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Пособие
по практическому курсу научно-технического перевода для студентов технических специальностей автотракторного факультета

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Пособие включает 12 разделов, в которых рассматриваются лексические и грамматические аспекты перевода, аутентичные научно-технические тексты, направленные на формирование навыков перевода.

Предназначается для спецкурса по техническому переводу для студентов автотракторного факультета.

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Предисловие

Данная работа является практическим пособием по обучению переводу научно–технической литературы с английского языка на русский студентов автотракторного факультета по техническим специальностям: двигатели внутреннего сгорания; автомобилестроение; тракторостроение; многоцелевые колесные и гусеничные машины; городской электрический транспорт; техническая эксплуатация автомобилей; автосервис; гидропневмосистемы мобильных и технологических машин. Пособие рассчитано на 36 часов.

Цель пособия - развить умение анализировать различные элементы текста и правильно переводить американскую и английскую научно–техническую литературу по специальности, а также привить навыки аннотирования и реферирования текстов.

Учебное пособие состоит из 12 разделов, приложения по аннотированию и реферированию научно-технического текста и дополнительных текстов для перевода. Каждый раздел включает учебный текст с разработками и дополнительный текст для письменного перевода.

Текстовой материал представлен аутентичными текстами, содержащими информацию по техническим характеристикам автомобиля и его эксплуатации.

Упражнения, включенные в уроки, отражают лексические и грамматические особенности перевода. В систему лексических упражнений входят упражнения на перевод терминологической лексики, многофункциональных слов. Упражнения на словообразование ставят целью научить студента переводить слова, в состав которых входят префиксы и суффиксы, часто встречающееся в научно – технической литературе.

В систему грамматических упражнений входят упражнения на перевод страдательного залога, инфинитива и инфинитивных конструкций, причастия и причастных оборотов, герундия, эмфатических конструкций и др. В каждый раздел включен поурочный словарь, составленный из наиболее трудной лексики текстового материала.

Разделы пособия представляют собой самостоятельную часть курса перевода, что дает возможность изменять последовательность изучения отдельных разделов.

В пособие включены тексты из оригинальных журналов по специальности. Эти тексты рассчитаны на развитие навыков работы с политехническим и отраслевым (по данной узкой специальности) словарем.

Unit 1

Basic Features of an Engine

Упр. 1. Запомните новые слова и выражения и их значения.

1. burn (v) - сгорать, сжигать
2. combustion chamber - камера сгорания
3. connecting rod - шатун, соединительная тяга
4. convert (v) - превращать, преобразовывать
5. core - сердцевина, сердечник
6. crankshaft - коленчатый вал
7. displacement - рабочий объем (цилиндров) двигателя
8. four-stroke - четырехтактный
9. jack-in-the-box - дифференциал
10. jumble - куча, мешанина, беспорядочная смесь
11. hood - крышка капота (двигателя)
12. ignite (v) - поджигать, воспламенять
13. internal combustion engine (ICE) - двигатель внутреннего сгорания
14. oil pan - поддон
15. piston - поршень
16. piston rings - поршневые кольца
17. reciprocating internal combustion engine - поршневой двигатель внутреннего сгорания
18. release (v) - высвобождать
19. rotate - вращаться
20. seal – уплотнение; сальник
21. set off(v) - запустить
22. smooth – гладкий, ровный
23. spark plug - свеча зажигания
24. sump - поддон (картера)
25. valve - клапан

Упр. 2. Прочтите и переведите интернациональные слова.

Diesel, efficient, equivalent, typical, energy, form, gas, cycle, compression, to start, to plan, multi-cylinder, horizontally, configuration, motorcycle, sports car, normal, liter, number, indicator, battery, compact, material.

Упр. 3. Переведите предложения на русский язык обращая, внимание на новые слова.

1. Almost all cars today have a four-stroke combustion cycle to convert gasoline into motion. 2. Almost all cars today use a reciprocating internal combustion engine. 3. You can get more displacement in an engine by increasing the number of cylinders. 4. If you put a tiny amount of high-energy fuel in an enclosed space and ignite it, an incredible amount of energy is released in the form of an expanding gas. 5. The combustion chamber is the area where compression and combustion take place. 6. Piston rings provide a sliding seal between the outer edge of the piston and the inner edge of the cylinder. 7. The piston is connected to the crankshaft by a connecting rod.

Упр. 4. Переведите выделенные слова на английский язык, используя активный словарь урока.

