

LANDIRENZO OMEGAS LPG injection system



**LR OMEGAS
Electronic
Control Unit**



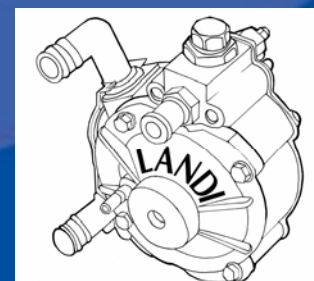
**LR OMEGAS switch -
indicator**



LR OMEGAS injectors

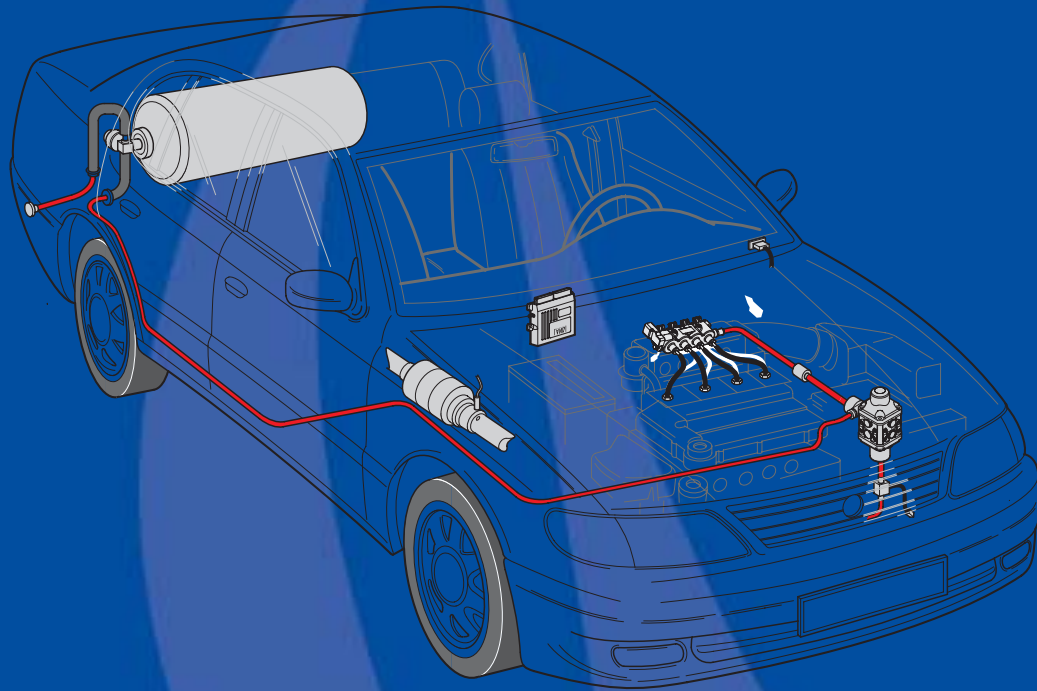


LR OMEGAS IG1 regulator



LR OMEGAS LI02 regulator

LANDIRENZO OMEGAS CNG injection system



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**LR OMEGAS switch -
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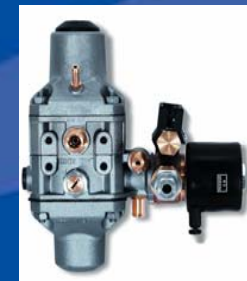


LR OMEGAS injectors



LR OMEGAS NG1 regulator

LR OMEGAS NG2 regulator



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IG1 PRESSURE REGULATOR

Two stage aluminium modular regulator
External HP shut-off valve
Filter integrated in shut-off valve

Service Pressure:	2,5 to 30 bar
Nominal Output Pressure:	1 bar
Temperature Range:	-20° ÷ 120° C
Solenoid Valve Supply:	6 ÷ 16 Volt
Flow Rate:	
Max:	75 Kg/h
Weight:	1450 g.
Homologation:	ECE/ONU R67/01

