

Automotive LPG

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70% ↓

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90% ↓

Worldwide

25
Millions

vehicles worldwide use Liquefied Petroleum Gas.

In Europe

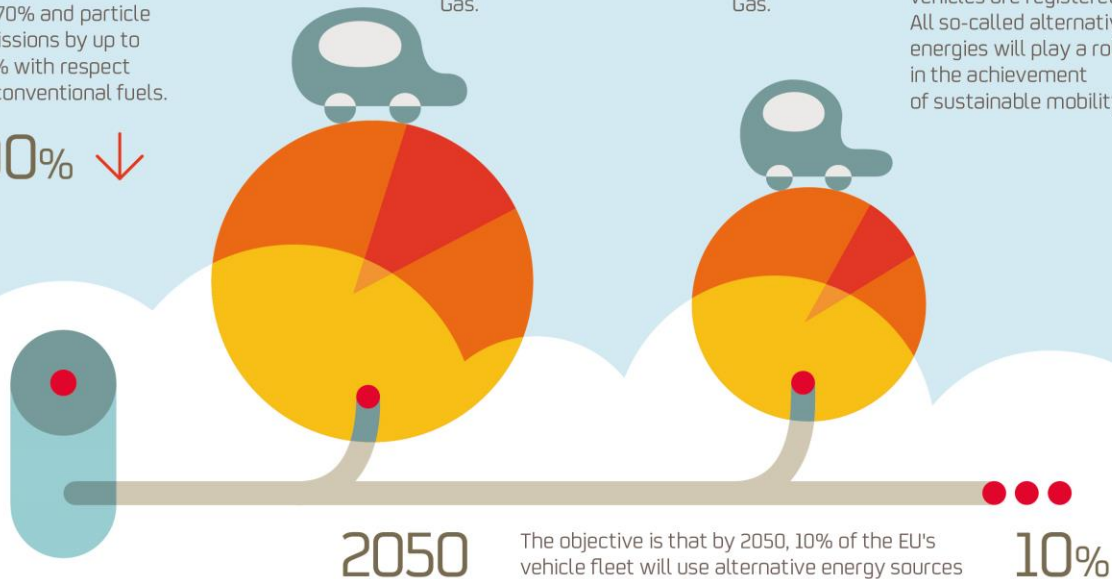
15
Millions

vehicles in Europe use Liquefied Petroleum Gas.

In Spain

50.000

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2050

The objective is that by 2050, 10% of the EU's vehicle fleet will use alternative energy sources

10%

Over 500 supply points guarantee AutoGas availability throughout Spain

AutoGas: eco-friendly mobility available for everyone today.

More than 25 million vehicles worldwide, 15 million just in Europe, use AutoGas or automotive LPG (Liquid Petroleum Gas) as a fuel. This alternative fuel, a mixture of propane and butane, offers the same performance as traditional fuels, but reduces emissions almost entirely. This makes it an eco-friendly transportation solution that is already available to users.



In Spain, some 50,000 AutoGas-powered vehicles are registered, a figure "still below the potential of this fuel," points out Jaime Fernández-Cuesta, Executive Director of LPG Repsol, leading distributor in Spain. "All so-called alternative energies will play a role" in the achievement of sustainable mobility, "but the only one currently ready in terms of infrastructure, autonomy, and flexibility is AutoGas," adds Fernández-Cuesta.

In a context in which many large European cities face an air quality problem, LPG-powered vehicles reduce nitrogen oxide (NOx) emissions by 70% and particle emissions by up to 90% with respect to conventional fuels, according to data from the Spanish Association of LPG Operators (AOGLP).

AutoGas-powered vehicles carry the ECO label and are exempt from restrictions in cities such as Madrid



The infrastructure is already prepared

With the objective that by 2050, 10% of the EU's vehicle fleet will use alternative energy sources, European Directive 2014/94/EU defines LPG as one of the fuels that the Member States must promote due to its potential to favor low-emission transportation both in urban environments and over long-distances.

AutoGas vehicles are bi-fuel, i.e., they have two tanks (LPG and gasoline) that can be used interchangeably, but "drivers use the LPG tank as much as possible because it represents savings in €/Km of up to 40% with the same performance," continues Fernández-Cuesta.

The lower cost of LPG, added to the fact that the cost of these vehicles is similar to that of conventional vehicles, makes it highly competitive compared to electric and hybrid vehicles, which cost practically double the amount.

