
# EMMEGAS Company & LPG/CNG Products presentation

Reggio Emilia
07/2010

# Emmegas Company Profile

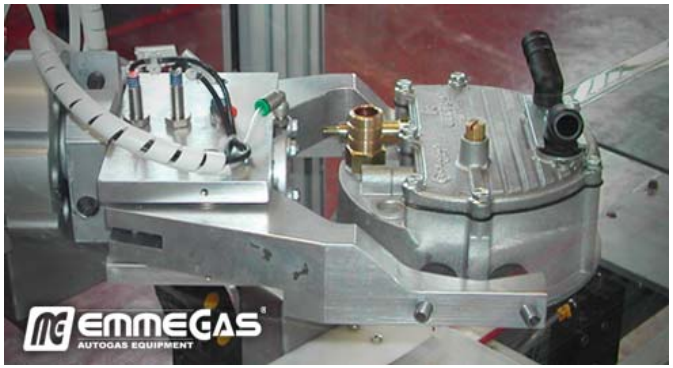
- EMMEGAS SpA is an Italian ISO9001 manufacturer of Lpg-Cng Conversion Kits.

- It was founded in 1993 by Mr. Medardo Landi.
- At the end of year 2002, Emmegas moved to the actual headquarter that has a modern R&D Centre with a new roller bench for simulating road rides and testing the exhaust emissions of cars.
- A new automated assembly line, completely controlled by PLC and outfitted with advanced testing equipment which grants the final inspection of 100% of production, completes the structure of a modern and customer oriented company.

# Strategy and Mission

Emmegas **Strategy**:

- A very flexible internal structure that can respond to the market requirements -by managing a lot of outsourcing suppliers- always under a strict Internal Quality Control System.

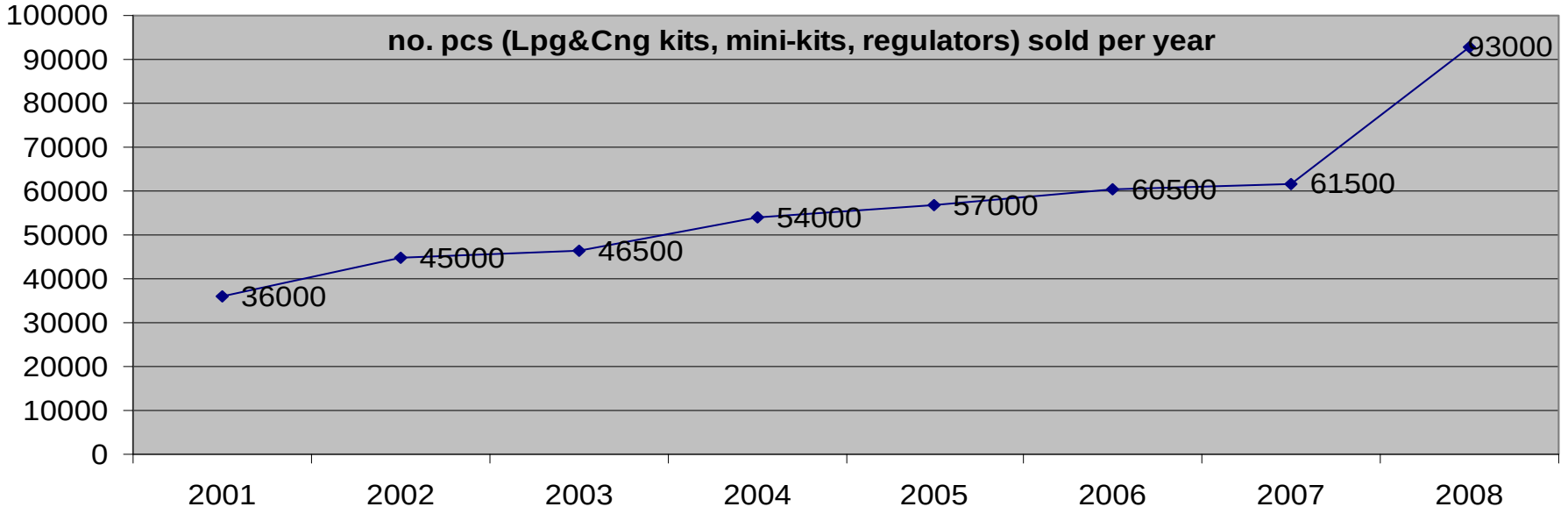


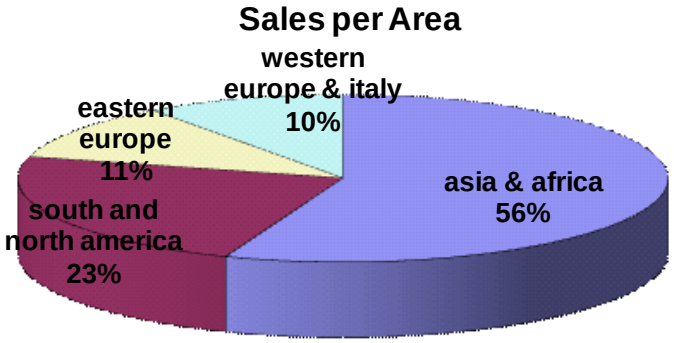

- Most of the mechanical components of the Kits are designed and manufactured by Emmegas itself, while the electronic components are studied and developed by our R&D Dept, in cooperation with primary companies of the field.

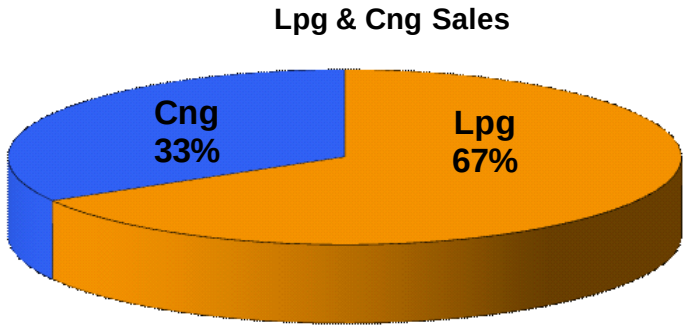
Emmegas **Mission**:

- The maximization of the customer's satisfaction by projecting and manufacturing high quality and price competitive products.
- The contribution to protect and preserve our environment by installing its LPG and CNG conversion kits, reducing the quantity of exhaust emissions of the cars.

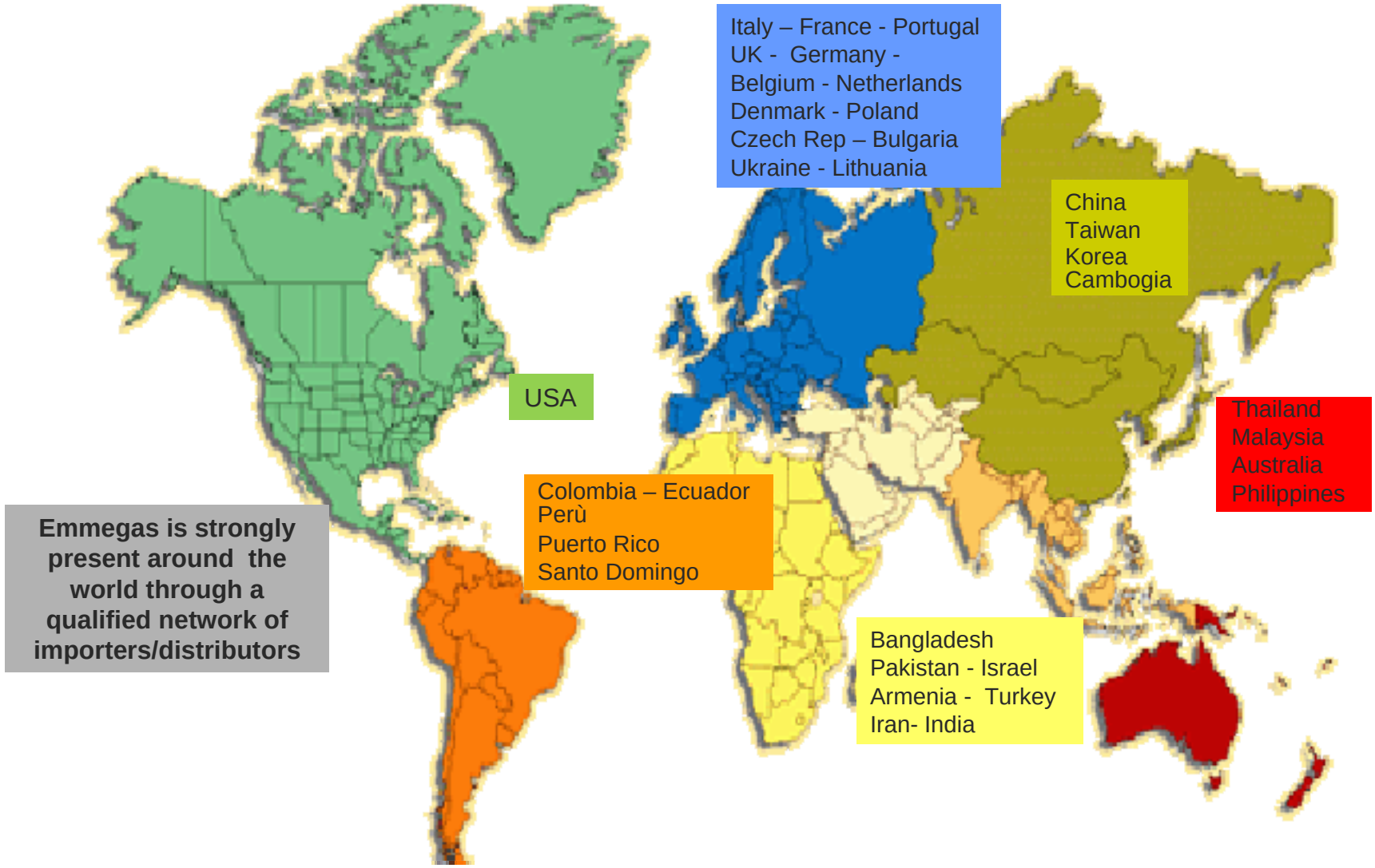
# The figures



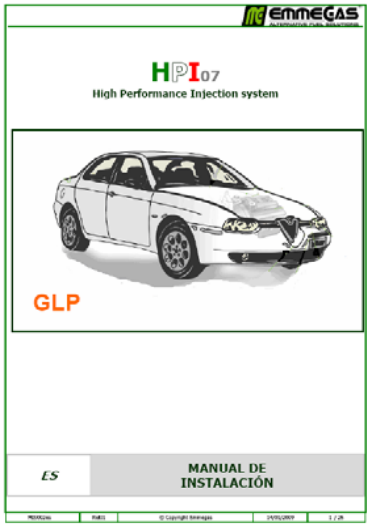
# Emmegas Sales Network



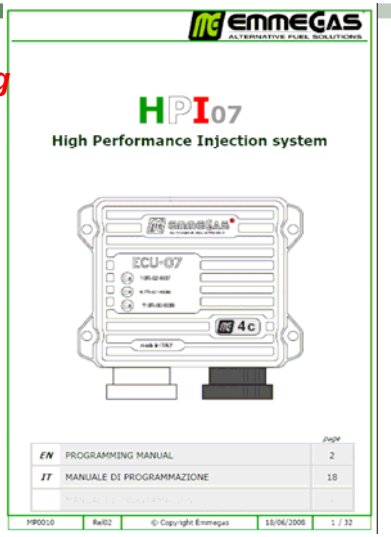
# Sales support (Promotional leaflets & material)

