

2022

**We are even more ambitious
with our new products ...**



www.vikars.com.tr

www.vikars.com.tr



Briefly : About Us

- * Our company is the LPG & CNG and alternative fuel systems manufacturer and exporter in Turkey.
- * Vikars is established in 1999 in Bursa, Turkey. Today, we are one of the industry's most experienced manufacturer as well as young and dynamic company with the enthusiasm of 23 years of age.
- * What are we doing?
- * As Vikars family, we are designing, manufacturing and marketing our own products, as well as we are producing for other brands who are working in LPG & CNG conversion system and want their products to be produced with Vikars quality.
- * We also work as a boutique enterprise who can provide customized solutions to those who need.





What can we promise?

- * We have achieved ambitious results in terms of fuel consumption and savings with Diesel/LPG, Diesel/CNG dual-fuel conversion system which we have launched recently.
- * On the other hand our success in the production of automotive industry products as LPG & CNG systems, air brake and clutch centers are already certified by our customers.
- * We produce high quality products at competitive prices to offer our customers.
- * We are happy to contribute to the conservation of nature.



We are happy to contribute to the conservation of nature

Less expensive

If you are driving an CNG/LPG vehicle, generally around 45% cheaper than gasoline or diesel. (According to countries' price ratio)

Eco friendly

CNG reduces greenhouse gas emissions.

Light-Duty Vehicles	Carbon Intensity of Fuel (gCO ₂ e/MJ)	Total	Reductions Relative to Gasoline
Gasoline (Baseline—CA RFG with EtOH mix)	95.86	95.9	NA
CNG	68	68	29%
Diesel Fuel	94.71	94.7	NA
CNG	68	75.6	20%

<https://www.ngvamerica.org/natural-gas/environmental-benefits/>

Better performance

*CNG has better combustion rate than petrol and diesel. Driving with CNG helps to extend the lifespan of vehicle's engine. Autogas is also non-corrosive and without any additives, with a higher octane rating (120 – 125) than gasoline.

Safe to use

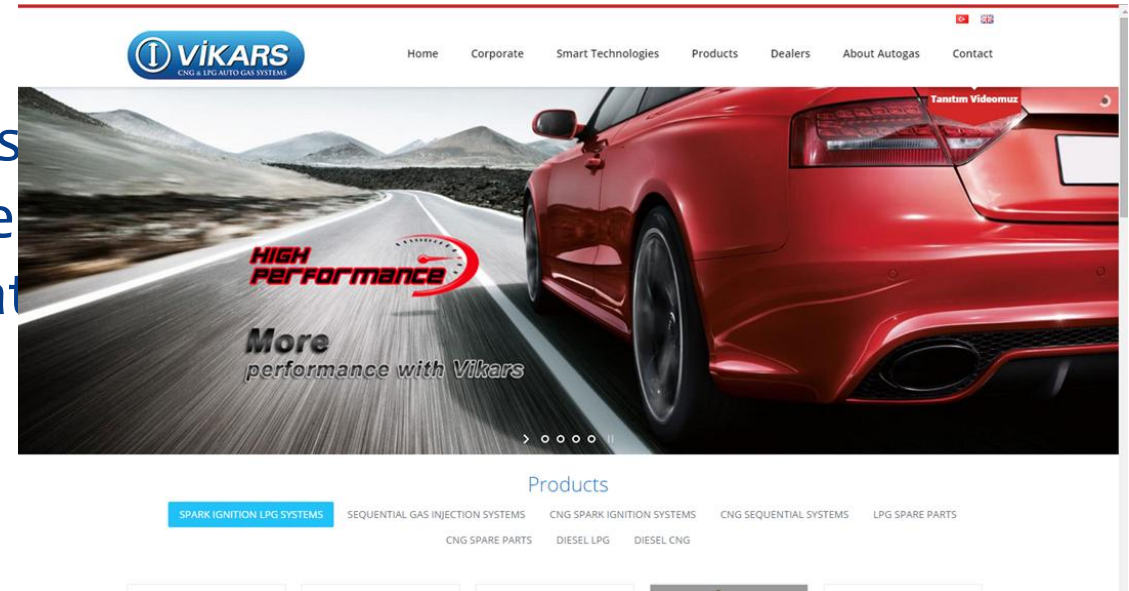
*CNG storing tanks are stronger compared to petrol and diesel tanks.

*Explosion hazard lower than other fuels. (CNG: air-gas mixture ratio 5% - 15%)