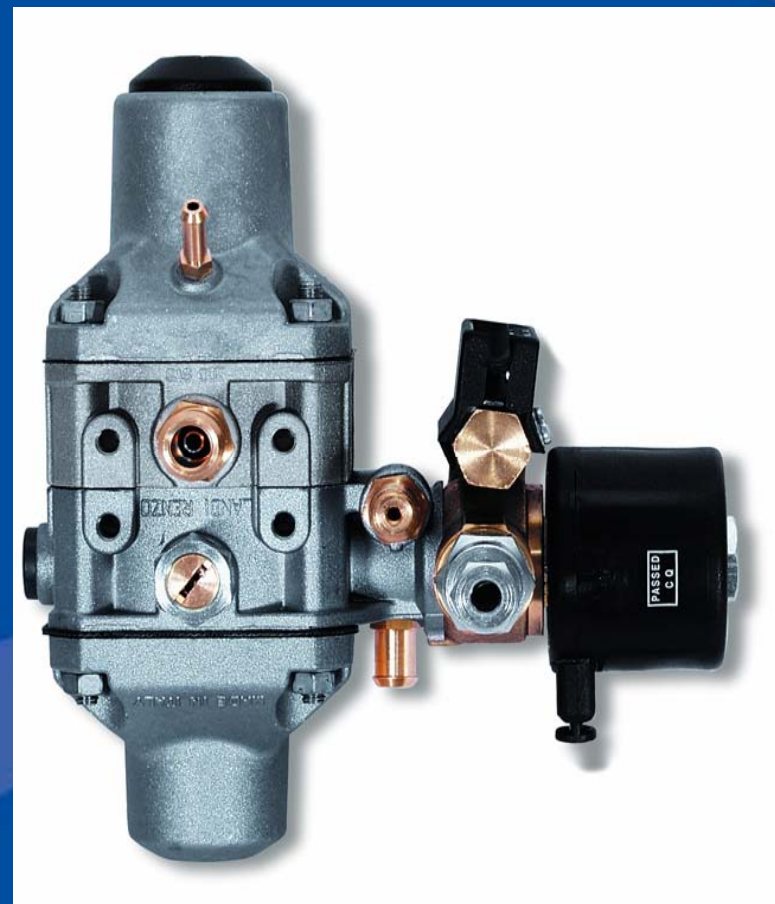


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NG2 PRESSURE REGULATOR

Two stage aluminium modular regulator
External HP shut-off valve
Filter integrated in shut-off valve

Service Pressure:	15÷260 bar
Nominal Output Pressure:	(1.5 to 9.5) bar $\pm$ 3%
Temperature Range:	-40° ÷ 120° C
Solenoid Valve Supply:	6 ÷ 16 Volt
Input Filter:	50 μ m
Flow Rate:	
Max:	40 Kg/h
Weight:	2100 g.
Homologation:	ECE/ONU no.110 @ -40°C min.



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NG1 PRESSURE REGULATOR

One stage aluminium modular regulator
External HP shut-off valve
Filter integrated in shut-off valve
SOP in 2005

Service Pressure:	15÷260 bar
Nominal Output Pressure:	(1.5 to 9.5) bar $\pm$ 8.5%
Temperature Range:	-40° ÷ 120° C
Solenoid Valve Supply:	6 ÷ 16 Volt
Input Filter:	50 μ m
Flow Rate:	
Max:	40 Kg/h
Weight:	1200 g.
Homologation:	ECE/ONU no.110 @ -40°C min.



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Landi Renzo Gas Injector

Current management:	4 / 1 "Peak and hold"
Supply Voltage:	6 to 16 volts
Temperature Range:	-40°C to +120°C
Nominal Pressure:	0.8 to 3 bar
Opening Time @12V:	2,0 ms
Dimensions:	Ø 32 x h 73 mm
Weight:	120 g
Homologation:	ECE R 110 @ -40°C
min.	