# Technical support

**Installation Manuals:**

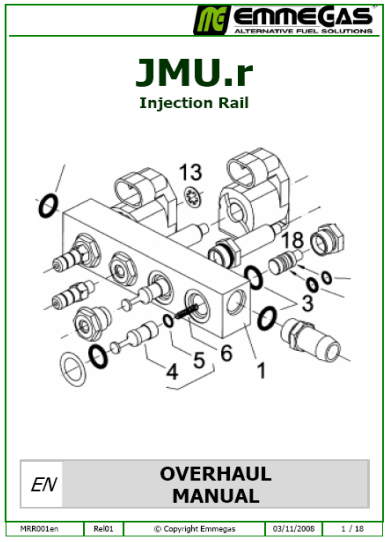



**Programming Manuals:**

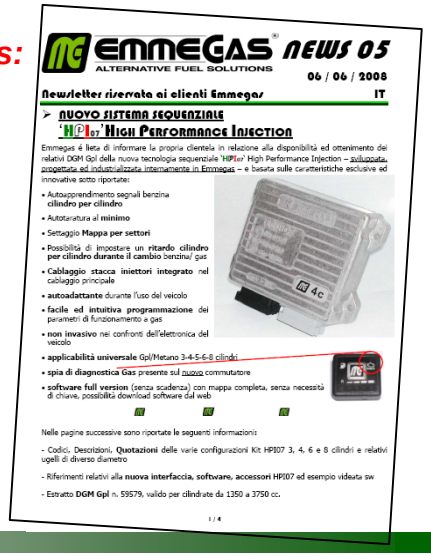



**User Manuals:**

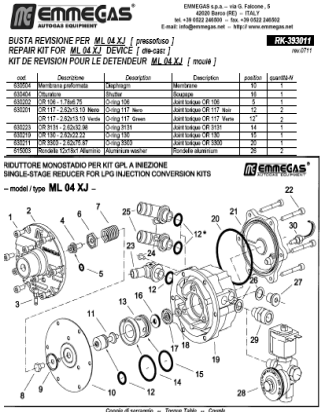

**Overhauling Manuals:**




**Newsletters:**




**Repair Kits:**



# Quality processes

Simultaneously to the enlargement and progressive completion of the range of products offered to the market, Emmegas S.p.A. got all the most important International **homologations:**

- The **ISO 9002 : 1994**
  Certificate obtained in 1999
- The **ISO 9001 : 2000**
  Certificate gained in 2002

both by TUV, confirm the achievement of the highest level of reliability of the company and of its products.


ZERTIFIKAT ◆ CERTIFICATE ◆ CERTIFICADO ◆ СЕРТИФИКАТ ◆ CERTIFICATO ◆ CERTIFICA

CERTIFICATO

Nr 50 100 1787 - Rev. 05

Si attesta che / *This is to certify that*

IL SISTEMA QUALITÀ DI
*THE QUALITY SYSTEM OF*

EMMEGAS ALTERNATIVE FUEL SOLUTIONS

**EMMEGAS S.p.A.**
**SEDE LEGALE E OPERATIVA:**
**VIA GIOVANNI FALCONE 5**
**I-42021 BARCO (RE)**

È CONFORME AI REQUISITI DELLA NORMA
*HAS BEEN FOUND TO COMPLY WITH THE REQUIREMENTS OF*

**UNI EN ISO 9001:2008**

Riferirsi al manuale della qualità per eventuali dettagli delle esclusioni ai requisiti della norma ISO 9001:2008
*Refer to quality manual for possible details of exclusions of requirements of the norm ISO 9001:2008*

Questo certificato è valido per il seguente campo di applicazione
*This certificate is valid for the following product or service range*

**Progettazione, fabbricazione ed assistenza di sistemi di alimentazione per impianti aftermarket a gas liquido e metano per autotrazione e relativi accessori e componenti; commercializzazione di componenti ed accessori per impianti a gas liquido e metano per autotrazione** (EA 22a, 29a)

***Design, manufacture and after-sales service of LPG and NGV conversion systems for aftermarket automotive kits and related components and accessories; trade of components and accessories for LPG and NGV aftermarket automotive kits*** *(EA 22a, 29a)*

SINCERT

Per l'Organismo di Certificazione
*For the Certification Body*
TÜV Italia S.r.l.

Andrea Vivi
Amministratore Delegato - CEO

Data di emissione / *Issue date*
2010-05-17

Data di scadenza / *Expiry date*
2011-04-18

**Riemissione del certificato emesso per la prima volta in data 2002-05-09**

"La validità del presente certificato è subordinata a sorveglianza periodica a 12 mesi e al riesame completo del sistema di gestione aziendale con periodicità triennale"
*"The validity of the present certificate depends on the annual surveillance every 12 months and on the complete review of company's management system after three-years"*

TÜV Italia • Gruppo TÜV SÜD • Via Carducci 125, Pal. 23 • 20099 Sesto San Giovanni (MI) • Italia • www.tuv.it TÜV

# Product homologation

Our products are conform to the following **Regulations**:

- ECE/ONU **67R-01**
  *LPG products*


- ECE/ONU **110R-00**
  *CNG products*

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- ISO **15500**
  *CNG Regulators conformity declaration*

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- **10R-02** Electromagnetic Compatibility
  *Electric & Electronic components*

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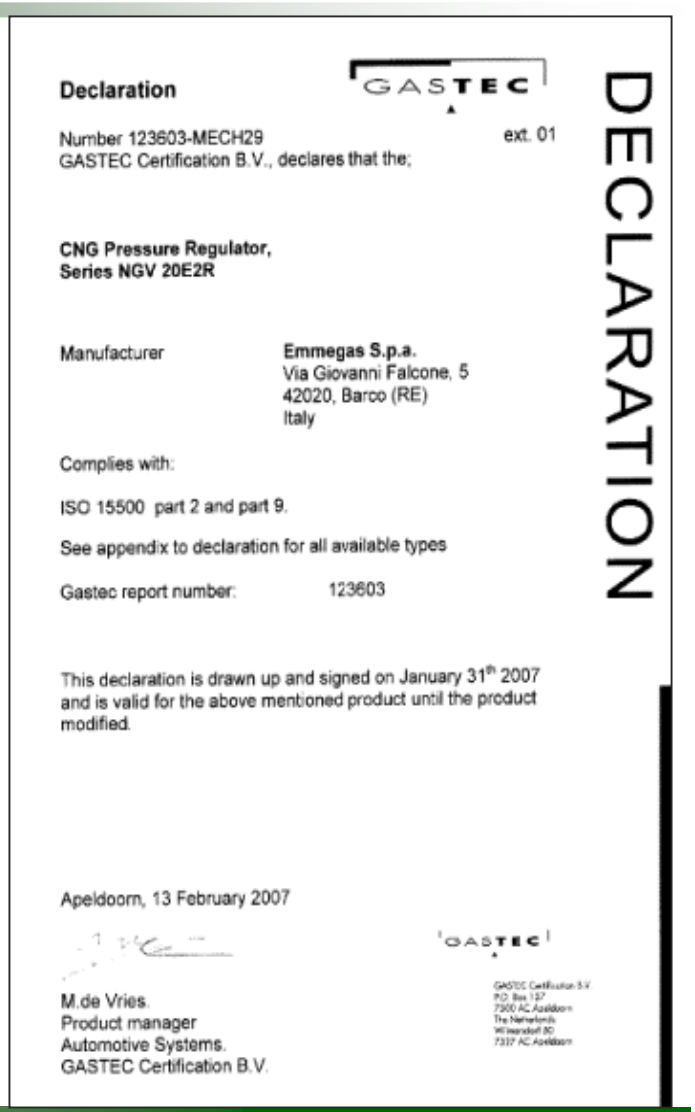
- Conformity to **EURO4** Exhaust Emission Limits
  *LPG & CNG products*



**Declaration**

GASTEC

Number 123603-MECH29 ext. 01
GASTEC Certification B.V., declares that the;

**CNG Pressure Regulator,**
**Series NGV 20E2R**

Manufacturer **Emmegas S.p.a.**
Via Giovanni Falcone, 5
42020, Barco (RE)
Italy

Complies with:

ISO 15500 part 2 and part 9.

See appendix to declaration for all available types

Gastec report number: 123603

This declaration is drawn up and signed on January 31th 2007 and is valid for the above mentioned product until the product modified.

Apeldoorn, 13 February 2007

M.de Vries.
Product manager
Automotive Systems.
GASTEC Certification B.V.

GASTEC

DECLARATION

# EMMEGAS LPG sequential products

# LPG HPI07 High Performance Injection system

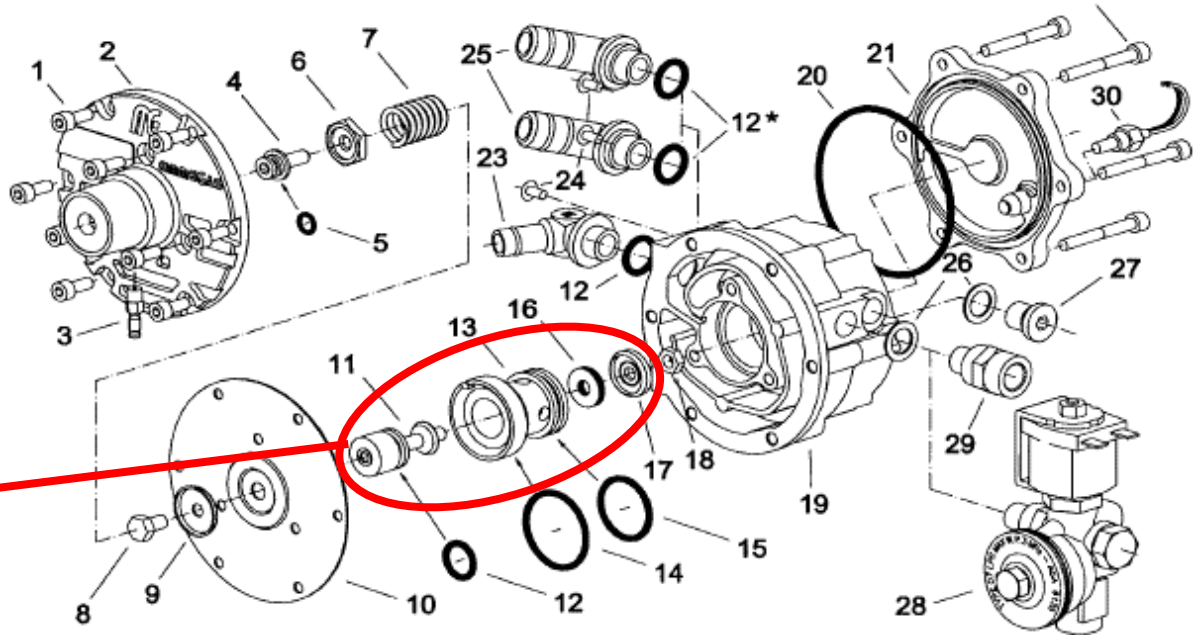

*EACH Timed Sequential Injection KIT INCLUDES:*

- **ML04-XJ** single-stage Lpg regulator
- **lock-off** Lpg valve
- **JMU** Injection Rail & **Filter** in gaseous phase
- **ECU07** control unit (3/4/6/8 cyl.) c/w **switch-indicator**
- universal **cut-injector** harness integrated into main wiring
- complete set of **wiring**, **hoses** and **fitting**