1. (Поддон) contains some amount of oil. 2. The (рабочий объем) tells you something about how much power an engine can produce. 3. When the (поршень) reaches the top of its stroke, the (свеча зажигания) emits a spark to (воспламенить) the gasoline. 4. A car engine can look like a big confusing (мешанина) of metal, tubes and (проводов) 5. It can (вращается) at both ends so that its angle can change as the piston moves and the (коленчатый вал) (вращается). 6. (Поршневые кольца) keep oil in the (поддоне картера) from leaking into the combustion area, where it would be burned and lost. 7. (Сердцевина) of the engine is the cylinder, with the piston moving up and down inside the cylinder.

Упр. 5. Выберите правильное определение для каждого данного слова и переведите их на русский язык.

jumble, piston, hood, core, wire, plug, combustion

1. the metal cover over the engine of a motor car (protective cover over the engine of a motor car).
2. piece or length of metal in the form of a thread.
3. a lot of different things mixed together in an untidy order, without any order.
4. chemical activity which uses oxygen to produce light and heat.
5. central or most important part of anything (of an engine).

6. a part of an engine consisting of a short solid piece of metal inside a tube, which moves up and down.
7. the part of a petrol engine that makes spark, which makes the petrol start burning.

Упр. 6. Выберите правильный перевод словосочетаний, где слово "ENGINE" является определяющим.

1. boxer engine	a) четырехтактный двигатель
2. centrally mounted engine	b) двигатель с высокими эксплуатационными характеристиками
3. crank engine	c) двигатель с верхним расположением клапанов
4. flat engine	d) двигатель с противолежащими (оппозитными) цилиндрами
5. flat twin engine	e) кривошипно-шатунный двигатель
6. four-stroke engine	f) двигатель без наддува
7. in-line engine	g) двигатель, расположенный в середине базы
8. naturally aspirated engine	h) двигатель с горизонтально расположенными цилиндрами
9. overhead valve engine	i) двигатель с двумя горизонтально расположенными оппозитными цилиндрами
10. reciprocating engine	j) поршневой двигатель с кривошипно-шатунным механизмом
11. supercharged engine	k) однорядный двигатель
12. turbocharged engine	l) газотурбинный двигатель
13. gas-turbine engine	m) двигатель с турбонаддувом
14.high-performance engine	n) двигатель с наддувом

Упр. 7. Переведите предложения на русский язык, обращая внимание на употребление многофункционального слова “one”.

1. The annual Geneva Motor Show is one of the best automotive delights of the year. 2. The automotive test platform gives engineers one platform for multiple tests. 3. One of the particular areas of research concerns the interaction between the tyre and the road surface. 4. One of the most important things for the driver to know is how to keep the speed. 5. Many sensors are interconnected and their output is used for more than one vehicle system. 6. Among possible sources of power for engines one has to consider the possibility of applying atomic energy.

Упр. 8. Переведите предложения на русский язык, обращая внимание на сложные предлоги.

1. The most famous act was the Red Flag Act of 1865, according to which the speed of the steam-driven vehicles was limited to 4 miles per hour and a man with a red flag had to walk in front of it. 2. In case of mechanical stabilization granular or cohesive materials are added to the subsoil. 3. Scania has achieved its position amongst European bus builders due to its safety, economy, quality and service. 4. In addition to quality assurance the company offers its customers extensive international aftersale service network. 5. Jaguar was forced to consider producing its own station wagon model because of main competitors.

Упр. 9. **Переведите предложения на русский язык, обращая внимание на перевод сказуемого.**

1. Dual-stage front airbags have been introduced on this model. 2. The basic specification level includes ABS braking and an emergency braking system. 3. The plant will be producing 1,000 cars a year. 4. Honda has also added a triple cone synchronizer between first and second gear. 5. The BMW X-5 off-road sports car, which appeared several years ago, has undergone its first comprehensive upgrade with a focus on improving performance and safety features. 6. Increased power has reduced the acceleration time and slightly increased the top speed. 7. The new Eclipse Sport Coupe will hit the market two weeks before the schedule. 8. New Eclipse cars have already appeared at motor shows and G8 version starts at $20,000.

Упр. 10. Переведите предложения на русский язык, обращая внимание на перевод инфинитива.

1. The purpose of a gasoline car is to convert gasoline into motion. 2. The easiest way to create motion from gasoline is to burn the gasoline inside an engine. 3. The fuel in a steam engine burns outside the engine to create steam. 4. When the piston reaches the top of its stroke, the spark plug emits a spark to ignite the gasoline. 5. The spark must happen at the right moment for things to work properly. 6. The intake and exhaust valves open at the proper time to let in air and fuel and to let out exhaust. 7. First the piston moves down to let the engine take in a cylinder - full of air and gasoline, then the piston moves back up to compress this fuel/air mixture. 8. The main aim of the piston rings is to prevent the fuel/air mixture from leaking into the sump during compression and combustion.

Упр. 11. Заполните таблицу, образуя указанные части речи, и переведите их.