High Performance

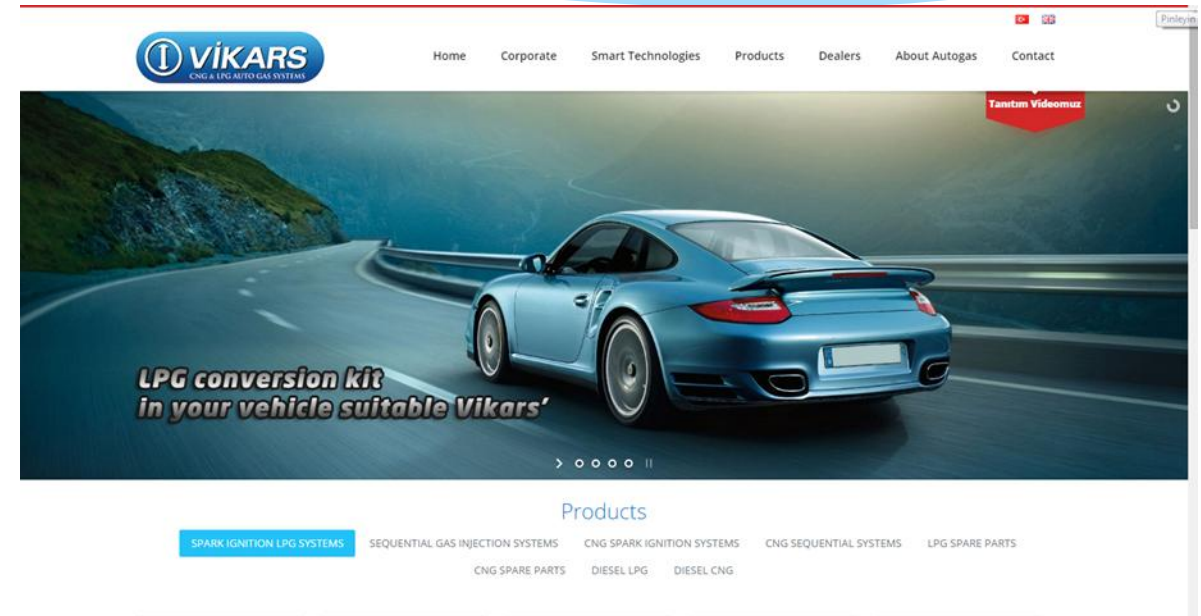
- * It's good for your business
- * Most businesses spend a large amount of money for fueling their vehicles. Because autogas is cheaper, the fuel expenses reduces. Secondly, autogas usage can create a positive image of a business. It is a clear indication that the company applies the best business and safety practices, and cares about the environment.

- * Equivalents: for 1 cubic meter CNG
- * $1 \text{ m}^3 \text{ CNG} = 1,1 \text{ liter Gasoline} = 1 \text{ liter Diesel} = 1,3 \text{ liter LPG}$



Fuel system conversion to LPG/CNG

- * When we convert fuel system to LPG/CNG SGI naturally 10% power loss will be observed as in all of other brands around the world. But we have something that other brands don't have. We can convert with blend of fuel and gas, then vehicle will not have power loss problem at all.
- * **Engine power remains the same with CNG. Engine power increases 10% with LPG.**
- * We have done this in Turkey with very expensive luxurious cars and it works very well. Customers wanted to use gas but they didn't want to lose any power. Now they are very happy to have converted with our blend system.
- * **We have produced the system for the new Mercedes CGI engine systems. There is no equivalent in the world. Vikars is the one again.**
- * Also very soon 2 new systems will be launched for new systems like TSI, FSI, GDI. One of them is with normal system, the other is fluid system. At the moment they are both in test stage.