# LPG HPI07: the PLUS of Emmegas mechanical parts

The HPI07 product is supplied with innovative LPG mechanical components based on exclusive features such as:

- **reduction device of regulator by piston** and without internal leverages, that means higher flow of gas, prompt response on high power demand from the engine, idle stability




- wide and adequate **water circuit inside the LPG regulator**, offers the most effective and efficient vapourization process of Lpg

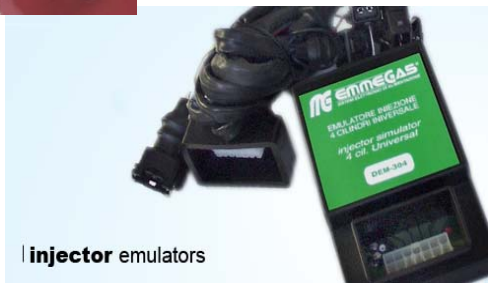
- water chamber **separated** from any Lpg circuit

# Emmegas Accessories

**cng** valves


**Timing** advance processors

**lock off** valves




**injector** emulators

**change-over** switches

**multi**valves


**Lambda** control systems

**mix**ers

**ML 04 J**
**XJ** injection

**ML 94 EP**
**E2R** electronic

**ML 03 P**
vacuum

**NGV 04**
**E2R** electronic

**NGV 20 E**
electronic

**NGV 04 J**
injection

# EMMEGAS CNG sequential products

# CNG HPI07 High Performance Injection system

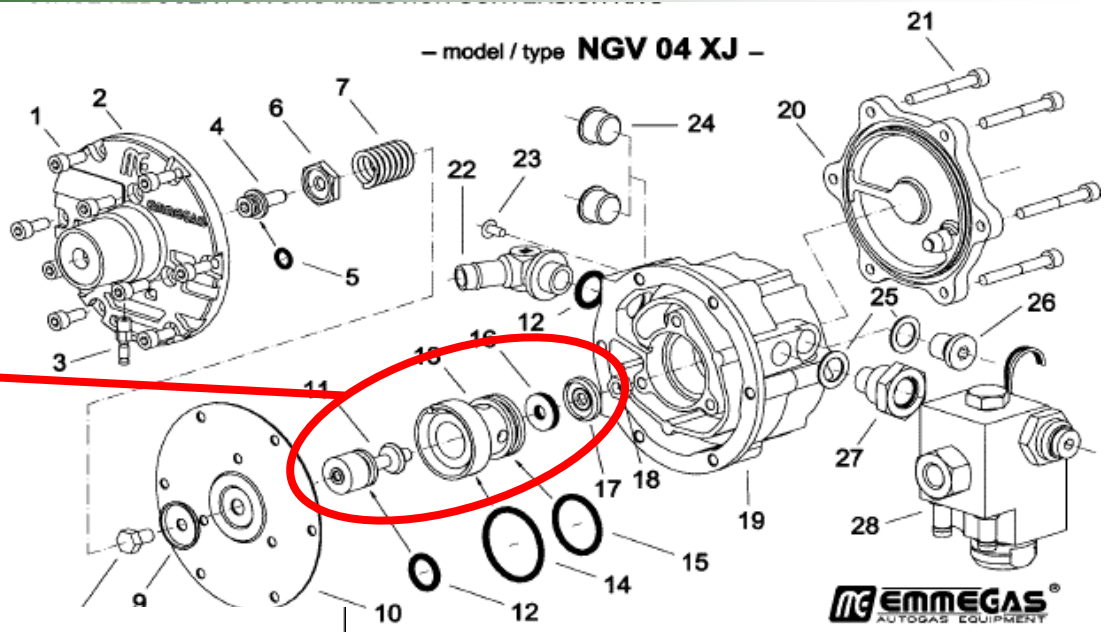

EACH Timed Sequential Injection KIT INCLUDES:

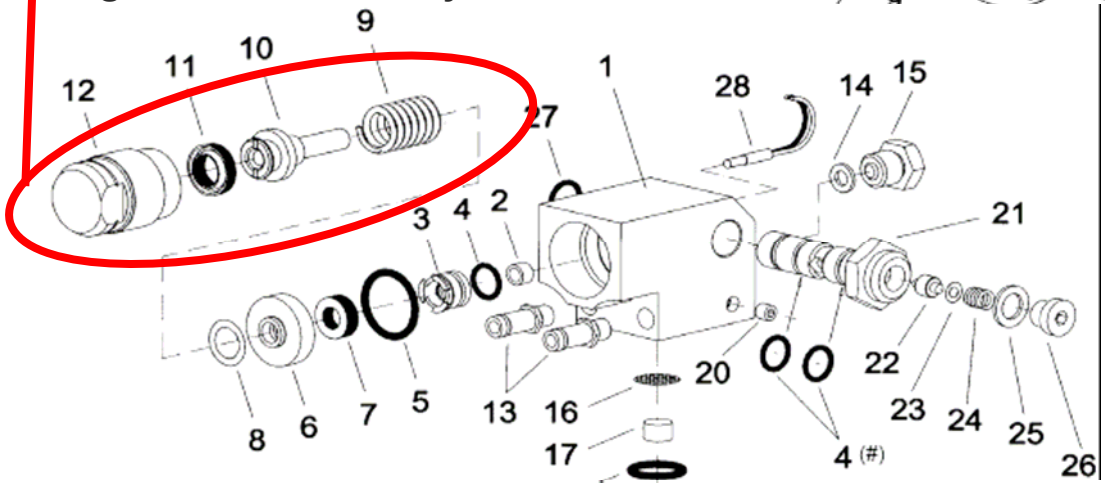
- **NGV04 J** two-stages CNG regulator with **Manometer** (c/w level sensor)
- **JMU** Injection rail & **Filter** in gaseous phase
- **ECU07** control unit (3/4/6/8 cyl.) c/w **switch / indicator**
- Universal **cut-injector** harness integrated into main wiring
- Complete set of **wiring**, **hoses** and **fitting**

# CNG HPI07: the PLUS of Emmegas mechanical parts

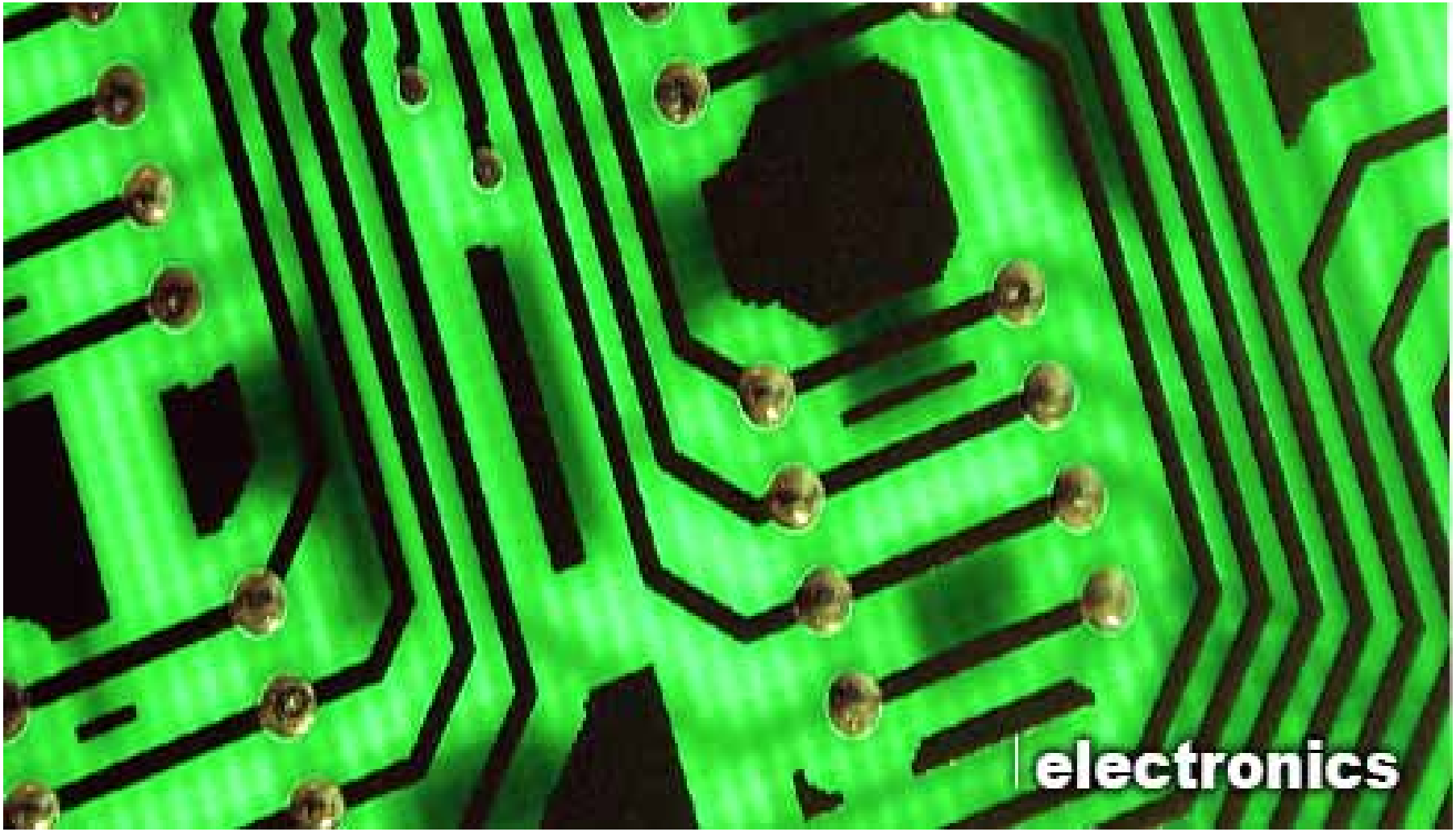
The HPI07 product is supplied with innovative CNG mechanical components based on exclusive features such as:

- **reduction device of regulator by pistons** (1° & 2° stage) and without internal leverages, that means higher flow of gas, prompt response in case of power need from the engine, idle stability



# EMMEGAS Sequential Injection c/u & SW

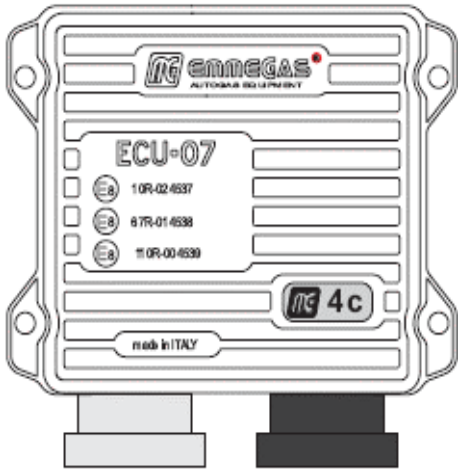


# HPI07: the advantages of Sequential Injection

-The HPI07 development is based on the **same principles used by a vehicle's gasoline ECU**

-The amount of required fuel is **adjusted for each cylinder**, independently and moment-to-moment

-This precise, synchronized injection strategy optimizes **performance**, **consumption**, provides a stable **response** and eliminate risks of **backfiring**




-The HPI07 includes the latest technology, is **easy to install** and will not interfere with the factory settings of the vehicle