VERB	NOUN	ADJECTIVE
move	…	…
…	ignition	…
…	…	useful
connect	…	…
…	mixture	…
compress	…	…
…	…	rotational
…	displacement	….
…	leakage	…
increase	….	…

Упр. 12. Прочитайте и переведите текст. Пополните свой словарь терминов по изучаемой специальности.

Have you ever opened the hood of your car and wondered what was going on in there? A car engine can look like a big confusing jumble of metal, tubes and wires. You might want to know what's going on or perhaps you are buying a new car.

The purpose of a gasoline car engine is to convert gasoline into motion so that your car can move. The easiest way to create motion from

gasoline is to burn the gasoline inside an engine. Therefore, a car engine is an internal combustion engine - combustion takes place internally. Two things to note:

1. There are different kinds of internal combustion engines. Diesel engines are one form and gas turbine engines are another. Each has its own advantages and disadvantages.

2. There is such a thing as an external combustion engine. A steam engine in old-fashioned trains and steamboats is the best example of an external combustion engine. The fuel (coal, wood, oil, whatever) in a steam engine burns outside the engine to create steam, and the steam creates motion inside the engine. Internal combustion is a lot more efficient (takes less fuel per mile) than external combustion, plus an internal combustion engine is a lot smaller than an equivalent external combustion engine.

Almost all cars today use a reciprocating internal combustion engine because this engine is relatively efficient, relatively inexpensive and relatively easy to refuel.

Internal Combustion

If you put a tiny amount of high-energy fuel (like gasoline) in a small, enclosed space and ignite it, an incredible amount of energy is released in the form of expanding gas. For example, if you can create a cycle that allows you to set off explosions like this hundreds of times per minute, and if you can use that energy in a useful way, what you have is the core of a car engine!

Almost all cars currently use what is called a four-stroke combustion cycle to convert gasoline into motion. The four-stroke cycle is also known as the Otto cycle, in honor of Nikolaus Otto, who invented it in 1867. They are - intake stroke, compression stroke, combustion stroke and exhaust stroke.

Understanding the Cycles

The piston is connected to the crank shaft by a connecting rod. Here's what happens as the engine goes through its cycle:

The piston starts at the top, the intake valve opens, and the piston moves down to let the engine take in a cylinder-full of air and gasoline. This is the intake stroke. Only the tiniest drop of gasoline needs to be mixed into the air for this to work. Then the piston moves back up to compress this fuel/air mixture. Compression makes the explosion more powerful. When the piston reaches the top of its stroke, the spark plug

emits a spark to ignite the gasoline. The gasoline charge in the cylinder explodes, driving the piston down. Once the piston hits the bottom of its stroke, the exhaust valve opens and the exhaust leaves the cylinder to go out the tail pipe. Now the engine is ready for the next cycle, so it intakes another charge of air and gas.

Notice that the motion that comes out of an internal combustion engine is rotational. In an engine the linear motion (straight line) of the pistons is converted into rotational motion by the crank shaft. The rotational motion is smooth because we plan to turn (rotate) the car's wheels with it anyway.

Now let's look at all the parts that work together to make this happen.

Counting Cylinders

The core of the engine is the cylinder, with the piston moving up and down inside the cylinder. The engine described above has one cylinder, but most cars have more than one cylinder (four, six and eight cylinders are common). In a multi-cylinder engine, the cylinders usually are arranged in one of three ways: inline, V or flat (also known as horizontally opposed or boxer). Different configurations have different advantages and disadvantages in terms of smoothness, manufacturing-cost and shape characteristics.

Displacement

The combustion chamber is the area where compression and combustion take place. As the piston moves up and down, you can see that the size of the combustion chamber changes. It has some maximum volume as well as a minimum volume. The difference between the maximum and minimum is called the displacement and is measured in liters or CCs (Cubic Centimeters, where 1,000 cubic centimeters equals a liter). For example: A motorcycle might have a 500 cc or a 750 cc engine, while a sports car might have a 5.0 liter (5,000 cc) engine. Most normal car engines fall somewhere between 1.5 liter (1,500 cc) and 4.0 liters (4,000 cc)

If you have a 4-cylinder engine and each cylinder displaces half a liter, then the entire engine is a "2.0 liter engine." If each cylinder displaces half a liter and there are six cylinders arranged in a V configuration, you have a "3.0 liter V-6."

Generally, the displacement tells you something about how much power an engine can produce. A 2.0 liter engine is roughly half as powerful as a 4.0 liter engine. You can get more displacement in an engine

either by increasing the number of cylinders or by making the combustion chambers of all the cylinders bigger (or both).