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GI Injector Range

- **Size 1** > up to 15 kW/cylinder engine power
(green cap)
- **Size 2** > between 15 and 30 kW/cylinder engine power
(black cap)
- **Size 3** > between 30 and 40 kW/cylinder engine power
(white cap)

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Pressure-Temperature Sensor

Pressure / Temperature
Sensor Bosch



P/T Sensor to Real Time Tj gas adjust.

GAS type:	LPG/CNG
Power supply:	6 ÷ 16
Volt	
Output:	0 ÷ 5 Volt
Max pressure:	6 bar
Range P:	0.5 ÷ 3.5
bar	
Range T:	-40 ÷
130°C	

Landi Renzo CNG – LPG Filter

CNG - LPG Filter

Type of fuel:	CNG - LPG
Fitting in:	14 mm
Fitting out:	14 mm
Max Pressure:	3 bar
Filter grade:	10 micron
Weight	75 g
Homologation:	ECE/ONU R110 @ -40°C min.



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ECU (Electronic Control Unit)



Automotive microprocessor 16 bit 50 Mhz

Up to 8 injectors management

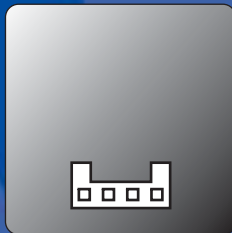
Sensors and actuators self diagnosis

Temperature range from -40° to 100°C

Talks with PC via wiring harness diagnosis connector

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Fuel Switch



Fuel switch selects fuel type and indicates GAS tank level.

A buzzer warns about automatic GAS to petrol switching (GAS tank empty) or system failures.

Automatic GAS to petrol switching must be acknowledged by the user.

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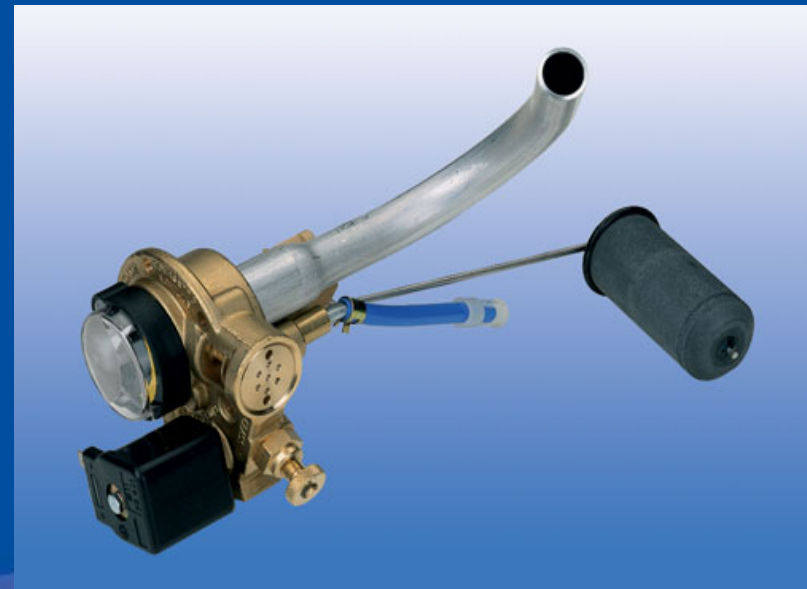
LPG Tank Valve

LPG tank valve

Models to fit the LPG tank main types

- Level indicator device
- Operating pressure: 15 bar
- Max Pressure: 67.5 bar
- 80% filling mechanical limiter
- Safety thermal fuse
- Safety overpressure valve
- Weight: 1.09 kg

