16
011	All	Registration categories and changes	11 Dec '18
012	All	Registration categories and changes	2 Nov '20
013	All	Registration categories and changes to include Biogas, CNG & LNG	22 Sep'21
014	All	Split of Categories (individual documents)	7 Jul '22

1. INTRODUCTION

An Authorised Person as mentioned in the Pressure Equipment Regulations (PER) is referred to in the Gas Industry as a Gas Practitioner who is registered with the Southern African Gas Association (SAGA) and licensed via the South African Qualification and Certification Committee for Gas (SAQCC Gas) to conduct work in one or more areas whichever is applicable in the domestic, commercial, industrial and specialised gas environments:

- Design
- Installation
- Maintenance
- Repair
- Commissioning
- Recommissioning

***NB**! Kindly take notice that attendance and completion of the required training course is not in itself sufficient to obtain registration as an authorised gas practitioner in one or more of the various categories of registration. Accordingly, it is imperative that one read and be guided by this Gas Practitioner Scope and Competency Policy with regards to all registration requirements applicable. Should there be any outstanding documentation needed for the processing of the application not received within 3 months of date of receipt of the application, it will be deemed null and void and applicant will forfeit the full course and registration fee*

2. DEFINITIONS

Reference "Guidance Notes to the Pressure Equipment Regulations July 2009" as amended.

2.1 "Fluid" means gases, liquids, vapours in pure phase and mixtures thereof and may contain solids in suspension.

2.2 "Gas" means gases, liquefied gases, gases dissolved under pressure, vapours and those liquids whose vapour pressure at the design temperature is greater than 50 kPa above normal atmospheric pressure.

2.3 "Gas system" means reticulation and or recirculation including all related **piping, pressure and safety accessories** excluding a transportable gas container connected to the system…

3. ACRONYMS

CNG	Compressed Natural Gas
CoC	Certificate of Conformity
ISO	International Organisation for Standards
LNG	Liquified Natural Gas
NG	Natural Gas
NGV	Natural Gas Vehicles
NQF's	National Qualifications Framework
OEM	Original Equipment Manufacturer
PER	Pressure Equipment Regulations
PoE	Portfolio of Evidence
SAGA	Southern African Gas Association
SANS	South African National Standards
SAQCC	South African Qualification and Certification Committee
SGES	Safe Gas Equipment Scheme

4. PRE-REQUISITE REQUIREMENTS FOR REGISTRATION OF NATURAL GAS VEHICLE (NGV) CNG and or LNG APPLICATIONS

Criteria for NGV practitioners forming part of the Portfolio of Evidence (POE) included but not limited to:

i) 3 Years automotive NGV gas experience including hands on proven technical experience as an auto mechanic - not 'kit' specific

ii) Valid Driver's License (optional)

iii) 1 Year welding experience (optional but an advantage)

iv) Experience on all the 4 categories (Bi fuel carburetor, Bi fuel injection, dual fuel, specialised)

v) Five (5) hands on installations per required category within South Africa as applied for

vi) Proof of supervision, under whose supervision did you work during the period of installation and provide proof of CoC's issued while under supervision substantiating your involvement

vii) An acceptable standard of secondary education equivalent minimum level NQF1 (literacy & math's) and provide proof of education levels achieved.

viii) Proof of each kit specific training completed with OEM

ix) Present and past employment with existing or NGV installation company,

x) Local and or international training course as prescribed or relevant.

xi) Confirmation of agreement of signature recommendation from present Line Manager or Supervisor in support of the application.

a. Cat 1 = Basic automotive skill set with relevant experience. Basic training under mentorship. Basis of 5 installations under mentorship with inspection of at least 3 installations. Completing and passing of course on all standards as currently listed

i. CNG: SANS 20110 and SANS 1104

ii. LNG: SANS 20110 (ECE R110) and ECE-R115

b. Cat 2 = Need to meet all requirements of CAT 1. Supplier training on kit commissioning and calibration. Relevant automotive training as per application. Relevant experience under mentorship. Basis of 5 installations under mentorship with inspection of at least 3 installations for each of the following categories:

i. CNG: Carburettor, Fuel Injection, Dual Fuel and Specialised.

ii. LNG: Fuel Injection, Dual Fuel and Specialised.

c. Cat 3 = Need to meet all requirements of CAT1 . Relevant automotive qualifications and experience. Proof of training as provided by OEM for each unit or model range.

d. Cat 4 = Need to meet all requirements of CAT 1 and 2. Proof of all supplier kit and OEM training. Relevant experience under mentorship.