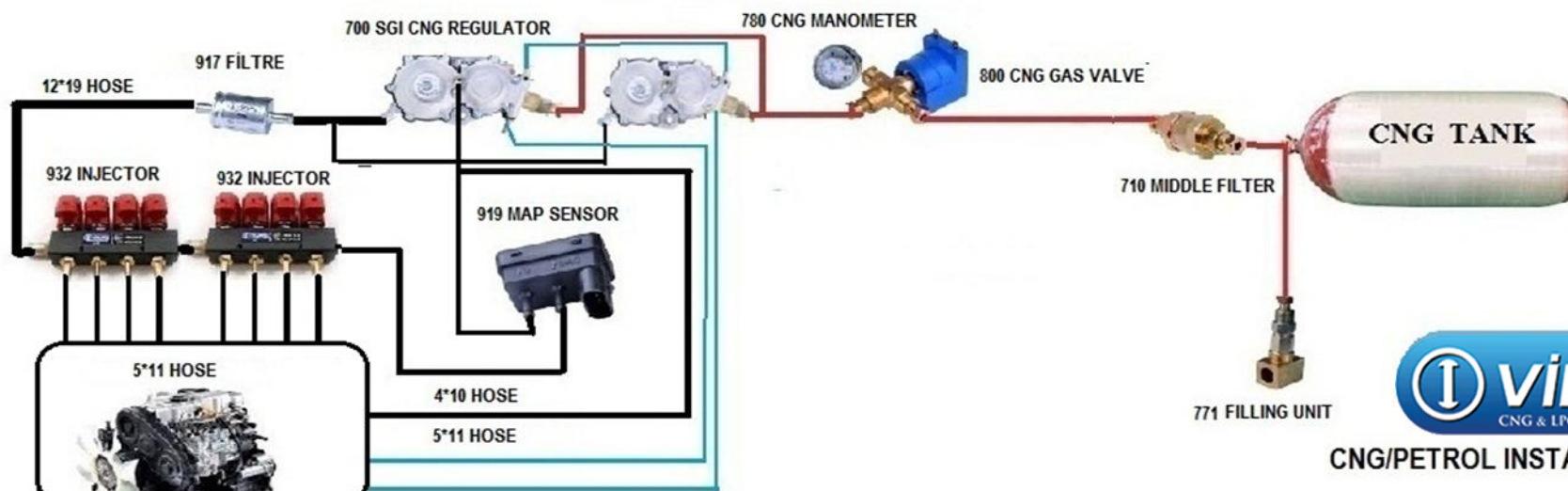
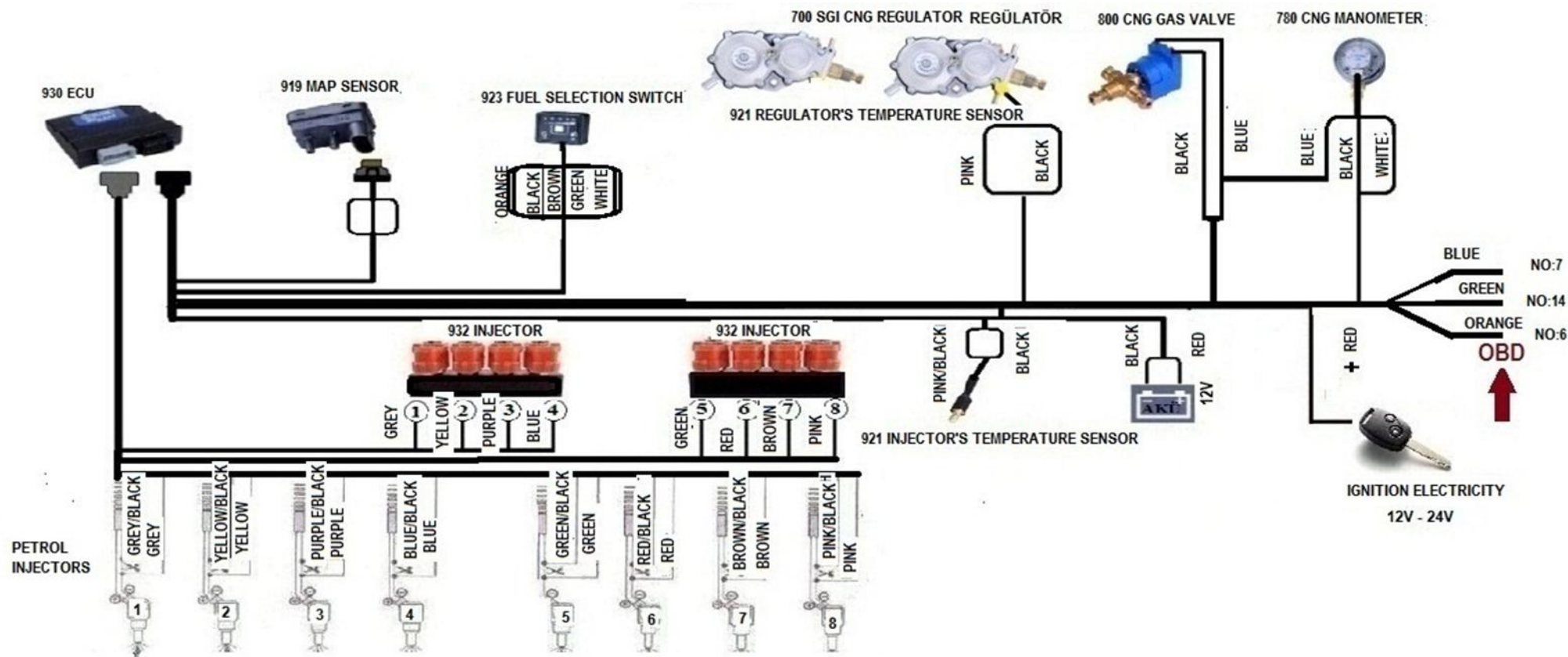
- * Life of the vehicle's engine is to be extended to 10% no matter if the vehicle is old or new, due to more comfortable engine performance thanks to our system.

Smart ECU (Electronic Control Unit)



- * In gasoline vehicles, ECU (Electronic Control Unit) has a program which makes self-adjustment in every second when connected to vehicle's OBD. This program is unique in the world.
- * **The aim is to ensure the usage of the optimum values permanently. Provides driving with the right choice according to road conditions and load status in gasoline vehicles.**
- * 1/100 sec receives information, makes adjustments every 1 sec. Automatically up to +30 %,-30% and in total 60% adjustment is made by itself.
- * **It also avoids the light failure due to the poor and the rich mixtures in the burning for gasoline vehicles.**
- * It takes this information directly from the vehicle's OBD connection. Constantly doing balancing according to LTFT and STFT values.
- * **The vehicle doesn't need to be taken to the technician to make adjustment in every 10.000 km. like other systems.**
- * Our system doesn't need adjustment, only filter changes.
- * **Diesel systems don't have this because there is no need. During the adjustment one time setting is made according to the amount of gas needed by the technicians.**

Petrol Conversion Wiring Diagram



CNG/PETROL INSTALLING DIAGRAM

Vikars's Diesel to CNG Conversion

The new invention of Vikars has increased the ratio of Diesel to Natural Gas conversion between 40% and 70% blend in CNG, thanks to our research and development team's proactive works which develop continuously. We also work very closely with our customers to understand their needs and we can implement solutions according to their specific requirements.

- * **Engine's power remains the same with LPG. Engine's power increases 10% with CNG.**
- * Other benefits of our system are mainly the easier installation and easier set up process.



- * Some other companies can manage from 10% to 20% blend but Vikars achieved between 40% to 60% blend for commercial vehicles as buses, trucks. According to vehicle's brand, road conditions, and driving style, LPG/CNG usage increases.
- * With our diesel systems; life of the engine of the car is extended to 10% on new cars or on the cars that haven't made many km. But life of the older vehicles remains the same, no reduction or shortening occurs.

