

MOST WIDESPREAD CAR FUEL SYSTEMS IN LATVIA

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Abstract. Overall, 932 828 cars are registered in Latvia as per 01 January 2009, and only 534 489 of them are suitable for road traffic. Some cars of specific brand and model year are more popular and widespread in Latvia than others, and many cars at the same time have similar or same fuel systems. The objective of the study is to determine the most widespread fuel systems for cars with diesel fuel and gasoline engines in Latvia. The study is based on the analysis of the Road Traffic Safety Authority data, specific car model manuals and information provided by car dealers.

Keywords: fuel systems, most popular car.

Introduction

It is important for the car service centers and spare parts trade and production companies to follow the development of the car park of prospective customers, in order to ensure successful business activities. So far, such quality studies of most widespread fuel supply systems, used in passenger cars, have not been performed in Latvia.

By choosing a narrow field of activity or by servicing vehicles of one or a few manufacturers only, car repair centers could prevent unnecessary waste of money for a company oriented on a specific car make. Especially important this is when you purchase diagnostics equipment and specialized instruments.

Today, when global oil and gas reserves are running low, the issue of using bio-fuel in vehicles has become more urgent. It is important to study the most widespread fuel supply systems, as by performing bio-fuel investigations, its introduction on the market would take place more rapidly, and it would be used by much more consumers.

Materials and methods

The available information on passenger cars registered in Latvia was used for the study. Such information was obtained in the Road Traffic Safety Authority (RTSA) [1, 2].

The algorithm of processing the obtained data is shown in Figure 1. The information on passenger cars in operational condition available in the RTSA database is grouped by make of the car. Then most widespread car manufacturing brands are selected among all groups. Such selection is performed separately for gasoline and diesel fuel engine cars.

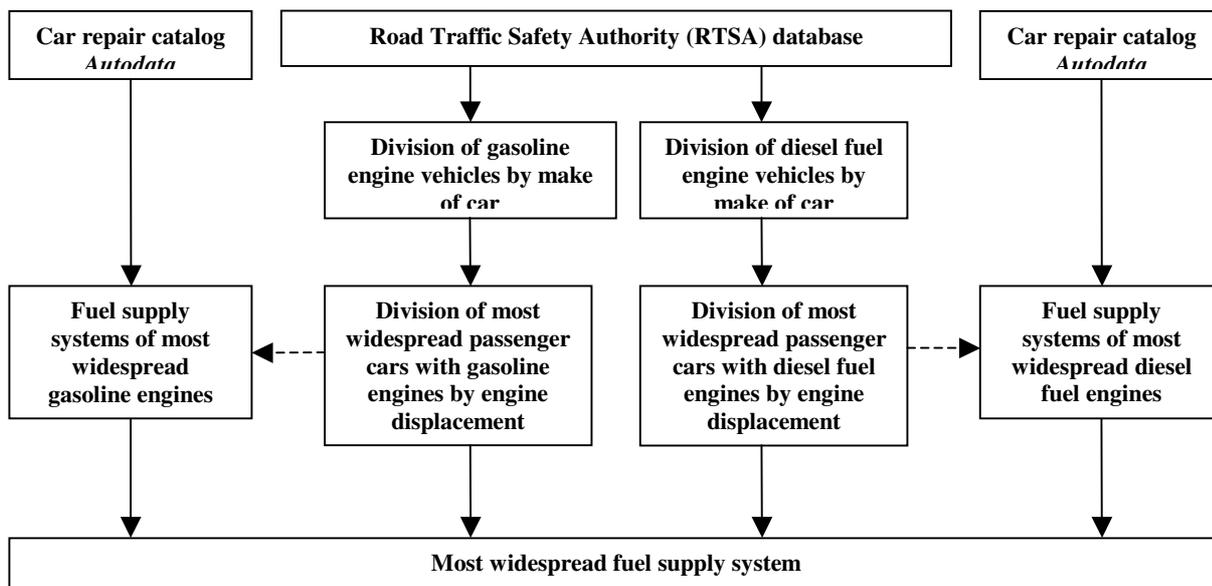


Fig. 1. Data processing algorithm

The obtained data on the most widespread vehicles were grouped by engine displacement, in order to determine the most widespread one. The most usual engine displacements were selected for each most widespread car manufacturer individually.

Latvia only registers car engine displacement information for vehicles initially registered in 2004 or later. Owing to this, the information on engine displacements available in the RTSA database is not complete and required particularization from the Internet ads portals *www.ss.lv* and *www.reklama.lv*. After analyzing the data of the most widespread passenger cars on these portals, engine displacements with the highest distribution levels were selected. The information from these Internet portals followed the same trend as the data obtained in the RTSA database.

