Call: ERASMUS-EDU-2022-CBHE-STRAND-2
Project Number: 101082860

Study program: **AUTOMOBILE TECHNOLOGY**

2-YEAR STUDY PROGRAM Professional Diploma

Subject:ALTERNATIVE FOOD PLANTS IN VEHICLES- new

Sem. I (III), Year II, mandatory

academic year 2024-2025

Topic:

ALTERNATIVE FOOD SYSTEMS IN VEHICLES

Reported by: Phd.cand. Eduard Ndokaj

1. **HISTORY of the evolution of vehicle engines**

The history of diesel and gasoline cars until the 2000s is about the development of the car industry.

Some important dates for diesel engines are:

The diesel engine was patented by German mechanic Rudolf Diesel in 1892.

Diesel-powered vehicles began to be mass-produced in the late 1920s and early 1930s.

Diesel engines grew compared to gasoline cars in the 1970s-1990s.

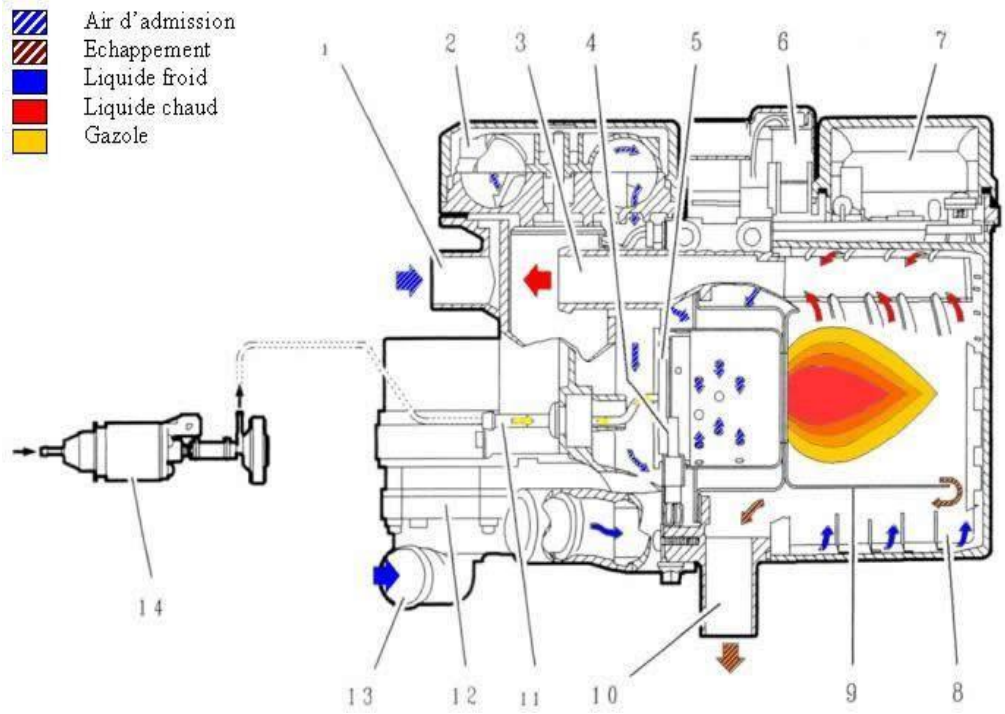
Heavy vehicles such as trucks and buses generally use diesel engines.

In recent years, 1990-2010, diesel engines were improved to reduce pollution and have befler environmental performance, but they never reached gasoline.

In 2010, as pollution and global warming problems became evident all over the world (especially in Europe as the most industrialized continent), the European Union decided to ban the production of diesel vehicles by 2025.

Because the objective is not moving forward in time, they postponed it until 2030.

Some of the most important brands have taken these measures in anticipation of this reality, such as: Volvo, VW, Audi, Skoda and Seat.



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2. **FUEL VEHICLES, situation report today:**

The first gasoline engine was patented by Carl Benz in 1885.

Ford's Model T, first produced in 1908, was an example of the success of gasoline-powered cars.

Companies like Mercedes-Benz, BMW, and Chevrolet began mass-producing their gasoline-powered cars, bringing significant innovations step by step.

Sports competitions that promote automotive technologies, such as Formula 1 and other motor racing, are an example of the use of gasoline-powered cars for maximum performance.

The latest developments in the field of car technology have taken into account energy efficiency and lower gas emissions and have promoted gasoline cars for a more environmentally friendly environment.

Among the advantages of the dominance of gasoline engines over diesel engines, of course, is their conversion to GPL & CNG, making these engines more economical and more ecological.

In 1948, the first bifuel plant (with two gasoline and LPG feed systems) was born.