Homologation: ECE/ONU R67.01



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LPG Tank

LPG toroidal tank

Carbon Steel body: DIN EN 10120-97

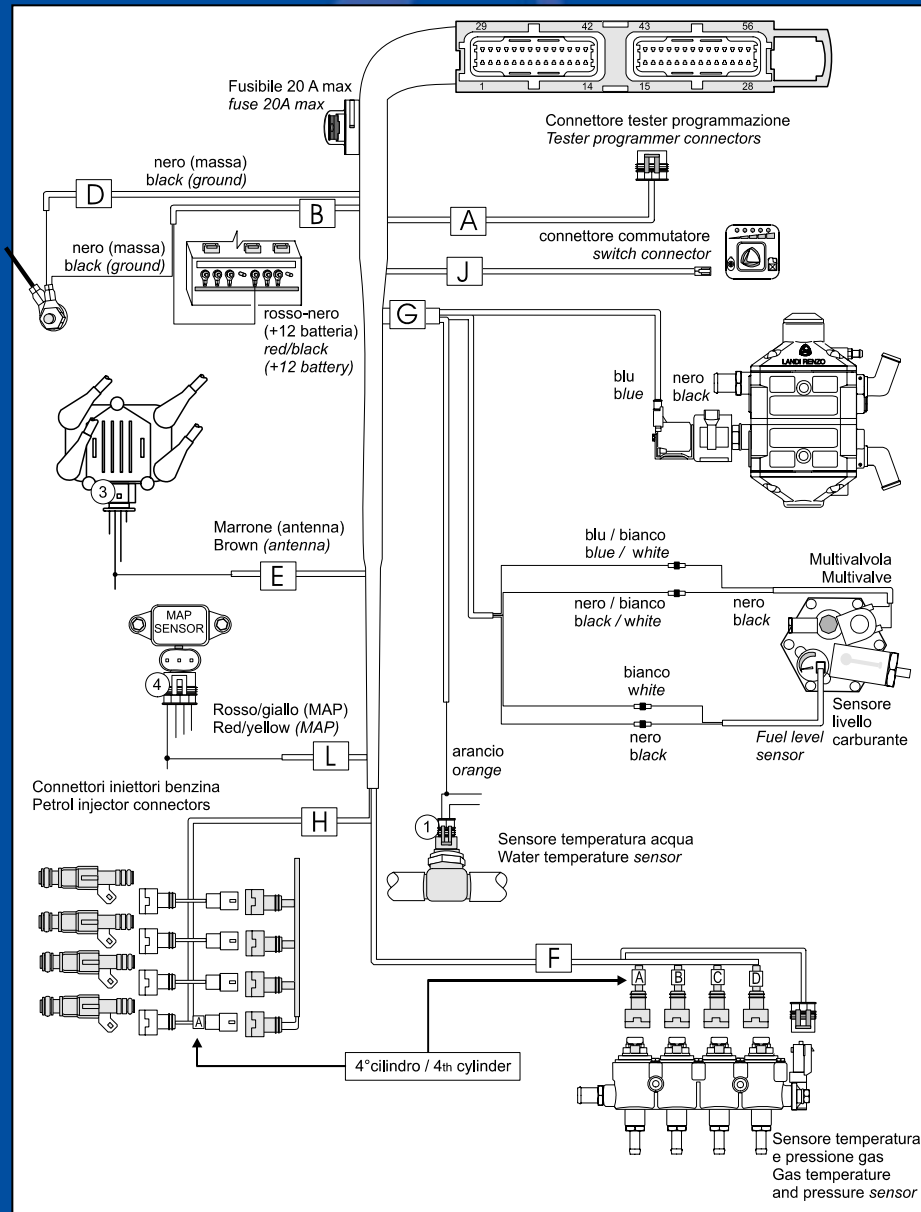
Operating pressure: 7-15 bar

Temperature Range: -20° C / + 65° C
Max. Pressure: 67.5 bar

Homologation: ECE/ONU R67.01



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Electrical Wiring Harness

Gas Injectors	A	B	C	D
Inj. Harness	blue-blue/black	red-red/black	green-green/black	yellow-yellow/black