In order to find the most widespread fuel supply system on the basis of the information obtained from advertisements and the RTSA database, information on fuel supply systems of specific engines, provided in the car repairs catalog *AUTODATA*, was used [3].

Results and discussion

As per 1 January 2009, total of 932 828 passenger cars were registered in Latvia, of which 735 974 are manufactured in 1985 or later. Of these, 522 318 had valid certificate of official examination – 70.97 % of the total number of cars of 1985 production year or younger [4].

By examining division of these cars according to the used fuel type, we can see that 173 420 cars have diesel fuel engines, and 348 892 cars use gasoline as fuel – both numbers only include vehicles in operating condition. Dynamics of the number of these vehicles by production year is shown in Figure 2. [3].

Obvious growth of the number of cars using both types of fuel is observed starting with 1991 production year. The most popular years for vehicles using gasoline as fuel are 1991 to 1998. Cars with diesel engines retain mostly equal division of their numbers by production year after 1992.

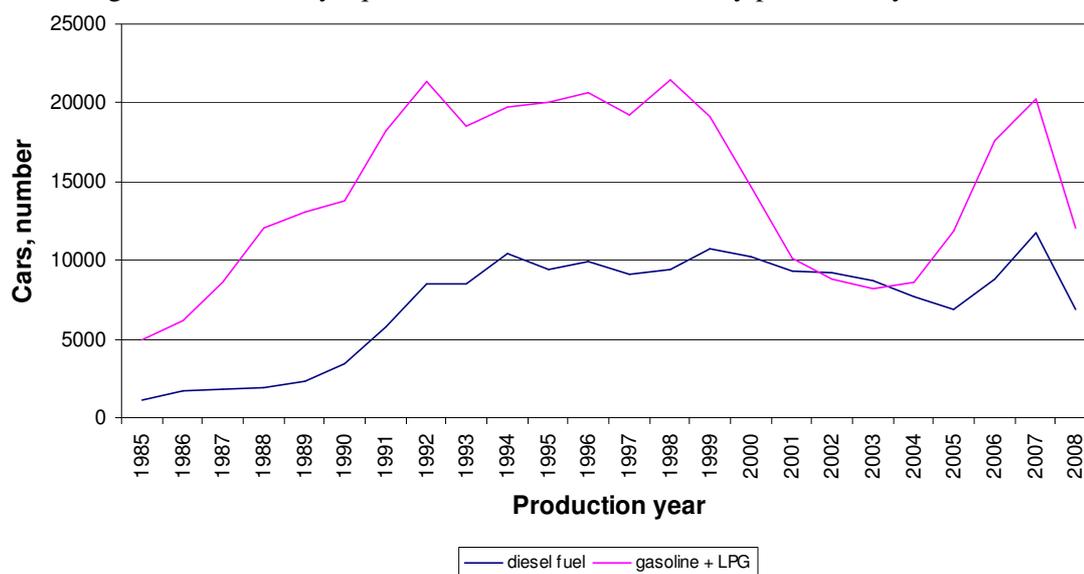


Fig. 2. Dynamics of the number of passenger cars in operating condition with gasoline and diesel fuel engines by production years

In order to narrow the range of the studied vehicles, and cut the number of production years, only gasoline engine cars produced in 1988 to 1999 were shortlisted for further studies. Six most widespread car makes, shown in Figure 3, are characteristic for this period.

These manufacturers represent the selected period with 155 321 gasoline engine vehicles, which makes 44.5 % of passenger cars with gasoline engines in operating conditions produced in 1985-2008.

Each of these car manufacturers has had a number of popular models in the observed time period, represented by several generations.

The most widespread Audi cars manufactured in 1988-1999 are equipped with 1.8, 2.0, 2.2, 2.3 and 2.6 litre engines. According to the *Autodata* information, these engines employed the Bosch Motronic and Jetronic fuel supply system in several modifications.

VW cars with 1988-1999 production years mostly have motors with 1.4, 1.6, 1.8 and 2.0 l displacement. These engines, according to the *Autodata*, used the Bosch Motronic, Digifant and Jetronic fuel supply systems.

1988-1999 Opel vehicles are powered by 1.6 and 2.0 litre engines. These used the Multec, Bosch Motronic and Simtec fuel supply systems.

BMW passenger cars of 1988-1999 production use 1.8 and 2.0 litre displacement engines. These engines widely used the Bosch Motronic fuel supply system.

Mazda and Ford models manufactured from 1988 to 1999 employ fuel supply systems of their own development – Ford EEC and Mazda EGI.