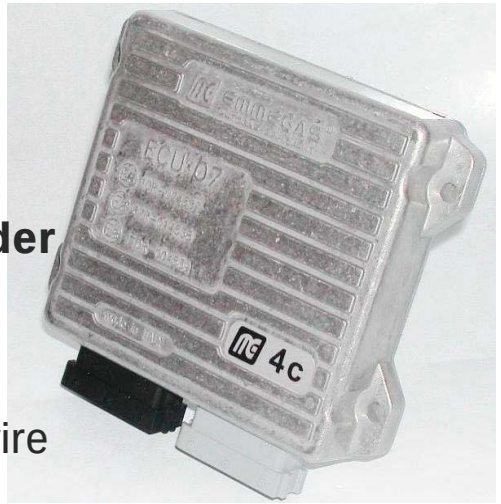
-Available in version for 3-4, 5-6-8, 10-12 cylinders, the HPI07 is based on a simple and **user-friendly installation** software with easy steps for configuration and diagnostics

-The intelligent **auto-calibration** function shows working parameters for gasoline under different conditions, mapping for the highest efficiency in either Lpg - Cng

**Windows-compatible programming and monitoring software, Sequential Injection ECU, Autocalibrating, Database creation for storage of configurations, Mapping Adjustment and memorization for management of different injectors, Gas level indicator control, mode indicator, sound alarm, Automatic switch to gasoline, different sensor options, ECU-incorporated emulation impedances, Injector control, continuous monitoring and diagnostic of gas injectors, Diagnostic and auto-test strategies, Pressure sensor, Adaptable to all type of injectors**

# HPI07: the PLUS of Emmegas sequential strategy

The new '**HPI07**' High Performance Injection Sequential system – designed, engineered and manufactured in Emmegas (*) - is based on following exclusive and innovative features:




- Petrol signal self-learning **cylinder per cylinder**
- Autocalibration at **idle**
- **Map adjustment by sectors** (or free)
- **Cut injector wiring integrated** into main wire
- Possibility to program a **delay cylinder per cylinder** during the petrol/gas switch
- **Not invasive** into the vehicle electronics
- user **friendly**, **small** dimension c/u, **easy** program
- **Self adapting** during use of the vehicle
- **Universal** Lpg/Cng applicability 3-4-5-6-8 cyl. engines
- **Diagnostic** on the new switch (and **memory of errors**, present and stored)
- **Software full version** (not expiring) with complete map, no need of key, download available on the web


## (*) Competitors:

*-Bigas: AEB platform*

*- Emer: AEB platform*

*- Landi srl: AEB circuit, now MED*

*- Landi Renzo: AEB circuit now MED*

*- Lovato: AEB circuit*

*- Romano: AEB platform*

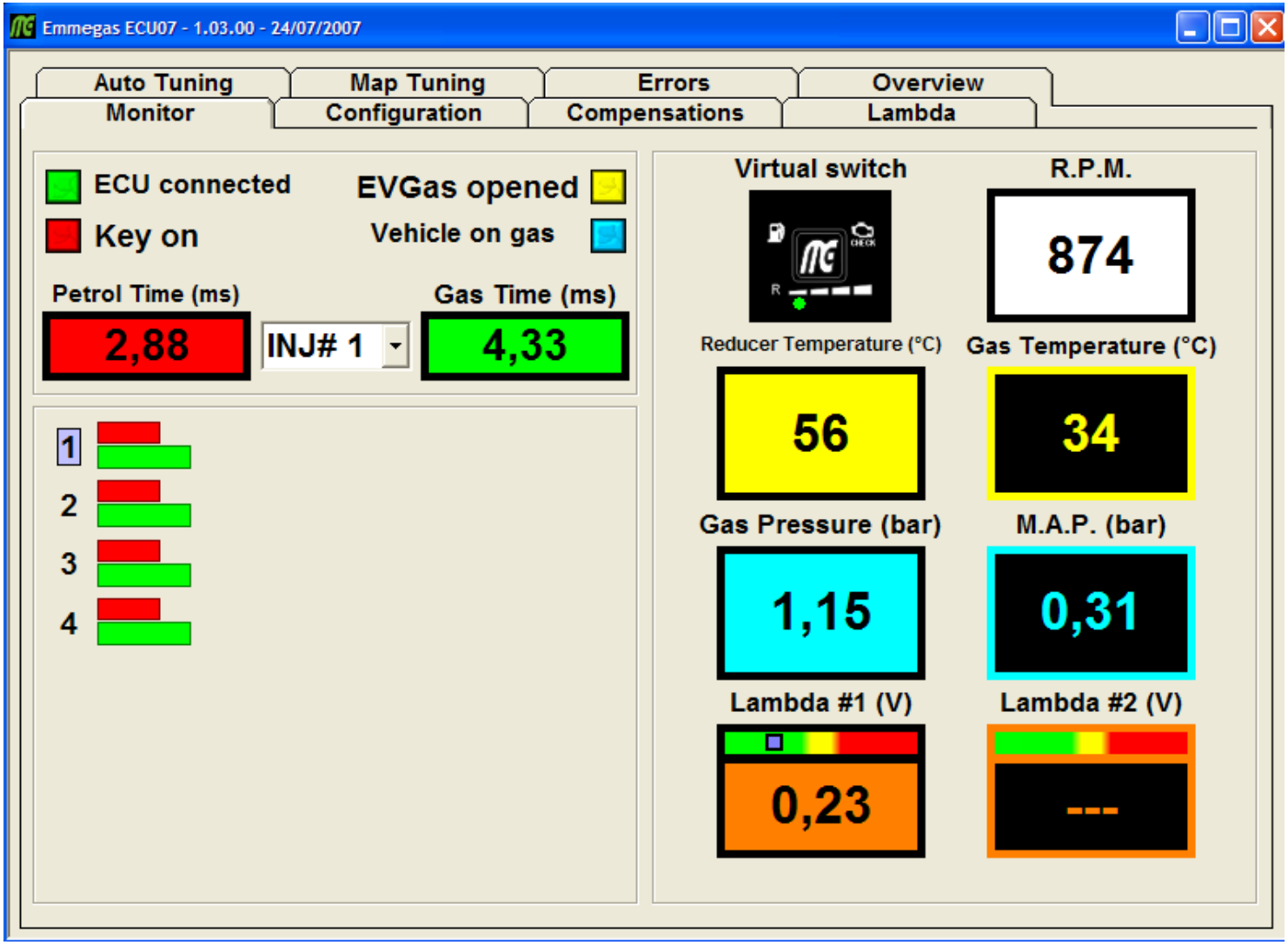
*- OMVL: AEB platform*

*- Tartarini: AEB platform*

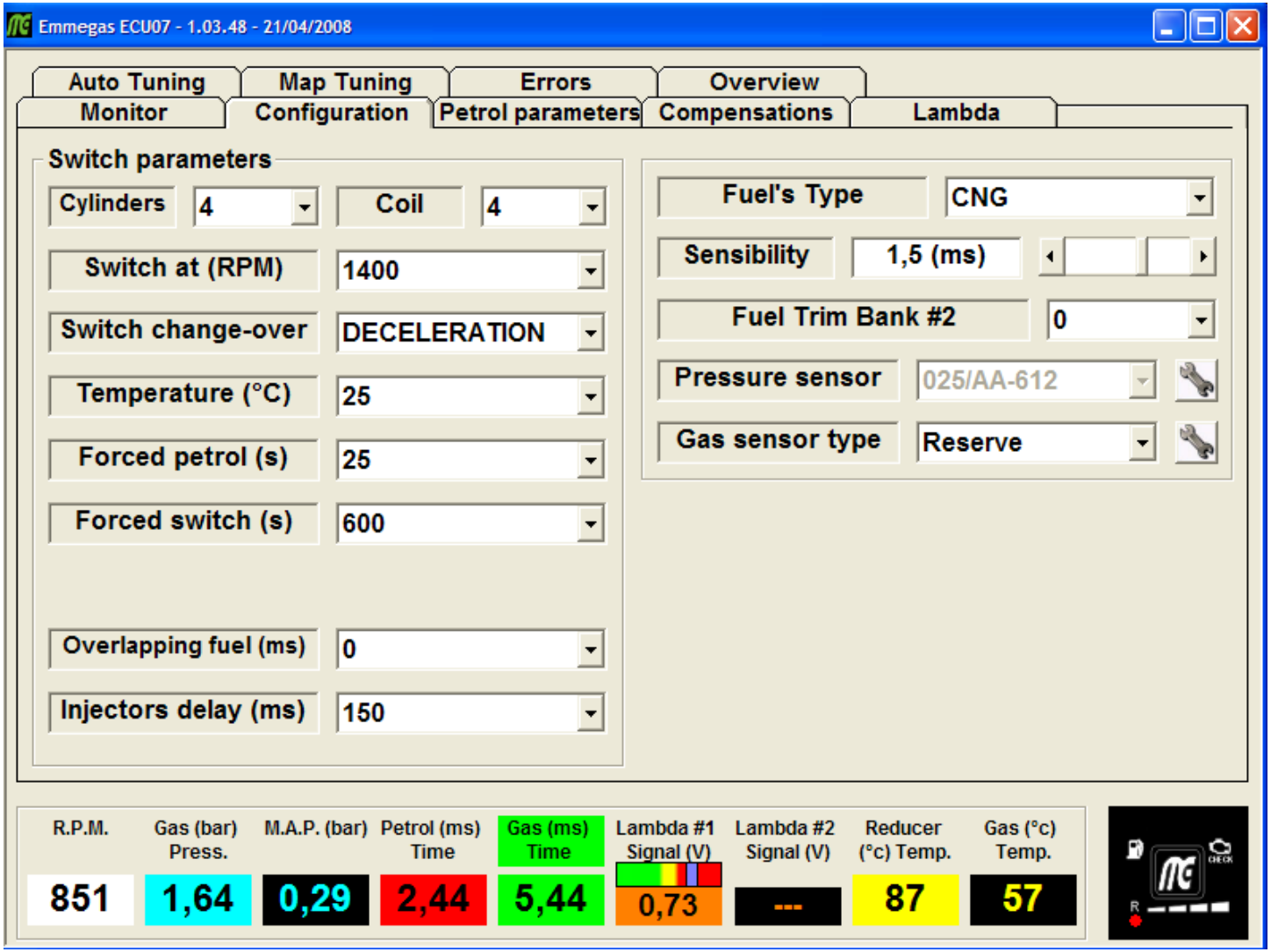
*- Zavoli: AEB platform*

*- Poland Assemblers: they are not manufacturers, they combine different components not designed to work togheter (Toma-setto regulator + Poland ECU + Valtek rail)*