Other Parts of an Engine

Spark Plug. The spark plug supplies the spark that ignites the air/fuel mixture so that combustion can occur. The spark must happen at just the right moment for things to work properly.

Valves. The intake and exhaust valves open at the proper time to let in air and fuel and to let out exhaust. Note that both valves are closed during compression and combustion so that the combustion chamber is sealed.

Piston. A piston is a cylindrical piece of metal that moves up and down inside the cylinder.

Piston rings. Piston rings provide a sliding seal between the outer edge of the piston and the inner edge of the cylinder. The rings serve two purposes:

- They prevent the fuel/air mixture and exhaust in the combustion chamber from leaking into the sump during compression and combustion.
- They keep oil in the sump from leaking into the combustion area, where it would be burned and lost.

Connecting rod. The connecting rod connects the piston to the crankshaft. It can rotate at both ends so that its angle can change as the piston moves and the crankshaft rotates.

Crank Shaft. The crank shaft turns the piston's up and down motion into circular motion just like a crank on a jack-in-the-box does.

Sump. The sump surrounds the crankshaft. It contains some amount of oil, which collects in the bottom of the sump (the oil pan).

Упр. 13. Выполните письменный перевод следующего текста.

In the traditional steam engine, and even in a modern steam turbine, fuel is burned outside the engine. But it is more efficient to burn fuel inside the engine and let the expanding gases produced drive a piston or turbine. The first such internal combustion engine, running on gas, was built by the German engineer Niikolaus August Otto (1832-1891). His engine, demonstrated in Paris in 1867, was large, noisy and not very efficient. But it became the forerunner of almost all today's engines. Nine years after the first gas engine Otto invented another, based on the four-stroke cycle. The crucial advance

in this engine was ignition, giving not only a considerable improvement in efficiency but also a remarkable reduction in fuel consumption. It takes four strokes of the engine to include one of power, so this system is known as the four-stroke cycle. It is by far the most common type of engine in use today. Many motorcycles and few small cars use the two-stroke cycle first created by Dugald Clerk in 1880.

Упр. 14. Составьте письменную аннотацию по теме "Составляющие двигателя и их функции", используя следующие выражения:

The text deals with … . Attention is drawn to the fact that … . It is pointed out that … . It should be noted that … . I find the text rather/very … .

Unit 2

What Can Go Wrong

Упр. 1. Запомните новые слова и выражения и их значения.

1. attach (v) - прикреплять
2. bearing - подшипник
3. clog(v) - забиваться, засоряться
4. combustion - сгорание
5. compression - сжатие, компрессия
6. crankshaft – коленчатый вал
7. cylinder head - головка цилиндра
8. exhaust - выхлоп
9. gasket- прокладка
10. hole -отверстие, дыра
11. impurity – загрязнение, примесь
12. lack (n) - отсутствие, нехватка
13. leak (v) - протекать
14. occur (v) - случаться, происходить
15. run-down - краткое изложение, обзор
16. seal (v) - изолировать, уплотнять
17. spark - искра

Упр. 2. Прочтите и переведите интернациональные слова.

Compression, system, cylinder, battery, technology, physical, chemical, problem, electromagnetic, progress, transmission, signal, period, centre, radar, serious, temperature, negative, test, filter.

Упр. 3. Переведите предложения на русский язык обращая, внимание на новые слова.

1. The most common "hole" in a cylinder occurs where the top of the cylinder (holding the valves and spark plug also known as the cylinder head) attaches to the cylinder head. 2. Three fundamental things can happen: a bad fuel mix, lack of compression or lack of spark. 3. The fuel system might be supplying too much or too little fuel to the mix, meaning that combustion does not occur properly. 4. The spark might be nonexistent or weak for a number of reasons. 5. Three renewable bearings located directly in the cylinder block support the camshaft. 6. The cylinder and the cylinder head bolt together with a thin gasket pressed between them to ensure a good seal. 7. If the valves do not open and close at the right time or at all, air cannot get in and exhaust cannot get out, so the engine cannot run.

Упр. 4. Переведите выделенные слова на английский язык, используя активный словарь урока.

1. There might be an (загрязнение) in the fuel (like water in your gas tank) that makes the fuel not burn. 2. The air intake might be (засорено), so there is fuel but not enough air. 3. Your piston rings are worn allowing air/fuel to (протекать) past the piston during compression. 4. The intake or (выхлопной) valves (не изолированы) properly, again (позволяя) a leak during compression. 5. If the (прокладка) breaks down, small (отверстия) develop between the cylinder and the (голова цилиндра), and this (отверстия) cause (утечки). 6. If the wire is cut or missing, there will be no (искры). 7. If the (подшипники) that allow the (коленчатый вал) to turn freely are work out, the (коленчатый вал) cannot turn so the engine cannot run.