It's extremely economic with up to 60% savings from diesel

If machines do not need to move around much, they do not change gear much as cranes, construction machinery, tractors, large generators which are working with Diesel system, these can be converted to LPG or CNG with up to 60% blend.

So payback time is generally less, since the fuel savings are relatively high.

At the moment we have systems available for vehicles with mechanical & electronic injections as well as mechanical & electronic pump systems. But when our new system will be launched shortly which can be used in all vehicles as well as it will improve working performance further more in electric common rail system.



Vikars's Diesel to LPG Conversion

- * As the temperature difference is too high in between Diesel and LPG, the higher blend ratio was causing a bad smell due to high mixture of Diesel. To prevent this we install 2nd ECU, in that way we can increase the gas mixture by 50% by reducing the consumption of Diesel and by increasing the gas consumption.
- * Nevertheless when our new system will be launched, which is going to work with electric common rail system more efficiently, also it will be increased the blend ratio surely.
- * In addition, our new system is allowing us to control the amount of diesel oil and gas from the computer as we want.



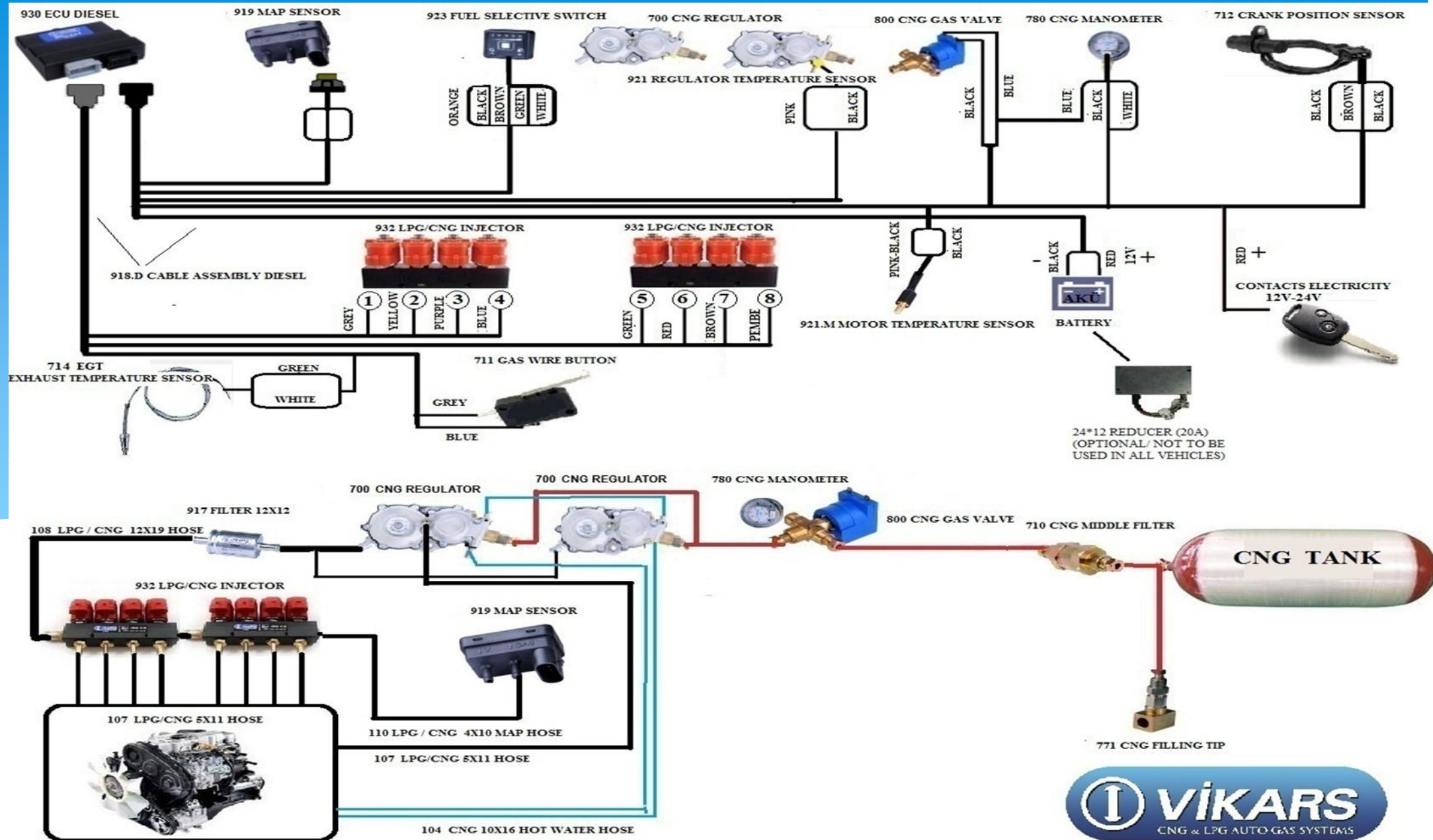
Some advantages of the CNG/LPG Conversion System from Diesel