# HPI07 software: MONITOR



# HPI07 software: CONFIGURATION

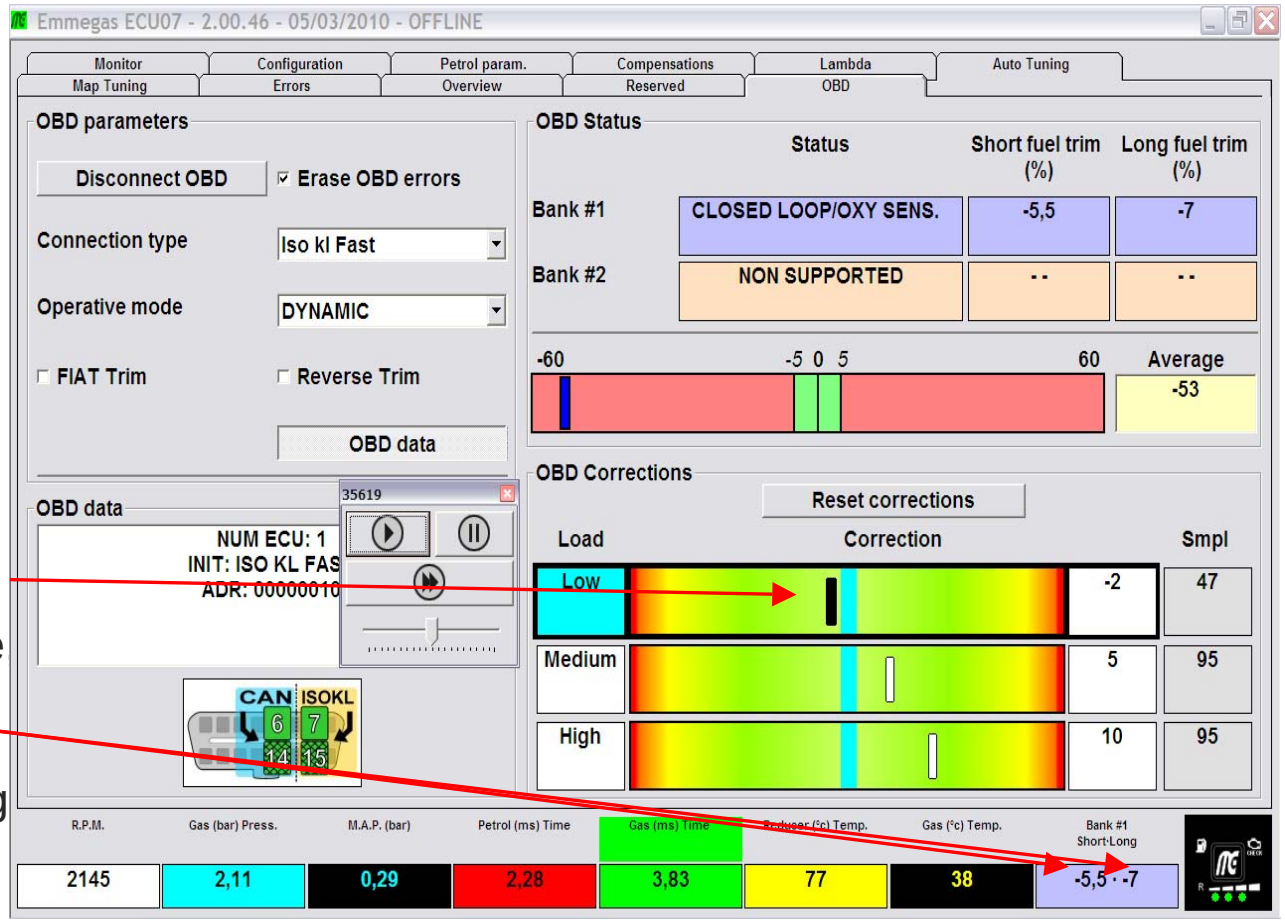


# HPI07 sw: **OBD Connection - New Feature**

- There will be 2 additional wires into the HPI07 cable (to be connected to the OBD of the vehicle) so that the **Gas Map will be automatically linked to the petrol carburation**

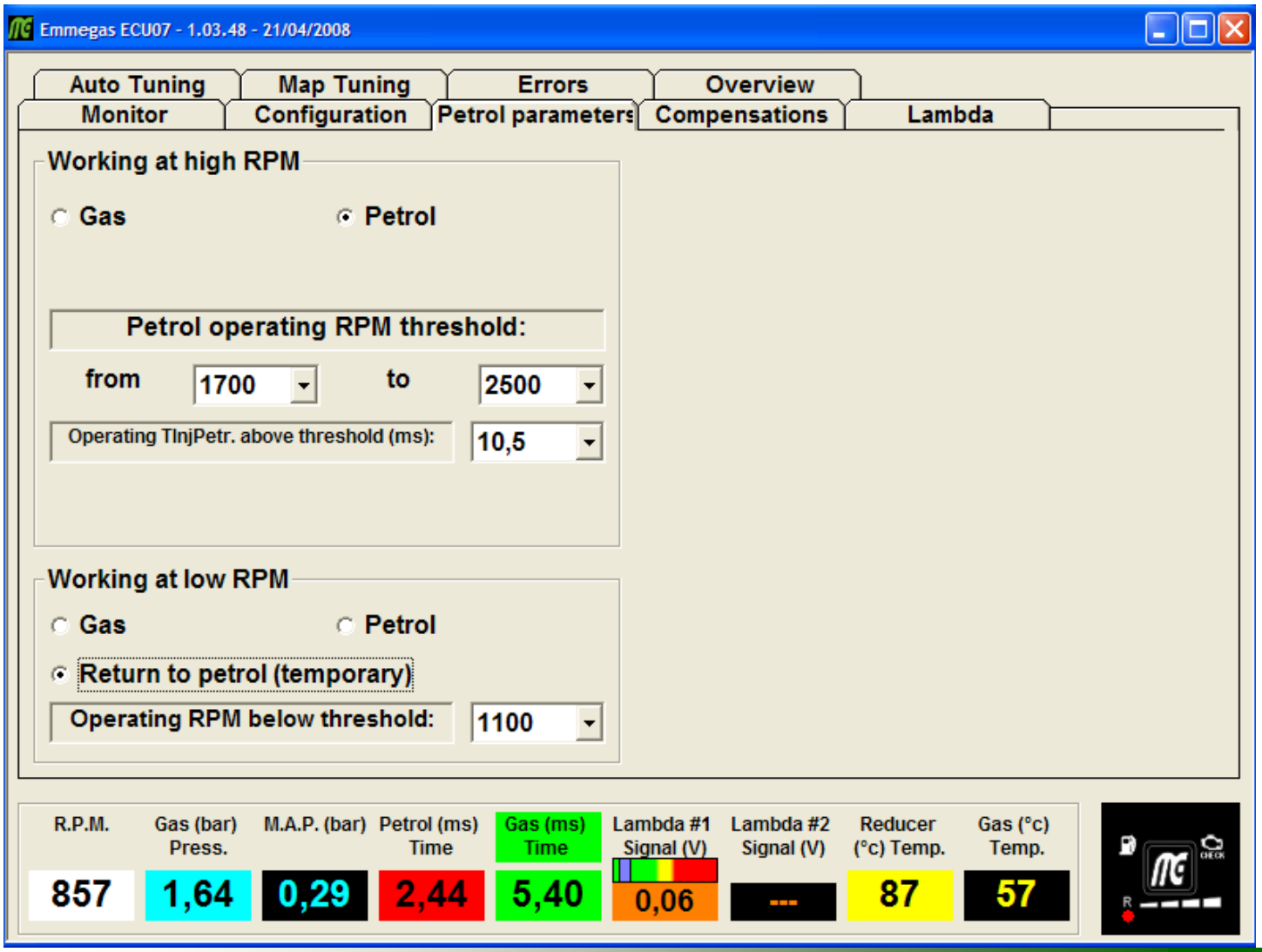
- The EXCLUSIVE feature of our solution is that **each sector of the Gas Map will have its specific corrector**

- Through the HPI07 software the **Slow and Fast petrol correctors will be visualized** in your computer during the programming of the ECU

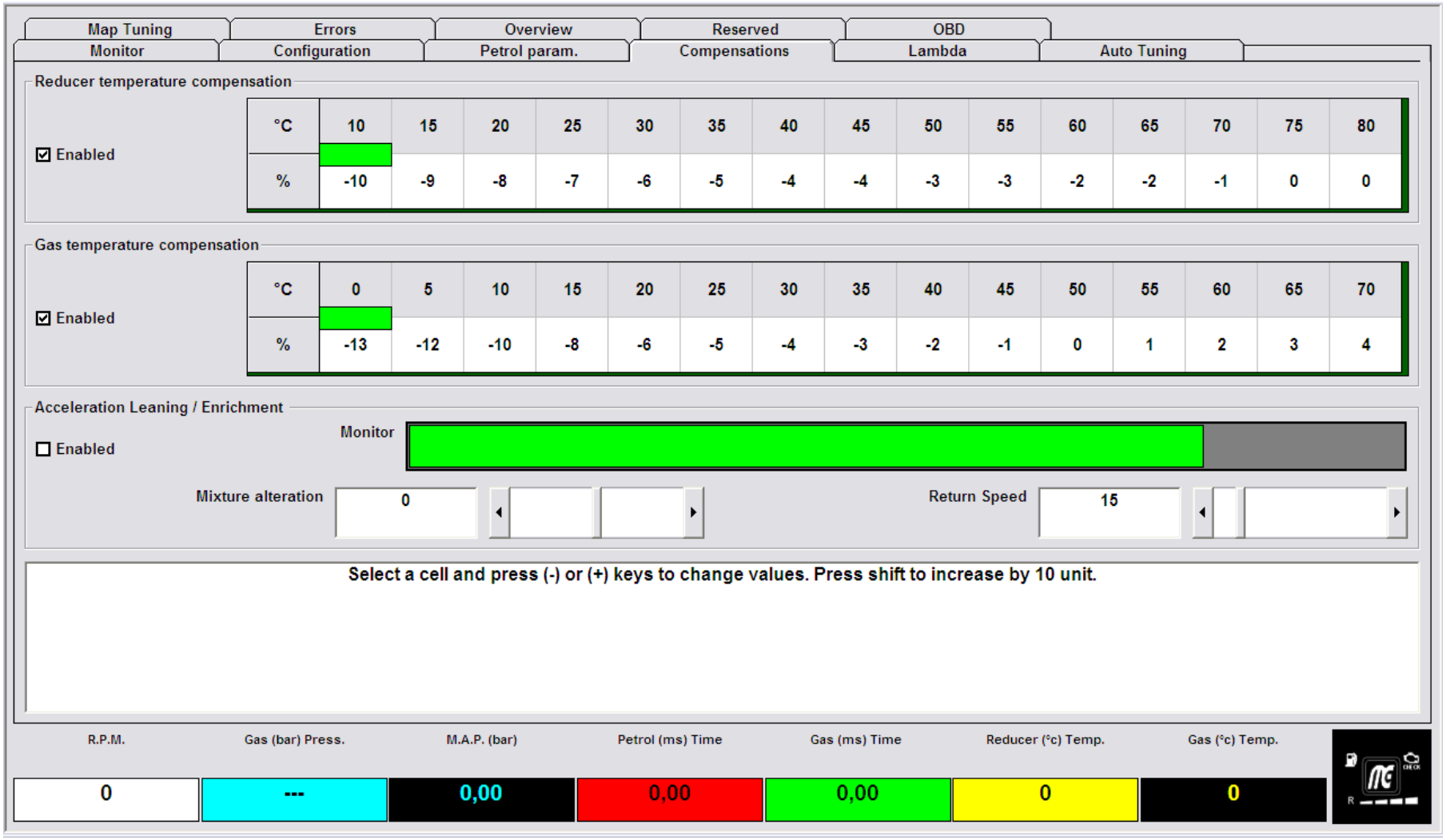



- The purpose of this new additional feature is the **self-adapting** of the system to the different condition of use, quality of fuel, etc. and **to avoid the turn on of the Check Engine LED** of the vehicle