Упр. 5. Выберите правильное определение для каждого данного слова и переведите их на русский язык.

gasket, bearing, run-down, pipe, to clog, spark.

1. reduction; detailed explanation or listing.

2. be or become blocked with waste matter, dirt, so that movement, flow of liquid is difficult or prevented.
3. flat piece of material often rubber, placed between two surfaces so that the steam, gas cannot escape.
4. flash of light caused by electricity passing across a space.
5. in a machine - device that supports moving parts and reduces friction.
6. tube through which liquids or gases can flow.

Упр. 6. Выберите правильный перевод словосочетаний, где слово "SYSTEM" является определяющим.

1. air brake system	a) автоматическое устройство для поддержания заданной скорости автомобиля
2. window cleaning system	b) герметизированная система
3. brake system	c)пневматическая тормозная система
4. brakeless ignition system	d) аварийная тормозная система
5. capacitor discharge ignition system	e) система зажигания с емкостным разрядом
6. cruise control system	f) тормозная система
7. emergency brake system	g) бесконтактная система зажигания
8. monitoring system	h) система клапанов
9. sealed system	i) система очистки стекла
10. valve system	j) система контроля

Упр. 7. Переведите предложения на русский язык, обращая внимание на перевод многофункционального слова “like”.

1. Like the radio and telephone, the information shown in the central display is controlled by keys on the multi-function steering wheel. 2. Like the steering column, the redesigned front seats are electrically adjustable, including a memory function. 3. There are about 3,000 Americans who like to collect antique cars. 4. Like most other great human achievements, the motor cars is not the product of any single inventor. 5. The operation performed is like this: when taken in the cylinder the air is

highly compressed, the temperature rises so the heated fuel-air mixture burns. 6. A car engine looks like a big, confusing jumble of metal, tubes and wires. 7. The hybrid car has a gasoline engine much like the one you will find most cars.

Упр. 8. Переведите предложения на русский язык, обращая внимание на перевод глаголов с предлогами, стоящими после них.

1. The word “automobile” consists of two words autos meaning “self” and mobilis – a Latin word meaning “movable”. 2. In Japan, buses are equipped with a manually adjustable system of suspension control. 3. Most automotive engineers dealt with topics such as gasoline and diesel engines, transmissions, suspension system, chassis, etc. 4. The new five speed automatic transmission is linked to the adaptive suspension system. 5. At the present rate of production oil supplies will run out rather soon and we will have to look for other sources of energy. 6. Success of the electric car depends on light weight battery, capable of being recharged quickly, and the availability of electric energy. 7. Land Rover is often associated with African wild life.

Упр. 9. Переведите предложения на русский язык, обращая внимание на перевод глаголов в пассивном залоге.

1. The power output has been boosted by a supercharger. 2. Chrysler-Benz, as the new amalgam in the making is being called, would be an automotive giant. 3. Its most recent success, the Century Coach, was awarded the 1994 Coach of the Year Prize in the UK. 4. The modern automobile has often been described as a computer on wheels. 5. In the powertrain area, sensors are used to measure the temperature and pressure of most of the fluids. 6. New models are regularly subjected to a number of standardized tests which make it possible to compare results. 7. Other sensors are being added as car manufactures add side impact bags and sophisticated head protection airbags.

Упр. 10. Переведите предложения на русский язык, обращая внимание на перевод модальных глаголов.

1. The air intake might be clogged, so there's fuel but not enough air. 2. If you are a poor mechanic, you should stop at service station periodically. 3. If your car doesn't start, the petrol pump may be broken or the

fuel pipe may be blocked. 4. You should check the spark plugs. 5. If you failed to start the engine, you have to repair it. 6. Fuel pump can be either electric or mechanic in operation. 7. If the charge of air and fuel cannot be compressed properly, the combustion process will not work like it should. 8. If someone sticks a potato up your tailpipe, exhaust cannot exit cylinder so the engine will not run. 9. Better technologies can improve the performance of the engine.

Упр. 11. Переведите предложения на русский язык, обращая внимание на перевод инфинитива.

1. The task was to develop a completely new family of cars. 2. Mini and BMW have every right to feel proud. 3. But manufactures can use VTES (Visteon's torque enhancement systems) to boost gasoline or reduce the size. 4. To improve driving control the 4-ETS is combined with the Electronic Stability Programme. 5. Karl Benz employed his own Otto-type engine to power a three-wheel carriage in 1885. 6. It is necessary to provide an automobile with a differential, in order the rear wheels to revolve at different speeds when the car turn a corner.

Упр. 12. Заполните таблицу, образуя указанные части речи, и переведите их.