Features	Advantages	Uniqueness
1. With our diesel systems life of the vehicle's engine is extended to 10% on new cars or on the cars that haven't run many km.	1. System does not give any damage to the engine, and also it extends the life of the vehicle in less-mileage vehicles.	1. This feature is also unique in the world & exclusive to Vikars.
2. Diesel engines can be retrofitted to run on Dual Fuel Natural Gas and Diesel with the ability to operate on 100% Diesel Fuel if Natural Gas is interrupted.	2. The system is used to lower exhaust emissions, extend diesel fuel tank run-time, reduce fuel expenses and prolong engine life and maintenance.	2. This feature is also unique in the world & exclusive to Vikars.
3. Natural gas enters the engine with normal combustion air through the air filter, before the turbo charger. A significantly reduced amount of diesel fuel continues into the engine, which serves as a pilot ignition source for the natural gas.	3. Our control system maintains the proper balance of natural gas, diesel and air to meet the engine's BTU power requirements.	3. This feature is also unique in the world & exclusive to Vikars.
4. Diesel systems don't have OBD because there is no need. During the adjustment one time setting is made according to the amount of gas needed by the technicians	4. We can simplify process in Diesel systems.	4. This feature is also unique in the world & exclusive to Vikars
5. The use of diesel with a second ECU in the system is reduced to a level that prevents black exhaust.	5. System has more control.	5. This feature is also unique in the world & exclusive to Vikars .

Principles of Converting Diesel Engines to Dual Fuel Conversion Systems

- * Diesel engines can be retrofitted to run on Dual Fuel Natural Gas and Diesel with the ability to operate on 100% Diesel Fuel if Natural Gas is interrupted. The system is used to lower exhaust emissions, extend diesel fuel tank run-time, reduce fuel expenses and prolong engine life and maintenance.
- * **Natural gas enters the engine with normal combustion air through the air filter, before the turbo charger. A significantly reduced amount of diesel fuel continues into the engine, which serves as a pilot ignition source for the natural gas. Our control system maintains the proper balance of natural gas, diesel and air to meet the engine's BTU power requirements.**
- * It works with electronic sequential system which is used in vehicles. Gas is given from the top of the pipe from the air filter before the turbo. Gas mixed with air then mixes with engine when emission valves opens in order.
- * **After the ignition of diesel a very strong power appears in the engine. It makes better combustion of the particles than in diesel combustion. The electronic control unit provides the change in gas quantity depending on how much we accelerate.**
- * The circuit in our electronic system has a perfect combustion by reducing the amount of air, the increased amount of gas is passing through the continuous gas injector provided by the amount of diesel used.

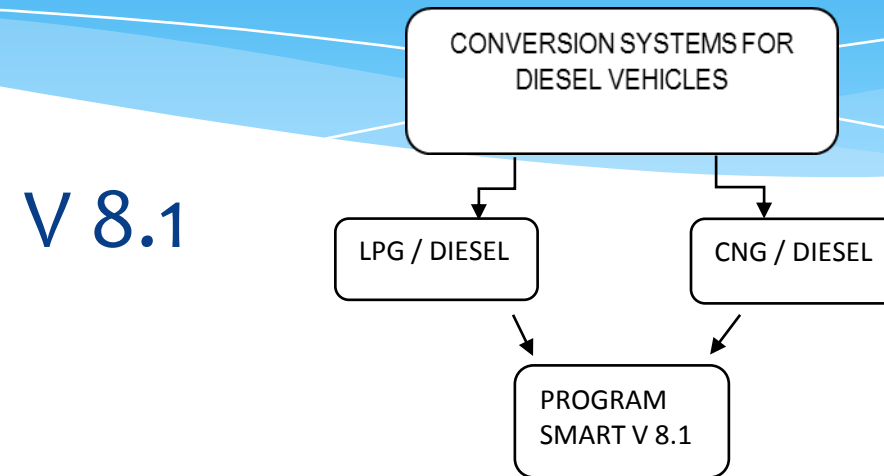
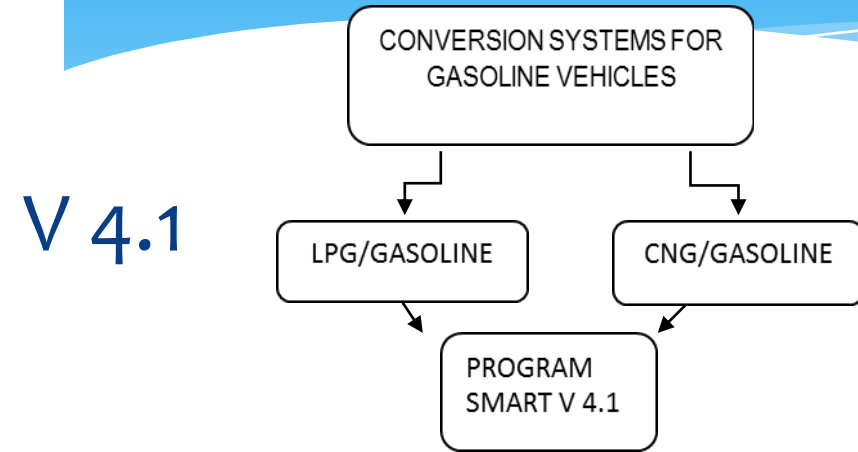
Diesel Conversion Wiring Diagram



VIKARS CNG DIESEL INSTALLING DIAGRAM

Installation Program=Smart V 4.1 and Smart V 8.1

The differences between both programs



- * This program is usable in LPG&CNG systems with gasoline.
- * On the first page of the program vehicle's gas and ECU temperature values are located.
- * There are OBD and manual calibration options.(In vehicles with OBD, It provides automatic calibration done at intervals as set in the program.)