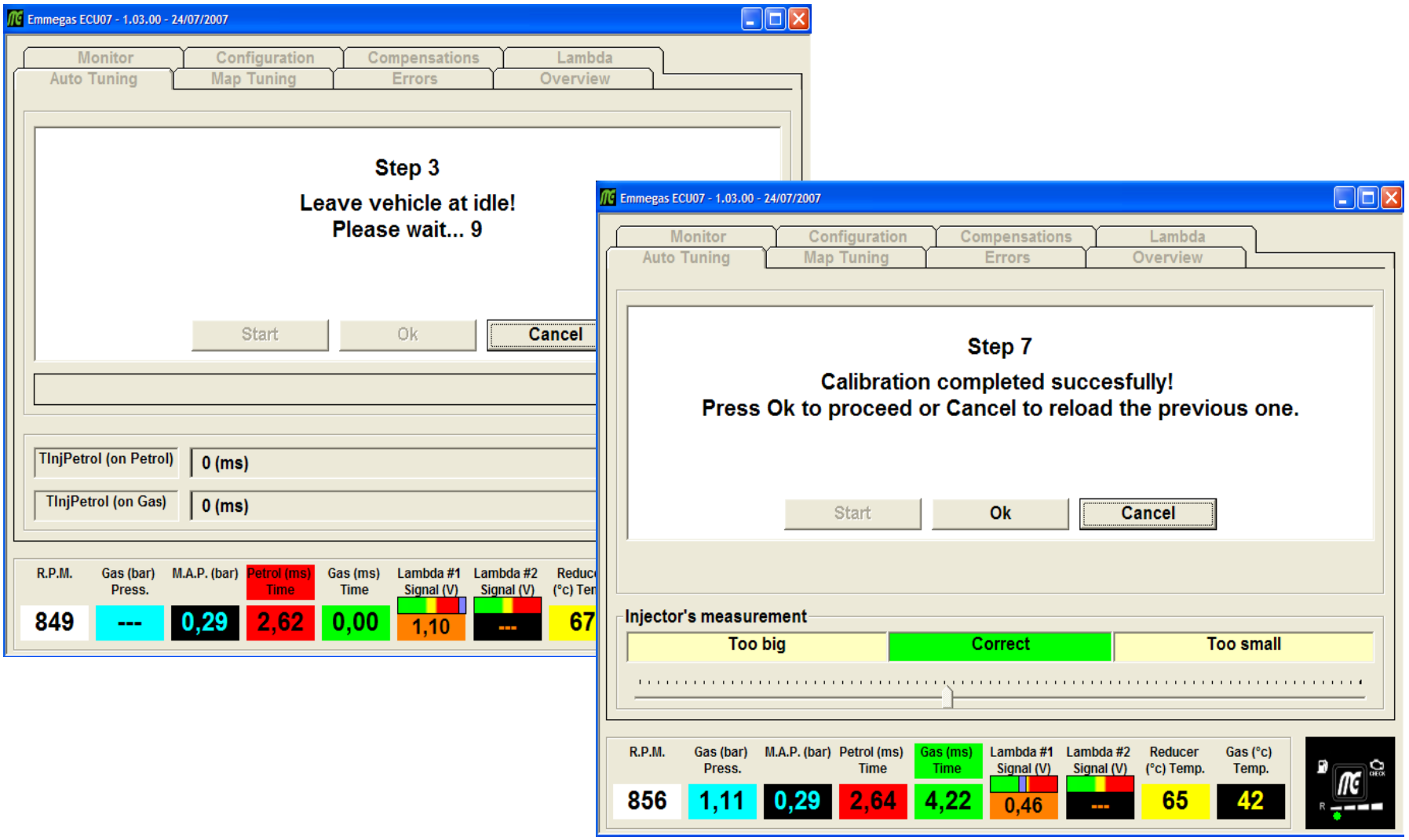
# HPI07 software: PETROL PARAMETERS



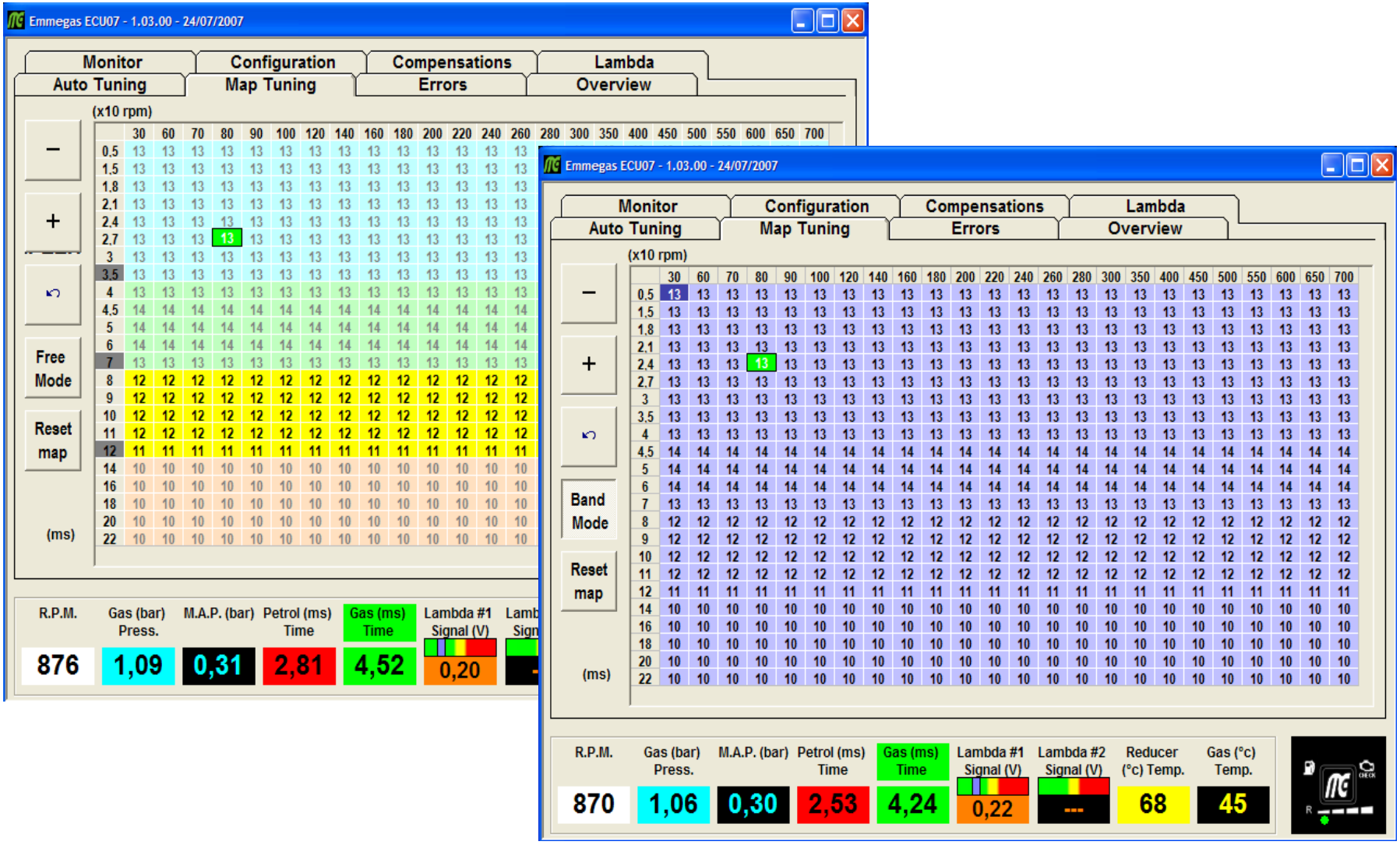
# HPI07 sw: COMPENSATIONS (w/Acceleration Mixture setting)