5. PRE-REQUISITE REQUIREMENTS FOR RE-REGISTRATION OF NATURAL GAS VEHICLE (NGV) CNG and or LNG APPLICATIONS

i) Description of past and present employment with an existing gas supply or system installation company

ii) Confirmation of agreement of signature recommendation from present Line Manager or Supervisor in support of the respective licensing category applied for.

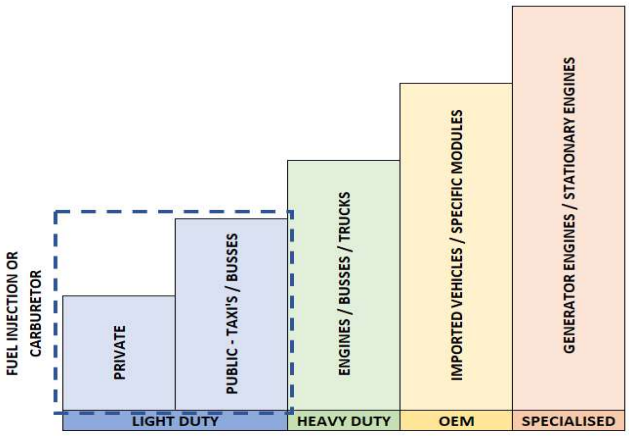
iii) Motivation of additional category licensing, if required.

iv) List of last 5 projects supported by means of CoC's issued by the gas practitioner. Magnitude, scope and level of specific responsibility as to the gas projects/actual gas installations to be provided. The assessment of at least 2 of these installations could be undertaken prior to re-registration should it be deemed necessary.

v) It is imperative that gas practitioners build up their portfolio by keeping records of all gas work done so when applying for renewal of the gas licence the portfolio of evidence is reflective of the past three years ensuring efficient renewal of the gas licence. Failing to provide CoCs as supporting documentation may result in a shortcoming in the review process and delay in the renewal of the license

vi) Attend required training course and pass with an average of 80%.

6. NATURAL GAS VEHICLES CATEGORIES (NGV, CNG and or LNG)



A NGV Practitioner is licensed to carry out any conversions done on BiFuel (carburetors, fuel injection) Dual Fuel, OEM and Specialised (Dedicated) systems. Pipeline category will be up to 200 bar gauge.

The following license categories are recorded:

6.1 CNG - NGV GAS INSTALLATIONS AND CONVERSIONS:

6.1.1 BIFUEL - CARBURETOR (OPTION OF 2 FUELS SEPARATELY AND LIMITED TO 200 BAR PRESSURE – OLD TECHNOLOGY VEHICLES) EXAMPLE: VEHICLES AND FORKLIFTS FITTED WITH CARBURETOR.

- ***Design*** – design and layout of piping and components of the gas system.
- ***Installation*** - Installation, modification of NGV equipment fitted to a carburetor engine.
- ***Maintenance and Repair*** – Maintaining all NGV equipment to the relevant installation. When any maintenance and repair is performed on a gas system for example the cleaning of an inline filter, removal of a valve the replacement of any conversion components
- ***Commissioning*** - Commissioning of the NGV gas system after being inspected and pressure tested and providing a Certificate of Conformity confirming the gas system and equipment is safe and fit for purpose. When a newly built / installed NGV gas system is to be put into operation the commissioning of such a system will include the entire NGV gas system, and will require the verification of the all the pressure and safety devices and controls on such a system. Commissioning can only be conducted by a competent commissioning NGV gas practitioner.
- ***Re-Commissioning*** When equipment is replaced after maintenance, repair or modifications it needs to be re-commissioned by a competent commissioning NGV gas practitioner duly appointed by his/her management to exercise the responsibility of re-commissioning the NGV gas system or part thereof including the electrical system.

6.1.2 BIFUEL - FUEL INJECTION (OPTION OF 2 FUELS SEPARATELY AND LIMITED TO 200 BAR PRESSURE – NEW TECHNOLOGY VEHICLES). EXAMPLE: VEHICLES AND FORKLIFTS WITH FUEL INJECTION SYSTEM.