- * This program is usable in LPG&CNG systems with diesel.
- * On the first page of the program EGT sensor temperature, regulator temperature, engine and ECU temperature values are located.
- * The crankshaft position sensor which is only used in diesel vehicles, EGT sensor, throttle cable switch settings can be made.

V 4.1

V 8.1

The screenshot displays the Vikars V4.0 software interface. The top menu bar includes Parameters, Settings, OBD, Calibration, MAP, Car informations, Tests, and Secopes. The main display area is divided into several sections:

- View Parameters:** A grid of digital readouts for Gas Pressure (Bar), Manifold Pressure (Bar), Supply Voltage (Volt), Coolant Temperature (°C), Gas Temperature (°C), and ECU Temperature (°C). A central RPM gauge shows 3675 RPM.
- All Injectors:** A list of 8 injectors with their respective pulse widths (0.0 ms).
- OBD Values:** A section showing OBD Connection Status (No Connection!), Short Term Fuel Trim (STFT), Long Term Fuel Trim (LTFT), Petrol ECU Operation Mode, Gas ECU Operation Mode, and Gas Correction Value.
- OBD Settings:** A section for configuring OBD Connection (Enable), OBD Protocol (CAN Std 500K), Inverse Trim (Standart), Adaptation Mode (Static Adaptation), Target Trim (LTFT), Correction Tolerance, Maximum Correction, Correction Start RPM, and Correction at Open Loop.

A status bar at the bottom indicates "No Connection!" and "Clear all trouble codes and emission values".

Turn the Ignition key on. Make sure the connection cables properly plugged.

The screenshot displays the Vikars V4.0 software interface, showing the Changeover Settings and Automatic Calibration sections.

Changeover Settings:

- Switch to Gas Temp: 35 °C
- Switch to Gas Delay: 3 [S]
- Injection Time for Changeover: 2.0 [ms]
- Cylinder Interval Time: 0.5 [S]
- Changeover Buzzer Enabled: ☐
- Hot engine starts with GAS: ☐

Automatic Calibration:

Please click the button on the right side to begin automatic calibration
Before start calibration switch to petrol and turn all load down

Waiting for calibration...

Settings:

- Save to file, Load from File, Default Settings, Save to ECU, Nozzle Table
- General Settings, Pressure Settings, RPM Settings, Petrol Addition, Sensor Settings, Injector Settings, Engine Technologies
- Pressure (Bar): 0,00, RPM: 0000, Temp: 0 C, Petrol (ms): 0,0, Gas (ms): 0,0, Fuel: Benzin

Automatic Calibration:

- Auto Calibration: Start
- Manuel Calibration: Adjust
- Connection lost

Settings:

- Save to file, Load from File, Default Settings, Save to ECU
- RPM Sensor Voltage: 2,10 Volt
- Changeover Delay: 10 [S]
- Switch to Gas Temp: 35 [°C]
- Critical Temperature: 10 [°C]
- Minimum Gas Pressure: 0,5 [Bar]
- EGT Sensor Enabled: ☒
- Gas Learning EGT Value: 501 [°C]
- Maximum EGT: 701 [°C]
- Maximum Engine Temp: 94 [°C]
- Cut-Off Cancellation RPM: 1000
- Map Sensor: Standard
- Level Sensor: LPG Sensor
- Operating Range of GAS (RPM): 100 - 4000
- Injector Type: Vikars 3 Ohm
- Pressure (Bar): 0,00, RPM: 0000, Temp: 0 C, Gas (ms): 0,0, Fuel: Diesel

Turn the Ignition key on. Make sure the connection cables properly plugged.

Troubleshooting & Solutions



* **Gasoline vehicle; System is ready to pass to CNG/LPG.**



* **Diesel vehicle; Yellow light is on; System is ready to operate with dual fuels**



* **LPG / CNG level indicator.**



* **LPG / CNG finished.**

PROBLEMS	REASONS	SOLUTIONS
Vehicle doesn't operate with double fuel	<ol style="list-style-type: none"> 1. Defected crank shaft sensor 2. Defected temperature sensor control 3. LPG/CNG fuse control 	Keep vehicle in diesel mode and change defect part.
Vehicle operates but fuel selection switch lights don't work.	<ol style="list-style-type: none"> 1. Defected switch 2. Defected control block 3. Defected fuse 	Keep vehicle in diesel mode and change defect part
Low power mode, fuel or consumption rate are not increased	<ol style="list-style-type: none"> 1. Wrong calibration 2. Filters are blocked due to oil and dirt 	<ol style="list-style-type: none"> 1. Perform right calibration 2. ECU electric connection should be disconnected.
Low power	<ol style="list-style-type: none"> 1. Wrong calibration 2. Running out of gas 3. Normative pressure drop 	<ol style="list-style-type: none"> 1. Perform right calibration 2. Supply gas 3. Apply to service.
Extremly high power	<ol style="list-style-type: none"> 1. Wrong calibration 	<ol style="list-style-type: none"> 1. Perform right calibration
High fuel consumption	<ol style="list-style-type: none"> 1. Wrong calibration 	<ol style="list-style-type: none"> 1. Perform right calibration

Our New Products



SC64 Anatolia

- * The system was produced without OBD for 4 cylinder vehicles.
- * **ECU sizes are smaller than our Smart system. Parts in new technologies becoming gradually smaller nowadays.**
- * New system has single cable installation and single socket. Less cables are used. There is no cable pollution in the car.
- * **This systems is getting cheaper compared to our Smart system. Because of decrescent parts according to the new technology.**



SC48 Gold & SC56 Gold

In addition to the above decreasing size advantages;

- * SC48Gold – produced for 4 cylinder vehicles and available in both with OBD and without OBD.
- * SC56Gold – produced for 6 and 8 cylinder vehicles and available with OBD systems only. And...