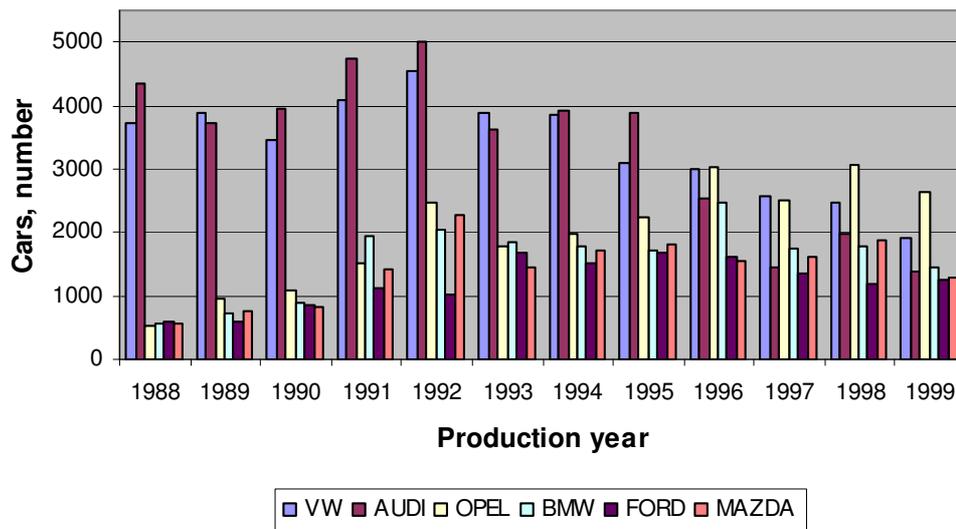


Fig. 3. The most widespread makes of gasoline engine cars manufactured in 1988-1999

In order to narrow the range of the studied vehicles, and cut the number of production years, four makes of diesel fuel engine vehicles manufactured in 1992-2004 were chosen for subsequent study. The division of these car manufacturers by production years is shown in Figure 4.

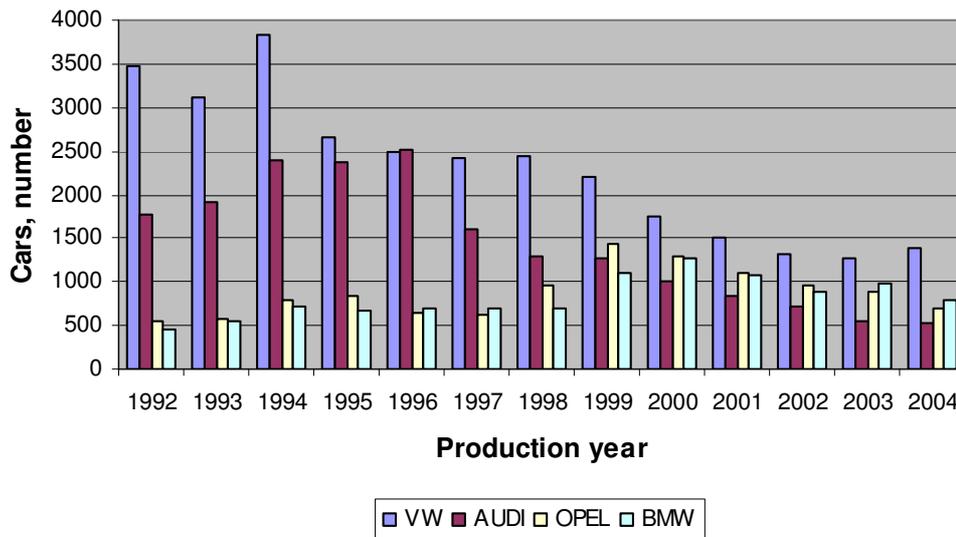


Fig. 4. The most widespread makes of diesel fuel engine cars manufactured in 1992-2004

The total number of cars, formed by these manufacturers in the chosen period, is 70 609, or 40.72 % of all diesel fuel engine passenger vehicles manufactured in 1985-2008.

VW and Audi manufactured cars of 1992-2004 periods with diesel engines are equipped with Bosch VE series distribution pumps, and in later model engines the pump-nozzle system is used .

Opel cars with 1992 to 2004 production year use the Bosch VP distribution pumps, Lucas CAV, Denso and Zexel high pressure pumps.

BMW branded vehicles manufactured in 1992-2004 are powered by the Bosch VE, VP fuel distribution pumps and Bosch Common Rail fuel supply system.

Conclusions

1. Passenger cars in operating condition with gasoline engines represent about 2 times more vehicles than those with diesel fuel engines.
2. The most widespread fuel supply system for gasoline engines is the Bosch Jetronic, widely used in VW and Audi vehicles manufactured until 1995, and the Bosch Motronic system, modifications of which are installed in VW, Audi and BMW cars.
3. The most widespread diesel fuel supply system is the Bosch VE distribution pump, widely used in VW, Audi, Opel and BMW passenger cars.

References

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