- ***Design*** *– design and layout of piping and components of the gas system.*
- ***Installation*** – Installation and modification of NGV gas equipment fitted to a fuel injection engine.
- ***Maintenance and Repair*** – Maintaining all NGV gas equipment to the relevant installation. When any maintenance is performed on a gas system such as the cleaning of a inline filter, removal of a valve the replacement of any conversion components
- ***Commissioning*** - Commissioning of the total NGV gas system after being pressure tested and providing a Certificate of Conformity confirming the gas system and equipment is safe and fit for purpose. When a newly built / installed NGV gas system is to be put into operation the commissioning of such a system will include the entire NGV gas system and will require the verification of the all the safety devices and controls on such a system. Commissioning can only be conducted by a competent commissioning NGV gas practitioner.
- ***Re-Commissioning*** When equipment is replaced after maintenance, repair or modifications it needs to be re-commissioned by a competent commissioning NGV gas practitioner duly appointed by his/her management to exercise the responsibility of re-commissioning the NGV gas system or part thereof including the electrical system.

6.1.3 DUAL FUEL (OPERATING ON NGV WITH DIESEL SIMULTANEOUSLY AND LIMITED TO 250 BAR PRESSURE) EXAMPLE: VEHICLES FITTED WITH MIXED FUEL/DUAL FUEL WITH NEW TECHNOLOGY TRUCKS/BUSSES/LOCOMOTIVES

- ***Design*** – design and layout of piping and components of the gas system.
- ***Installation*** – Installation and modification of NGV gas equipment fitted to a mixed fuel injection engine.
- ***Maintenance & Repair*** – Maintaining all NGV gas equipment to the relevant installation. When any maintenance is performed on a gas system such as the cleaning of a inline filter, removal of a valve the replacement of any conversion components
- ***Commissioning*** - Commissioning of the total NGV gas system after being pressure tested and providing a Certificate of Conformity confirming the gas system and equipment is safe and fit for purpose. When a newly built / installed NGV gas system is to be put into operation the commissioning of such a system will include the entire NGV gas system and will require the verification of the all the safety devices and controls on such a system. Commissioning can only be conducted by a competent commissioning NGV gas practitioner.
- ***Re-Commissioning*** When equipment is replaced after maintenance, repair or modifications it needs to be re-commissioned by a competent commissioning NGV gas practitioner duly appointed by his/her management to exercise the responsibility of re-commissioning the NGV gas system or part thereof including the electrical system.

6.1.4 ORIGINAL EQUIPMENT MANUFACTURER (OEM) - OPERATING ON CNG AND LIMITED TO 250 BAR PRESSURE

- ***Maintenance and Repair*** – Maintaining all NGV gas equipment to the relevant installation. When any maintenance is performed on a gas system for example the cleaning of a inline filter, removal of a valve the replacement of any conversion components
- ***Re-Commissioning*** When equipment is replaced after maintenance, repair or modifications it needs to be re-commissioned by a competent commissioning NGV gas practitioner duly appointed by his/her management to exercise the responsibility of re-commissioning the NGV gas system or part thereof including the electrical system.

6.1.5 SPECIALISED

Specialised environment will be:

- Working Pressure up to 250Bar
- Fixed internal combustion engines (stationary CNG applications)
- Internal combustion engines using CNG gas applicable other than automotive applications
- Only internal combustion applications meaning pressured spark or compression ignition
- Completed SANS329 training where industrial thermoprocessing is part of the gas system

Excluded activities are

- CNG automotive application for Sea and Air usage
- CNG Fueling Stations
- CNG industrial installations

Scope of Competency as per SAQCC Gas registration for NGV Gas Practitioner will be: ''*The holder of this card is authorised for* ***BiFuel*** *(carburetor/fuel injection) and* ***Dualfuel*** *conversions,* ***OEM*** *and* ***Specialised*** *(design / installation / maintenance / commissioning / recommissioning) as per SANS 20110; SANS 15500 & SANS 1104*

NB! A single or combination of the licence could be granted depending on qualifications, knowledge, experience, expertise and work done as per your Portfolio of Evidence provided.

After replacement, repair, modification, and commissioning/re-commissioning a Certificate of Conformity shall be issued for specific scope of work performed.