Some important features of SC48 and SC56 Gold



Features	Advantages	Uniqueness
1. When the gas valves cables (+ or -) which goes to multivalve cables touch each other, ECUs brake downs in all systems in the world. Because electronic components inside of ECU burst and burns. But our ECU does not fail. Because there is a leakage current relay in the Vikars ECU.	1. Program fault indicator warns only, by writing "Check for faulty parts". When the error is corrected and the fault information is deleted from the program, the ECU is reused with no problem.	1. This feature is only in Vikars, there is no other brand has in the world.
2. After stopping the car, even if there is a gas leak even in very small quantities, the button will give an audible warning 5 times before starting the car. Report the malfunction to the user.	2. There is no doubt that our customers will feel more secure with the help of this feature.	2. This feature is also unique in the world & exclusive to Vikars
3. The wirings of our petrol ECU's are the same socket as some ECU's used in the world. For gasoline vehicles, when brands like Lovato, Landi Renzo, Prins, BRC etc. When ECU's broken down, you can change to Vikars's ECU directly (without changing cables and entire system).	3. Because our cable installation and our socket is the same with theirs but also our program allows us to work with the old system. You do not need to change the entire installation	3. This feature is also unique in the world & exclusive to Vikars.
4. You do not need to find and connect car's cycle line (speed cable). Our system reads the cycle (speed) from injector.	4. This makes it easier for those who install it. This feature is available in both our Smart and SC48 and SC56 Gold products.	4. There are only a few companies in the world other than Vikars has this feature.
5. Gas-gasoline switch button light can be decrease up to 90% (+ or -) or increase it.	5. It prevents the driver from feeling uncomfortable by adjusting as he/she wants.	5. This feature is also unique in the world & exclusive to Vikars.

Some important features of SC48 and SC56 Gold- Continues-1



Features	Advantages	Uniqueness
6. Ensures compliance with vehicle engine types in technologies such as Valvetronic & Start / Stop. When our vehicles stop in the traffic lights in the gas and starts in gas again. Valvetronics are also compatible with the car's petrol injector.	6. Since our system is compatible with vehicle engine types, there would be no problem to face.	6. There are only a few companies in the world other than Vikars has this feature.
7. In the morning, when the vehicle is running with gasoline, each gas injector opens and closes once and heats the injectors.	7. Thus, by heating the cold injectors, provides a more comfortable switch to gas.	7. There are only a few companies in the world other than Vikars has this feature.
8. System decreases and increases the amount of gas separately according to the temperature of the injector and the temperature of the regulator. Reduces the gas when the gas is cold, increases the gas when gas is hot.	8. This compensates for temperature and prevents excessive gas throwing from the exhaust. That way prevents air pollution and saves fuel much more.	8. This feature is also unique in the world & exclusive to Vikars.
9. If the battery voltage drops below 10 volts, the fault code will give a low voltage fault. Or if it exceeds 16.5 volts, the fault code will give a high voltage fault. This will prevent the error.	9. Normally, when the charging dynamo is faulty, nobody will notice easily. The service can not find the reason why the car is not working with gas. It is quite easy to detect this in our product.	9. This feature is also unique in the world & exclusive to Vikars.
10. When the amount of gas decreases, the injectors work more and compensate the pressure. If pressure decreases, the injector works more. If pressure increases, the injector runs less.	10. Since systems makes adjustments automatically, it ensures that no problems are encountered when receiving products from different brands and CNG / LPG stations.	10. There are only a few companies in the world other than Vikars has this feature.

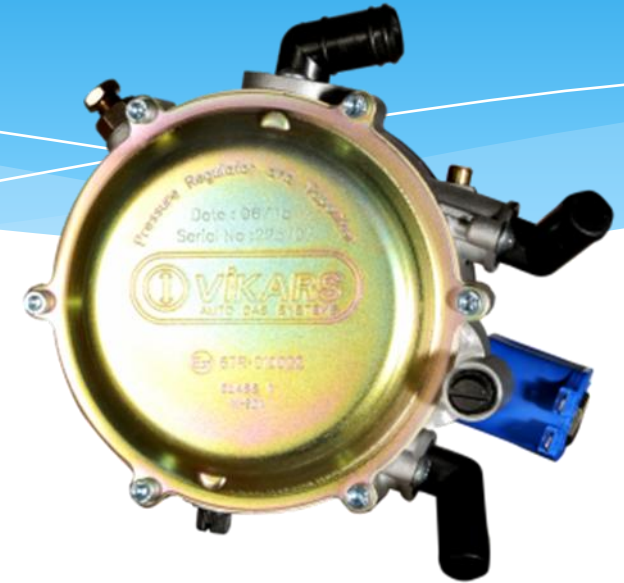
Some important features of SC48 and SC56 Gold- Continues-2