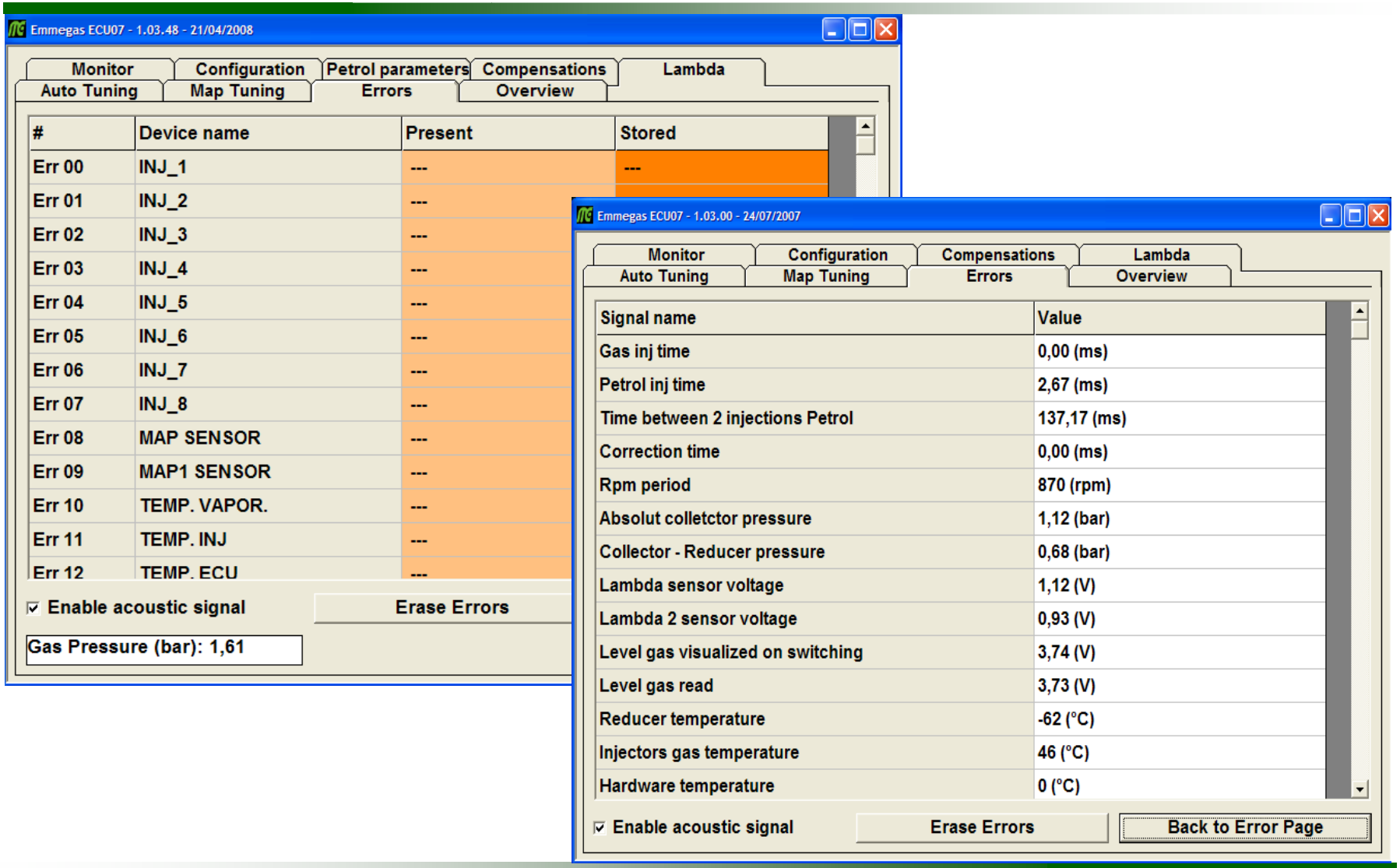
# HPI07 software: AUTO TUNING



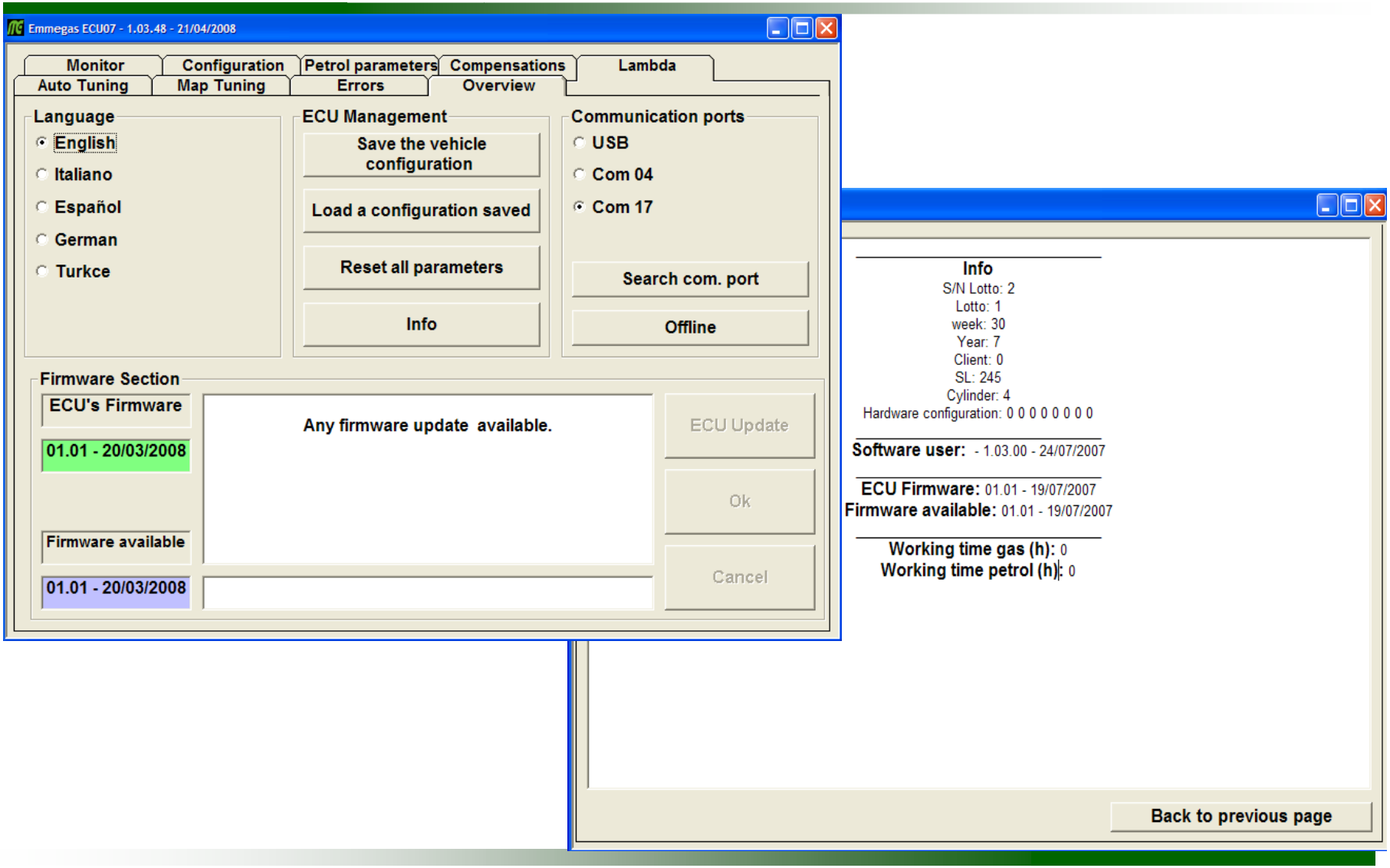
# HPI07 software: MAP TUNING (sectors and free)



# HPI07 software: ERRORS REPORT



# HPI07 sw: OVERVIEW AND INFO SUMMARY



# FINAL DRIVE TEST


Roller Bench in the new EMMEGAS Test Laboratory – Reggio Emilia - Italy

# HPI07: Electric Scheme & Installation Diagram

**WIRE COLOURS CORRESPONDENCE TABLE / TABELLA CORRISPONDENZA COLORE FILI**

| | I | GB | ES | TR | PL | D | F |
|---|---|---|---|---|---|---|---|
| A | Azzurro | --- | -- | --- | --- | --- | --- |
| B | Bianco | White | Blanco | Beyaz | Biała | Weiß | Blanc |
| C | Arancio | Orange | Naranja | Turuncu | Pomarańczowa | Orange | Orange |
| G | Giallo | Yellow | Amarillo | Sarı | Żółta | Gelb | Jaune |
| H | Grigio | Grey | Gris | Gri | Szara | Grau | Gris |
| I | Blu | Blue | Azul | Mavi | Niebieska | Blau | Bleu |
| M | Marrone | Brown | Marrón | Kahverengi | Brązowa | Braun | Marron |
| N | Nero | Black | Negro | Siyah | Czarna | Schwarz | Noir |
| R | Rosso | Red | Rojo | Kirmizi | Czerwona | Rot | Rouge |
| S | Rosa | Pink | Rosa | Pembe | Różowa | Rosa | Rose |
| V | Verde | Green | Verde | Yesil | Zielona | Grün | Vert |
| Z | Viola | Violet | Violeta | Mor | Fioletowa | Violett | Violet |
| RN | Rosso - Nero | Red - Black | Rojo - Negro | Pembe-Siyah | Czerwona-Czarna | Rot - Schwarz | Rouge - Noir |
| VN | Verde - Nero | Green - Black | Verde - Negro | Yesil-Siyah | Zielona-Czarna | Grün - Schwarz | Vert - Noir |
| MN | Marrone - Nero | Brown - Black | Marrón - Negro | Kahverengi-Siyah | Brązowa-Czarna | Braun - Schwarz | Marron - Noir |
| SN | Rosa - Nero | Pink - Black | Rosa - Negro | Pembe-Siyah | Różowa-Czarna | Rosa - Schwarz | Rose - Noir |
| GN | Grigio - Nero | Grey - Black | Gris - Negro | Gri-Siyah | Szara-Czarna | Grau - Schwarz | Gris - Noir |
| GN | Giallo - Nero | Yellow - Black | Amarillo - Negro | Sarı-Siyah | Żółta-Czarna | Gelb - Schwarz | Jaune - Noir |
| ZN | Viola - Nero | Violet - Black | Violeta - Negro | Mor-Siyah | Fioletowa-Czarna | Violett - Schwarz | Violet - Noir |

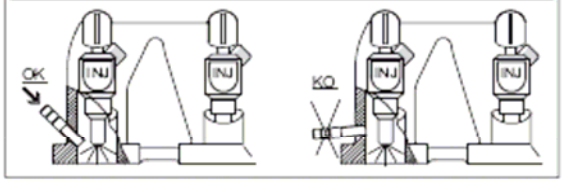
**NOZZLES Ø / VEHICLE DISPLACEMENT & POWER correspondence table**
**TABELLA di corrispondenza Ø UGELLI / CILINDRATA E POTENZA VEICOLO**

| Ø | Engine displacement divided by the number of cylinders<br>Cilindrata diviso per il N°dei cilindri<br>$cm^3$ | | Power divided by the number of cylinders<br>Dividere la Potenza per il N°dei cilindri<br>CV/Hp | |
|---|---|---|---|---|
| 1,8 mm | 0 | 350 | 10 | 20 |
| 2,25 mm | >350 | 500 | >20 | 32 |
| 2,5 mm | >500 | 650 | >32 | 39 |
| 2,7 mm | >650 | 800 | >39 | 46 |
| 3,5 mm | >800 | | >46 | |

The total displacement and the total Power must be divided dy the number of the cylinders.
A > if the two results belong to the same line, use the corresponding nozzle;
B > if further to the item A, the two results are on the upper boundary use the bigger hole diameter of the next line;
C > if the two results belong to different lines, use the nozzle with the bigger hole diameter.
Note > the conversion Factors "kW<=>CV" are: 1kW=1,36CV ; 1CV=0,735kW

Dividere la cilindrata totale e la potenza per il numero dei cilindri
A > se entrambi i risultati cadono nella stessa riga, utilizzare il foro corrispondente a quella riga;
B > se, oltre a quanto sopra, entrambi cadono sul limite superiore del proprio intervallo, passare al foro successivo;
C > se i due risultati cadono su righe diverse, dei due utilizzare il foro maggiore.
Nota > I fattori di conversione kW<=>CV sono: 1kW=1,36CV ; 1CV=0,735kW

**POSIZIONAMENTO UGELLI / NOZZLES POSITIONING**

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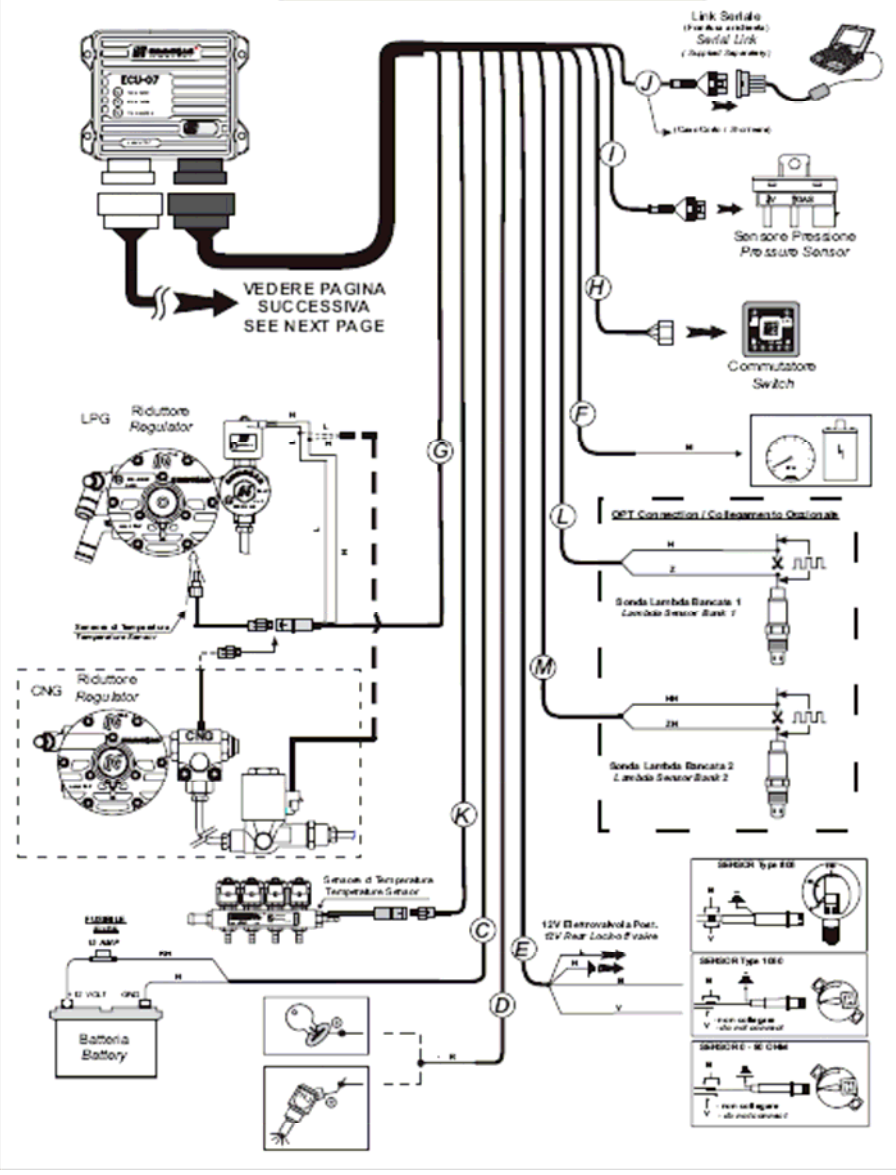
Cod. 60220 Rev. 04/08