VERB	NOUN	ADJECTIVE
save	…	…
…	…	separate
…	cooler	…
…	power	…
…	…	compressible
…	detection	…
…	adaptor	….
improve	…	…
….	creation	….

Упр. 13. Прочитайте и переведите текст. Выпишите из текста ключевые слова и выражения для составления аннотационного перевода.

So you go out one morning and your engine will turn over but it won't start… What could be wrong? Now that you know how an en-

gine works, you can understand the basic things that can keep an engine from running. Three fundamental things can happen: a bad fuel mix, lack of compression or lack of spark. Besides that, thousands of other things can create problems, but these are "the big three." Based on the simple engine we have been discussing, here is a quick run down on how these problems affect your engine.

Bad fuel mix: A bad fuel mix can occur in several ways:

- You are out of gas, so the engine is getting air but no fuel.
- The air intake might be clogged, so there is fuel but not enough air.
- The fuel system might be supplying too much or too little fuel to the mix, meaning that combustion does not occur properly.
- There might be an impurity in the fuel (like water in your gas tank) that makes the fuel not burn.

Lack of compression: If the charge of air and fuel cannot be compressed properly, the combustion process will not work like it should. Lack of compression might occur for these reasons: your piston rings are worn (allowing air/fuel to leak past the piston during compression); the intake or exhaust valves are not sealing properly, again allowing a leak during compression; there is a hole in the cylinder.

The most common "hole" in a cylinder occurs where the top of the cylinder (holding the valves and spark plug and also known as the cylinder head) attaches to the cylinder itself. Generally, the cylinder and the cylinder head bolt together with a thin gasket pressed between them to ensure a good seal. If the gasket breaks down, small holes develop between the cylinder and the cylinder head, and these holes cause leaks.

Lack of spark: The spark might be nonexistent or weak for a number of reasons:

- If your spark plug or the wire leading to it is worn out, the spark will be weak.
- If the wire is cut or missing, or if the system that sends a spark down the wire is not working properly, there will be no spark.
- If the spark occurs either too early or too late in the cycle (i.e. if the ignition timing is off), the fuel will not ignite at the right time, and this can cause all sorts of problems.

Many other things can go wrong. For example:

- If the battery is dead, you cannot turn over the engine to start it.
- If the bearings that allow the crankshaft to turn freely are worn out, the crankshaft cannot turn so the engine cannot run.
- If the valves do not open and close at the right time or at all, air cannot get in and exhaust cannot get out, so the engine cannot run.
- If someone sticks a potato up your tailpipe, exhaust cannot exit the cylinder so the engine will not run.
- If you run out of oil, the piston cannot move up and down freely in the cylinder, and the engine will seize.

In a properly running engine, all of these factors are within tolerance.

As you can see, an engine has a number of systems that help it do its job of converting fuel into motion. Most of these subsystems can be implemented using different technologies, and better technologies can improve the performance of the engine. All different subsystems used in modern engines will be described later.

Упр. 14. Выполните письменный перевод следующего текста.

Unlike steam engines most internal combustion engines do not produce great power at slow speeds. The cylinders are small and each individual ignition stroke produces comparatively little power. To obtain a useful amount of work from such engine it must be run fast, to put the maximum number of ignition strokes into each second. Motor car engines commonly produce their maximum power at speeds of 5,000 revolutions per minute or more. The oscillating pistons and valve gear sets the upper limit on speed, specially prepared engines, in which great attention has been paid to balance and smoothness, thus can be obtained more power by running into speeds of 12,000 rpm or more.

Упр.15. Составьте письменный реферат об основных проблемах, возникающих при запуске двигателя, используя следующие выражения:

The text is about … . It is shown that … . In the opinion of the author it is … . Of special interest is the fact that … .

Unit 3

Subsystems of Modern Engines

Упр. 1. Запомните новые слова и выражения и их значения.

1. alternator – генератор переменного тока
2. approach - подход
3. bank of cylinders - блок цилиндров
4. boost – форсировка двигателя (наддув)
5. camshaft – распределительный вал
6. carburetion - образование топливной смеси
7. catalytic converter - катализатор
8. emission - выхлопы
9. exhaust pipe - выхлопная труба
10. ignition - зажигание
11. lag - запаздывание
12. lobe (n) - рабочая часть кулачка, выступ кулачка
13. lubrication - смазка
14. muffler - глушитель
15. naturally aspirated – с естественным засосом воздуха (без наддува)
16. overhead cam - верхний кулачок
17. spin (v) - вращать, крутить
18. squirt (v) - разбрызгивать тонкой струйкой
19. supercharger - нагнетатель с наддувом
20. sump - поддон картера
21. timing chain-цепь привода распределительного механизма
22. trickle (v) down - капать
23. turbocharger - турбонагнетатель
24. valve lifter – толкатель клапана
25. valve train - клапанный механизм, газораспределительный механизм (ГРМ)
26. wire - провод

Упр. 2. Прочтите и переведите интернациональные слова.