Features	Advantages	Uniqueness
11. The program set up is very easy. Installation is done without the need for COM settings. Unlike Italian brands. In our system, these settings are made automatically.	11. Saves great time	11. This feature is also unique in the world & exclusive to Vikars
12. OBD settings are set by 30% + or - automatically. In total, 60% automatically adjusts itself continuously to save fuel and not lose performance.	12. Increases fuel economy and prevents performance loss.	12. This feature is also unique in the world & exclusive to Vikars.
13. The coils of the multivalve and gas valve are run in sequence at separate times. Gas goes in two level. Due to this it uses less voltage on the electronic board.	13. It consumes less electricity.	13. There are only a few companies in the world other than Vikars has this feature.
14. When the temperature is above the specified level, the vehicle works directly with gas without using gasoline. Thus, it does not need to use gasoline but works directly with gas.	14. So less gasoline is used.	14. There are only a few companies in the world other than Vikars has this feature.
15. When the injector cables are plugged in the wrong place, we can correct the cable colors from the computer.	15. Saves great time.	15. This feature is also unique in the world & exclusive to Vikars.

Competitors in LPG & CNG Systems

- * **General info about the Market :**
- * There are not many manufacturers in the world market. The same manufacturers are doing a lot of brands.
- * Vikars products quality is made to stand at least 5 years, even though our warranty is covering 2 years or 100.000 km for all parts.
- * European brands can not enter the Turkish market because their product is so expensive and quality is the same as or lower than Turkish products. Or they are subcontracting in the Far East but then, their quality goes further down because they go for cheaper products.



Our Achievements:

- * The new invention of Vikars increased ratio for Diesel to Natural Gas Conversion between 40% and 70% blend.
- * **In gasoline vehicles, ECU (Electronic Control Unit) has a program for self-adjustment in every second when connected to vehicle's OBD. This program is unique in the world. Therefore, vehicle doesn't need to be taken to the technician to make adjustment every 10.000 km. like other systems.**
- * With our diesel systems life of the vehicle's engine is extended to 10% on new cars or on the cars that haven't run many km. But life of the older vehicles remain the same, no reduction or shortening occurs.
- * **With our gasoline systems life of the vehicle's engine is extended to 10% in all the vehicles old or new cars because the engine works more comfortably with our system.**
- * If the appropriate installation is done in the first place, no problem should occur. If the installation haven't been done appropriately, the parts can be disintegrated and broken according to the usage and road conditions.
- * **The most common problem we have faced, occurs when drivers go much faster after the installation because the engine power is getting much better and as a result of this saving rate decreases. To prevent this we install 2nd ECU in diesel systems, now we are able to control vehicle speed as vehicle owner wants.**
- * We do the diesel tests at the same gear and speed first. Then we repeat the test with Diesel/CNG blend system. You will see that there will be no problem when you drive the vehicle as you usually do.

Some Of Our Successes Stories

***Russia:**

- * We made installations during our tests to following vehicles: 1 bus, 2 Kamaz Truck, 1 Man Truck, 1 Mercedes Truck. This vehicles currently are working with 40% diesel and 60% CNG.
- * As soon as they will get expected encouragement and support from the country's president, they will install our Diesel/CNG blend system to 1 million heavy vehicle. They also considering for us to open a factory in Russia for them.

***Armenia:**

- * 6 diesel CNG trucks were installed: 2 Kamaz trucks, 2 Maz trucks, 1 Ford Transit and 1 Iveco brands. When empty the vehicle consumed 35% Diesel, 65% CNG on the straight road. When vehicle went uphill and overloaded it consumed 60% Diesel, 40% CNG during the tests.
- * Armenian customers were very happy with the result. They are finishing certification process in Armenia. As soon as they get their certificates they will start to sent their orders.

***Uzbekistan:**

- * We made installation to 20 vehicles in different four cities. 4 public transportation buses, 2 DAF trucks, 4 Chinese Trucks, 2 MAN trucks, 2 tractors and 6 Isuzu.
- * Some of these vehicles are going out of town, overload trucks go to mountains working with 60% diesel and 40% CNG.
- * Vehicles on normal conditions are working at least with 40% diesel and 60% CNG. Currenty they have 500 orders per month. They continue their certification process and are trying to overcome customs problems.

Some Memories From Around The World



What is the product's guarantee ?

- * Our product's warranty period is of 2 years, if the filter change and maintenance work have been done at every 10.000 km.
- * All parts have 100.000 km guarantee for those who obey car maintenance periods. But we have cars that their injectors are working over 150.000 km and we never get any complaint from customers.
- * When the vehicles maintenance is done on time there will be no problem on the engine of the vehicles because there is no problem or deficiency of vehicle's water, temperature, oil & grease.



From the very start, VIKARS introduced many LPG/CNG brands to Turkish market, always put the customer & distributor demands in the first place, produced the market needs and finally launched one of the First Native LPG/CNG Systems' in 1999 and since then keeps constant improvement.

- * Credibility
- * Good Quality
- * Constant Improvement
- * High Customer Satisfaction



Vikars has TSE ISO 9001:2008, ECE-R 67.01 and R110 CNG Quality & Proficiency Certificates, works with a wide network of dealers in Turkish Republic besides exporting the products to all over the world.

Thank you...



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TÜRKİYE

For further information:
Please visit our webside
* www.vikars.com.tr