NGV Certificate of Conformity (CoC) downloadable from the SAQCC Gas digital CoC App via Android, iOS and Huawei

6.2 LNG - NGV GAS INSTALLATIONS AND CONVERSIONS:

6.2.1 DUAL FUEL

- ***Design*** – design and layout of piping and components of the gas system.
- ***Installation*** – Installation and modification of NGV gas equipment fitted to a mixed fuel injection engine.
- ***Maintenance and Repair*** – Maintaining all NGV gas equipment to the relevant installation. When any maintenance is performed on a gas system such as the cleaning of a inline filter, removal of a valve the replacement of any conversion components
- ***Commissioning*** - Commissioning of the total NGV gas system after being pressure tested and providing a Certificate of Conformity confirming the gas system and equipment is safe and fit for purpose. When a newly built / installed NGV gas system is to be put into operation the commissioning of such a system will include the entire NGV gas system and will require the verification of the all the safety devices and controls on such a system. Commissioning can only be conducted by a competent commissioning NGV gas practitioner.
- ***Re-Commissioning*** When equipment is replaced after maintenance, repair or modifications it needs to be re-commissioned by a competent commissioning NGV gas practitioner duly appointed by his/her management to exercise the responsibility of re-commissioning the NGV gas system or part thereof including the electrical system.

6.2.2 ORIGINAL EQUIPMENT MANUFACTURER (OEM)

- ***Maintenance and Repair*** – Maintaining all NGV gas equipment to the relevant installation. When any maintenance is performed on a gas system such as the cleaning of a inline filter, removal of a valve the replacement of any conversion components
- ***Re-Commissioning*** When equipment is replaced after maintenance, repair or modifications it needs to be re-commissioned by a competent commissioning NGV gas practitioner duly appointed by his/her management to exercise the responsibility of re-commissioning the NGV gas system or part thereof including the electrical system.

6.2.3 SPECIALISED

Specialised environment will be:

- Fixed internal combustion engines (stationary LNG applications)
- Internal combustion engines using LNG gas applicable other than automotive applications
- Internal combustion applications meaning pressured spark or compression ignition

- Completed SANS 13577 part 1, 2 & 4 training where industrial thermoprocessing is part of the gas system

Excluded activities are

- LNG automotive application for Sea and Air usage
- LNG Fueling Stations
- LNG industrial installations

Scope of Competency as per SAQCC Gas registration for NGV Gas Practitioner will be: ''*The holder of this card is authorised for* ***Dualfuel*** *and or* ***OEM*** *and or* ***Specialised*** *conversions (design / installation / maintenance / commissioning / recommissioning) as per ECE-R115, SANS15500 all parts, SANS1104 and SANS20110 & for LNG ISO 12614 all parts*.

NB! A single or combination of the licence could be granted depending on qualifications, knowledge, experience, expertise and work done as per Portfolio of Evidence provided.

After replacement, repair, modification, and commissioning/re-commissioning a Certificate of Conformity shall be issued for specific scope of work performed.

NGV Certificate of Conformity (CoC) downloadable from the SAQCC Gas digital CoC App via Android, iOS and Huawei

7. ADDITIONAL CATEGORIES COVERED UNDER THE ROAD TRAFFIC ACT AND DANGEROUS GOODS TRANSPORT REGULATIONS

23.1 Mobile Applications (NGV/PRU)

23.2 Dangerous Goods Transport (CNG transport and Virtual Pipeline)

8. LEGISLATION AND BEST PRACTICE

The practitioner needs to clearly understand the content of the following:

i. Occupational Health and Safety Act
ii. Pressure Equipment Regulations R734 (PER)
iii. ECE R115
iv. Rules Governing the Safe Gas Equipment Scheme (SGES)
v. Health and Safety Standards relevant to gas type applications
vi. SAGA Technical Bulletins
vii. Code of Good Practice for Gas Practitioners

viii. Terms & Conditions for Training

ix. Competition and Antitrust Policy and Meeting Rules

x. Certificate of Conformity (CoC) per application level

xi. Pressure Test Certificate per application level

9. RELATED DOCUMENTS

i. Natural Gas Vehicle (CNG/LNG) Gas Practitioner Application

ii. Respective CoC's