Battery, to generate, electrical system, electricity, radio, mechanism, modern, to activate, starter, transmission, distributor, radiator, to circulate, motorcycle, filter, cylinder, turbine, compressor, starter solenoid, volt, amp, electronic, cycle, individual, motor.

Упр. 3. Переведите предложения на русский язык обращая, внимание на новые слова.

1. The valve train consists of the valves and a mechanism that opens and closes them, which is called a camshaft. 2. Many high-performance engines have four valves per cylinder and this arrangement requires two camshafts per bank of cylinders. 3. In carburetion, a device called a carburetor mixes gas into air as the air flows into the engine. 4. When you turn the ignition key, the starter motor spins the engine a few revolutions so that the combustion process can start. 5. The lubrication system makes sure that every moving part in the engine gets oil so that it can move easily. 6. The emission control system consists of a catalytic converter, a collection of sensors and actuators and some other things. 7. The electrical system consists of a battery and an alternator. 8. The oil trickles down into the sump, where it is collected again and the cycle repeats. 9. High-performance engines are either turbocharged or supercharged, which means that air coming into the engine is first pressurized to increase displacement.

Упр. 4. Переведите выделенные слова на английский язык, используя активный словарь урока.

1. Most modern engines have what are called (верхние кулачки). 2. This (подход) has more moving parts and also (вызывает) more (запаздывание) between the cam's activation of the (клапан) and subsequent motion of the (клапан). 3. A timing belt links the (коленчатый вал) to the (распределительный вал) so that the valves are in sync with the (поршнями). 4. The (распределитель) has one (провод) going in the center and four, six or eight (проводов) coming out of it. 5. A turbocharger uses a small turbine (прикрепленный) to the (выхлопная труба) to spin a compressing turbine in the (поток входящего воздуха). 6. The exhaust system includes (выхлопная труба) and (глушитель). 7. The (генератор переменного тока) is connected to the engine by a (ремень) any generates electricity to (перезарядить) the battery.

Упр. 5. Выберите правильное определение для каждого данного слова и переведите их на русский язык.

lubricate, ignition, bank, sump, carburetor, supercharger, radiator, turbocharger, starter solenoid.

1. row of cylinders in an engine.
2. electrical mechanism of a vehicle engine that makes it start working.
3. device for cooling the cylinders of the engine of a motor vehicle.
4. device used in an internal - combustion engine to force extra oxygen into the cylinders.
5. a system that makes a vehicle more powerful by sing a turbine to force air and petrol into the engine.
6. a large electronic switch that can handle much current to power the motor.
7. put oil into machine parts to make them work easily.
8. that part of internal combustion engine in which petrol and air are mixed to make an explosive mixture.
9. the part of an engine that contains lubrication oil.

Упр. 6. Образуйте подходящие словосочетания, вставьте их в предложения и переведите их на русский язык.

1. fuel, valve, cam, ignition, starter, crank, spark, air/fuel.
2. cams, system, solenoid, shaft, lifters, wires, plugs, mixture, shaft

1. Most modern engines have what are called ... . 2. Rods linked the cam below to ... above the valves. 3. The ... is geared to turn at one–haft the rate of the ... . 4. The ignition system produces a high-voltage electrical charge and transmits it to the … via... . 5. The starting system consists of an electric starter motor and ... . 6. The ... pumps gas from the gas tank and mixes it with air so that the proper ... can flow into the cylinders.

Упр. 7. Переведите предложения на русский язык, обращая внимание на перевод прилагательных.

1. Henry Roys and Charlles Rolls decided to design the most comfortable and reliable car. 2. The higher the pressure, the higher the temperature. 3. Help also comes from mounting the fan on spacers and keeping it as far as possible from the engine. 4. Although STN displays are slower and more limited in viewing angle than TFT's, they are cheaper and more energy efficient. 5. A stiffer body, quieter engine and the use of sound-deadening

materials in the body provide a much quieter ride than its predecessor. 6. The new Saab 9-3 is 17mm higher and 55mm wider than the old one and has a 71mm longer wheelbase. 7. As far as paint colors are concerned "moon silver" is proving the most popular along A-Class customers.

Упр. 8. Переведите предложения на русский язык, обращая внимание на употребление многофункционального слова "since".