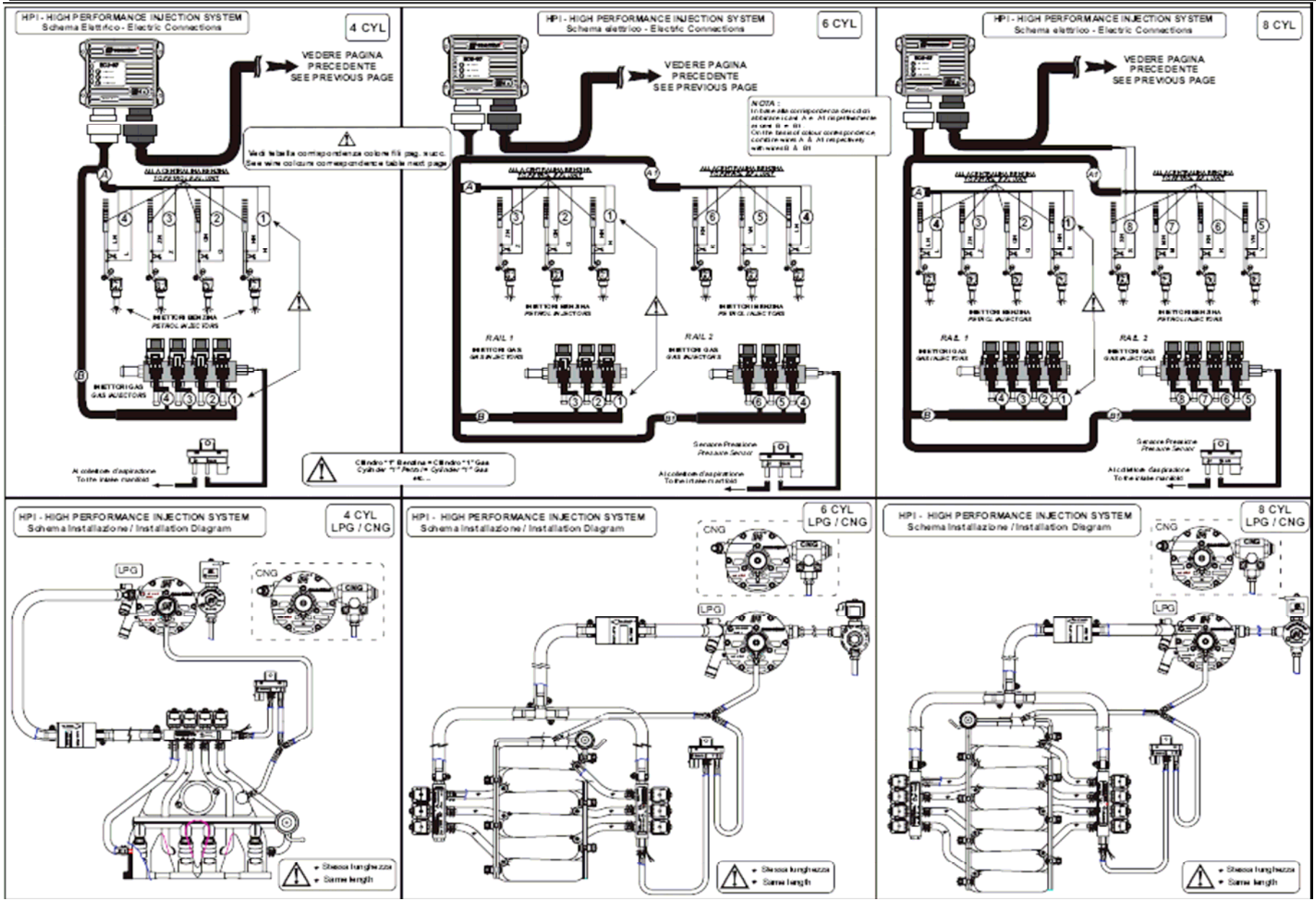
EMMEGAS® ALTERNATIVE FUEL SOLUTIONS

**HPI - HIGH PERFORMANCE INJECTION SYSTEM**
Schema Elettrico - Electric Connections

4 - 6 - 8 CYL
LPG / CNG

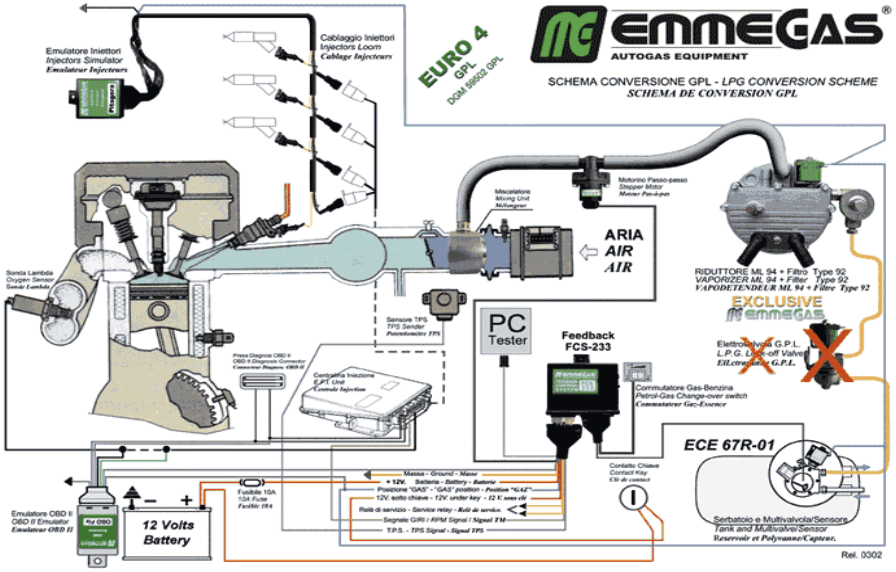


# HPI07: Electric Scheme & Installation Diagram

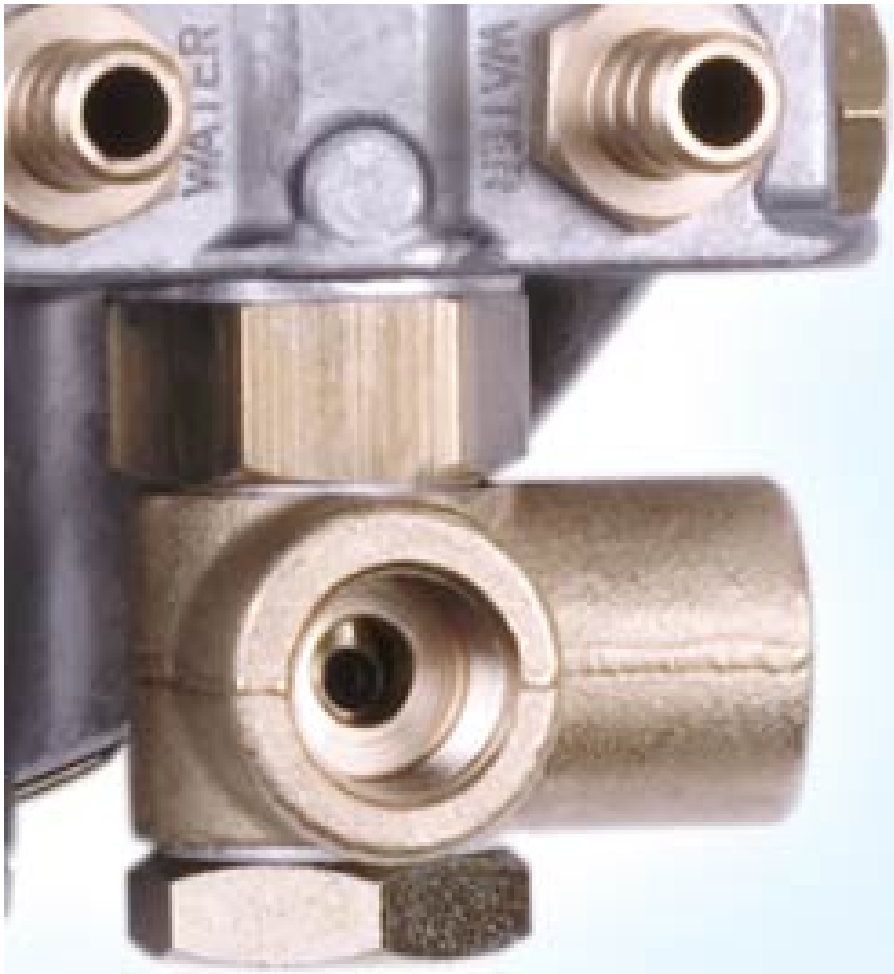


# LPG ML94 Electronic kit

Easy installation
Good quality/price ratio



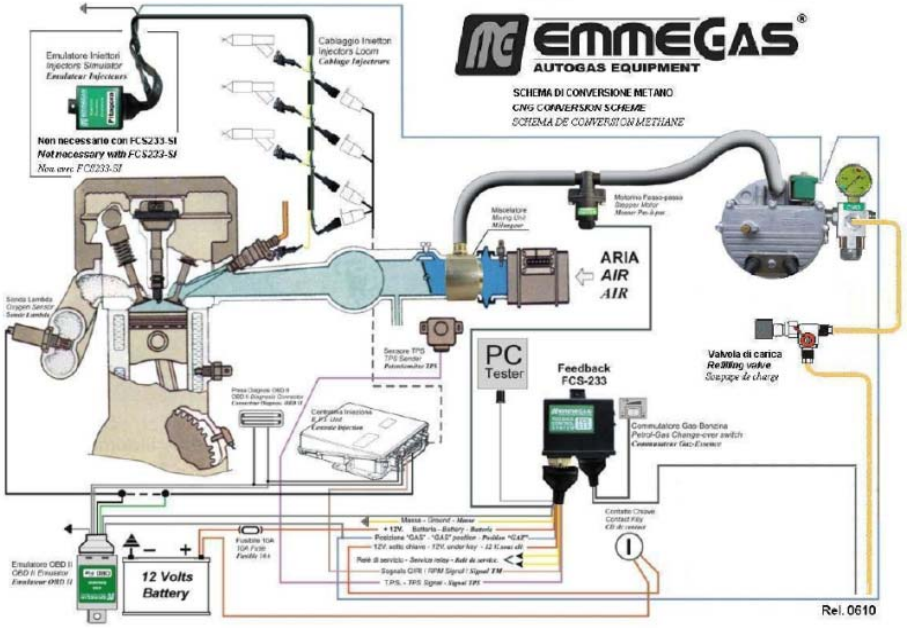

- EACH KIT INCLUDES:
- Lpg **ML94 EP/E2R** electronic regulator
- **Lambda Control System** (only for vehicles with catalyst and sonda lambda)
- Electronic **Switch & Indicator**
- **Lpg lock-off** valve
- **Petrol lock-off** valve (only for vehicles with carburettor)
- Complete set of **wiring**, **hoses** and **fitting**




**electronic** kits

# CNG ‘NGV20’ Electronic kit

Easy installation
Good quality/price ratio




EACH KIT INCLUDES:

- Cng **NGV** type electronic regulator
- **Lambda Control System** (only for vehicles with catalyst and sonda lambda)
- Electronic **Switch & Indicator**
- **Manometer** with Level Sensor
- **Petrol lock-off valve** (only for vehicles with carburettor)
- complete set of **wiring**, **hoses** and **fitting**

# Thanks for your attention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