Only two years later, the biofuel Diesel and LPG (only with ecological efficiency) was born, which economically did not bring any advantage.

This last data also shows the hypocrisy of the market and industrialists who, for a lifle more money, are ready to sacrifice even the future.

This period coincides with the gasification of all European and American metropolises. Even the automotive sector, where Italy was a pioneer in quality, quantity and mentality, could not escape this great energy revolution.

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3. VEHICLE CONVERSIONS IN ALBANIA

In the 1920s and 1930s, the first cars began to appear on the few roads that Albania had. All of them ran on gasoline.

After 1950, the number of cars (all state-owned) in Albania began to increase. Mainly work cars.

After 1990, the mass entry of mainly European vehicles began.

They were more diesel and less gasoline.

After 2000, the number of gasoline cars began to increase, peaking in 2022 when the number of diesel cars equaled those with gasoline.

In this equation, in addition to environmental factors, the taxation system and those of performance, the galloping development of gas plants for gasoline vehicles has influenced as a determining factor, guaranteeing economic and ecological efficiency. Nowadays, over 80% of gasoline cars in circulation are converted to LPG (Albania does not have methane gas).

For illustration - during 2024 alone, around 90,000 vehicles were imported from South Korea and the majority of them are gasoline, gasoline + electric, electric, 100% gas and very few are diesel.

In 2010, the introduction of Electric and Hybrid cars in Albania began.

For your information - at the end of 2023, 3,000 electric vehicles and 3,500 hybrids were circulating in Albania.

By November of this year (2024) there will be around 10,000 electric vehicles in circulation - + 300%

These figures show that we are moving at a very fast pace.

4. ALTERNATIVE FOOD SYSTEMS IN VEHICLES

I, personally and alone, have requested the inclusion of this subject in the Automotive Technology program because:

1. In 2020, LPG cars were greatly increased - around 85-90% of gasoline cars were converted to LPG.

2. There were about 150 services that installed gas systems in vehicles and almost twice as many that repaired them - so there was a need for trained, educated and certified personnel.

3. In Albania, certification of gas plants became mandatory, so mechanics had to be specialized.

4. In 2020, Hybrid and Electric cars began to circulate prominently on our roads.

So cars with alternative fuel systems were a reality and a program like Automotive Technology would be incomplete without studying this part of the Gas, Hybrid, and Electric vehicle fleet.

In addition, for 5 years I have consulted with students of the Automotive Technology Program (mainly with those students who worked in service stations who knew the terrain well) who supported and helped me.

Initially, I encountered opposition from my colleagues who taught in the Automotive Technology program, with the excuse that these systems were studied in several subjects simultaneously. After the verifications that I personally made by verifying the mandatory literature of the subject from the UAMD library and presenting it to the department, the way was opened for me to prepare the syllabus and the relevant literature.

I am pleased to say today that this course is the number 2 most important course in the Automotive Technology Program after the course "Electrical and Electronic Systems in Vehicles".

I am pleased to say that this subject is very popular with second-year Automotive Technology students and all of our lecture hours are held in the form of a conversation where especially students who work in the service department are active with questions and debates.

I personally contributed 5 panels and some tools to the Automotive Technology laboratory, which had not been made available to us for years.

5. THE FUTURE OF ALTERNATIVE VEHICLE FOOD SYSTEMS

Currently, Albania has a vehicle fleet (with license plates) of around 1,000,000.

In the Western Balkans, we are second to last in terms of the number of vehicles/inhabitant (surpassed only by Bosnia & Herzegovina)

Albania has signed the Technical Treaty of Rome - thus accepting the fact that in 2030 (after 6 years) it will no longer register (license) diesel cars and after 2035 it will no longer register (license) vehicles that run on fossil fuels.

It is automatically expected that the number of Hybrid & Electric cars will increase at high rates to achieve the objectives.

In light of the above, Albania needs to train and educate new generation mechanics who will maintain and repair these modern, increasingly electronically complicated machines.

In the future, a good portion of some services will initially shrink and then disappear. Let's say that the shrinking of some mechanical and generic services is already a reality.

To keep pace with the times and stay ahead of this technological revolution, we will need to continuously improve our programs, syllabi, lectures, and teaching practices.

We are already late because some of the subjects in the Automotive Technology program are of liflle or no use to a mechanic, except for three of them. This is my personal opinion, but it is also an opinion consulted with second-year students (especially those who work in auto repair shops).

Students must complete 50% of all courses in the UAMD service and not in the front exhibition that our entire department calls a laboratory.

Reference: Lecture Series written by lecturer Eduart NDOKAJ

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