Its autonomy varies in accordance with the size of the gas tank and engine of the vehicle. The range of a 100 CV engine and a 74-liter tank is about 600 kilometers, but it can reach 1,200 kilometers when combined with the use of the gasoline tank.



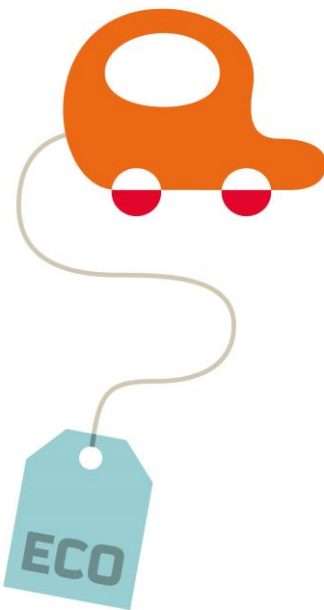
In any case, refueling LPG does not pose a problem. Repsol has 369 service stations that offer AutoGas. Including those of other operators, there are more than 500 supply points, constituting "a network that enables mobility throughout Spain with complete peace of mind and is capable of supplying a vehicle fleet five times greater than the current one. Additionally, as opposed to other alternative energy sources, this network can be expanded without significant investment or technology."

Dissemination among consumers

In October 2016, [Clúster Autogás](#) was created, a multi-sector association that integrates the leading LPG distributors, automobile and engine manufacturers, and technology centers to promote the use of this fuel. For Fernández-Cuesta, who currently presides over this association, its main challenge is dissemination: "despite awareness of the need for more efficient transportation, the general public is unaware of the advantages of LPG."

Due to their low emissions, AutoGas-powered vehicles carry the ECO label under the [classification of the Spanish General-Directorate of Traffic \(DGT\)](#), which is the reference for traffic regulations established in different cities. The Madrid City Council, for example, exempts all AutoGas-powered vehicles from traffic restrictions when high-pollution measures are activated.

AutoGas is also supported by Autonomous Communities and the Central Government, which established the objective of reaching 250,000 LPG-powered vehicles in Spain by 2020 in its Alternative Energy Vehicle Incentive Strategy (Plan VEA). "Achieving this objective is complex, but we can make significant progress if Clúster Autogás and public authorities work together to drive demand, as is happening in other European countries such as Italy," which currently leads its implementation with 2.5 million vehicles.





Euro VI Repsol participates in developing the first 100 % AutoGas-powered bus in Europe.

Wider range for urban transportation

With AutoGas, a proven technology, we are innovating in aspects such as direct injection engines and LPG-only engines.

In addition, a consortium between the engine manufacturer Begas and the second largest bus manufacturer in the world, King Long, with the support of the Repsol Technology Center and The Universitat Politècnica de València, is currently developing the first 100% LPG bus model available in the European market.

This LPG engine, fully developed in Spain, will also be a pioneer in efficiency thanks to its innovative gas injection system. The prototype of the new bus is being developed for the Valladolid City Council, a forerunner in implementing LPG-powered buses for environmental reasons, which now needs to renew its fleet.

The prototype will be presented in June 2017, with the commitment that its price will be similar to that of an equivalent bus powered by diesel, thereby "meeting the demand for heavy-duty LPG engines, which may be a competitive alternative for urban transportation companies," explains Jaime Fernández-Cuesta.

Converting vehicles to bi-fuel to grow

AutoGas is currently a fuel used mainly by professionals, such as the taxi guild, whose members "are great LPG advocates because they have been using it for years" and account for 50% of the consumption of AutoGas at Repsol service stations. The objective of the sector is to attract an increasing number of private users.

In addition to the wide range of new vehicles offered by manufacturers, "another area undergoing significant growth is the transformation of current gasoline vehicles into bi-fuel vehicles by means of a simple adaptation," which can be carried out in any of the approximately 800 specialized garages in Spain.

The cost of transformation is approximately €1,000 on average, but "some local and regional authorities [partially subsidize this transformation](#), and the cost can be easily amortized in less than one year by savings in consumption." For its part, Repsol offers €600 in AutoGas refueling for each transformed vehicle, an additional option for a fuel "that must be supported if we want to take a major step forward in the use of alternative energy sources in the short term," concludes Fernández-Cuesta.