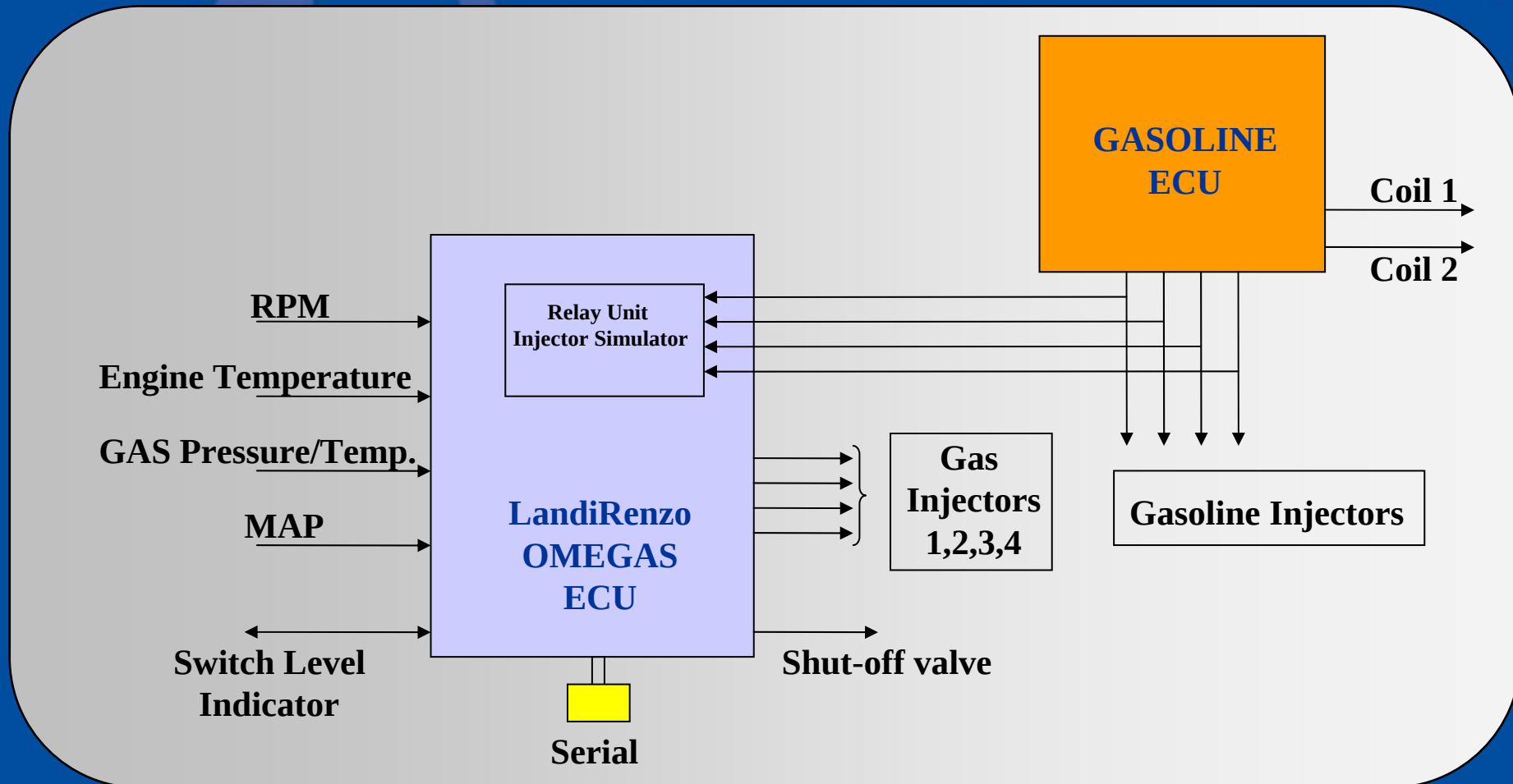
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Black	Ground	Battery Negative
Little-Black	Logical Ground	Battery Negative
Red-Black	+12	Battery Positive
Brown		Negative Coil
Red-White	+15	Positive of Injectors
ORANGE		Temperature Sensor
Little black		Ground Temperature Sensor
Red_Yellow	MAP	Do not connect
Purple	Lambda	Lambda Sensor
Gray		Do not connect
Blue		Positive solenoid Valve
Black		Negative Solenoid Valve
Blue-White		Positive Tank Solenoid Valve
Black-White		Negative Tank Solenoid Valve
Little White		Level indicator
Little Black		Level indicator
Green		Do not connect

Electrical Wiring Harness

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Signals Flow



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LandiRenzo OMEGAS ECU Input/Output

INPUT SIGNALS

- Petrol Tinj
- RPM
- Coolant Temperature
- GAS Pressure
- GAS Temperature
- GAS level
- MAP

OUTPUT SIGNALS

- GAS Tinj
- GAS Solenoid Valve
- Level Indication on Switch
- Diagnostic Port → PC

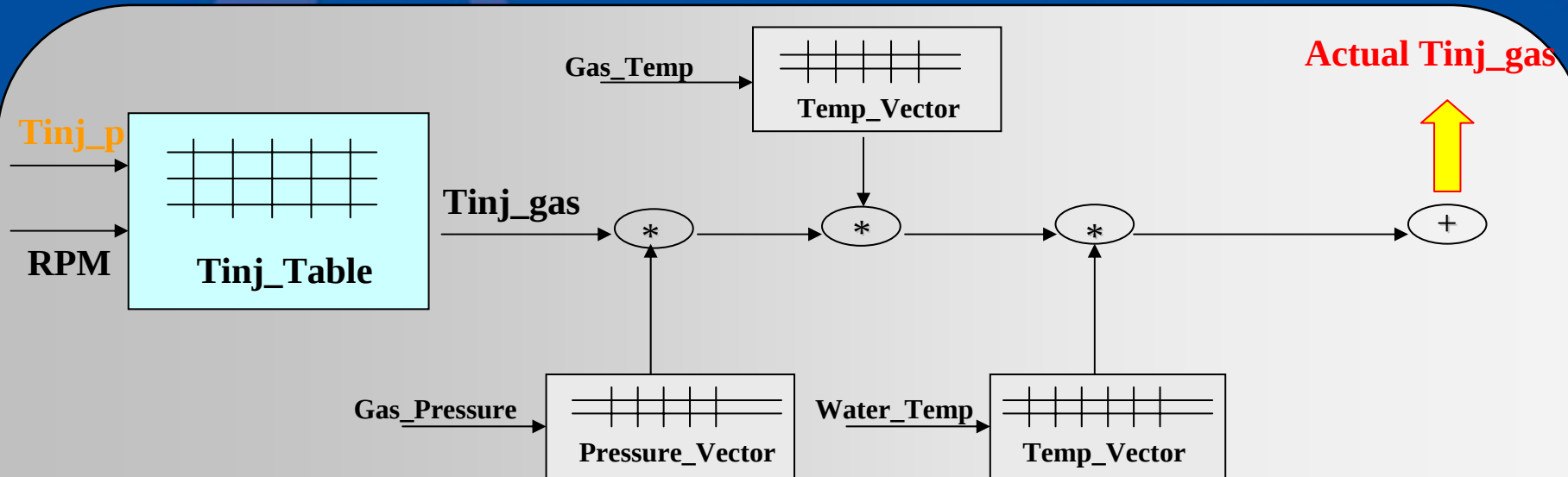
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LandiRenzo OMEGAS ECU Main Functions

- **Fuel Type Setting (GAS/Petrol);**
- **GAS Injection Management;**
- **Transient Management for GAS mode;**
- **GAS Shut-off Valves Management;**
- **Self Diagnosis (OMEGAS System Constant Monitoring);**
- **Communication with Calibration/Diagnosis Tool**

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Tinj_gas Calculation



$$Tinj_gas = Tinj_b * (K1(rpm, Tinj_b) / 128) * K2(Gas_Pressure) * K3(Water_Temp) * K4(Gas_Temp)$$