1. The company IRIZAR was founded in 1889 and since then it has been engaged in the construction of bus work for passenger transport. 2. Since 1970 there were many brilliant inventions in the automobile industry. 3. The progress of motor cars in Great Britain was stopped since there were severe speed limits. 4. Since the French engineer Cugnot invented the first self-propelled vehicle in 1770, the automobile industry developed very rapidly. 5. Since flexibility is the ability of the engine to run smoothly, most engines perform properly at all speeds and through all variations of atmospheric conditions. 6. Ever since 1904 the trade name of Rolls-Royce has always been the perfect car.

Упр. 9. Переведите предложения на русский язык, обращая внимание на перевод сказуемого в пассивном залоге.

1. The camshaft is located above the valves. 2. Older engines used a camshaft which was located in the sump near the crankshaft. 3. The camshaft is geared to turn at one-half the rate of the crankshaft. 4. The engine is timed so that only one cylinder receives a spark from the distributor at a time. 5. In a few cars and in most motorcycles the engine is air-cooled. 6. A supercharger is attached directly to the engine to spin the compressor. 7. In most cars, oil is sucked out of the oil pan by the oil pump, run through the oil filter and then squirted onto bearings and the cylinder walls. 8. The piston is connected to the crankshaft by a connecting rod. 9. The difference between the maximum and the minimum volume is called the displacement and is measured in liters or Cubic Centimeters.

Упр. 10. Переведите предложения на русский язык, обращая внимание на перевод инфинитивного оборота "сложное подлежащее".

1. The V5-engined car is reported to be the most powerful and luxurious Golf Estate yet available in the UK. 2. At the beginning of the 20th century a new car design seemed to be a fantasy. 3. The turbocharger market

in Europe alone is estimated to be worth at least € 1 billion a year. 4. Ford, Daimler-Benz and Ballard are expected to accelerate further the development of fuel-cell-powered components for cars and trucks. 5. The electric automobile energized by rechargeable batteries appeared to have a great future nearly a century ago. 6. Most drivers are found to have phones in their vehicles or carry phones when they drive.

Упр. 11. Переведите цепочки однокоренных слов.

1. create – creator – creature – creation – created – creating
2. determine – determined – determining - determination
3. recognize – recognized – recognition –recognizable
4. technology – technologist – technical – technician – technique
5. cycle - recycle – bicycle – motorcycle – recycled –recycling
6. accumulate – accumulation – accumulated – accumulating
7. consume - consumption –consumer

Упр.12. Заполните таблицу, образуя указанные части речи и переведите их.

VERB	NOUN	ADJECTIVE
…	…	meaningful
activate	…	…
arrange	…	…
…	linkage	…
…	performance	…
require	…	…
…	….	productive
…	…	compressive
power	…	…
explode	…	…
…	charge	…

Упр. 13. Прочитайте и переведите абзацы об электрической системе, системах запуска и выхлопа.

Valve Trains.

The valve train consists of the valves and a mechanism that opens and closes them. The opening and closing system is called a camshaft. The camshaft has lobes on it that move the valves up and down.

Most modern engines have what are called overhead cams. This means that the camshaft is located above the valves. The cams on the shaft activate the valves directly or through a very short linkage. Older engines used a camshaft located in the sump near the crankshaft. Rods linked the cam below to valve lifters above the valves. This approach has more moving parts and also causes more lag between the cam's activation of the valve and the valve's subsequent motion. A timing belt or timing chain links the crankshaft to the camshaft so that the valves are in sync with the pistons. The camshaft is geared to turn at one-half the rate of the crankshaft. Many high-performance engines have four valves per cylinder (two for intake, two for exhaust), and this arrangement requires two camshafts per bank of cylinders, hence the phrase "dual overhead cams."

Ignition System

The ignition system produces a high-voltage electrical charge and transmits it to the spark plugs via ignition wires. The charge first flows to a distributor, which you can easily find under the hood of most cars. The distributor has one wire going in the center and four, six, or eight wires (depending on the number of cylinders) coming out of it. These ignition wires send the charge to each spark plug. The engine is timed so that only one cylinder receives a spark from the distributor at a time. This approach provides maximum smoothness.

Cooling System

The cooling system in most cars consists of the radiator and water pump. Water circulates through passages around the cylinders and then travels through the radiator to cool it off. In a few cars (as Volkswagen Beetle) and in most motorcycles, the engine is air-cooled instead. Air-cooling makes the engine lighter but hotter, generally decreasing engine life and overall performance.

Air Intake system

Most cars are naturally aspirated, which means that air flows through an air filter and directly into the cylinders. High-performance engines are either turbocharged or supercharged, which means that air coming into the engine is first pressurized (so that more air/fuel mixture can be squeezed into each cylinder) to increase performance. The amount of pressurization is called boost. A turbocharger uses a small turbine attached to the exhaust pipe to spin a compressing turbine in the incoming

air stream. A supercharger is attached directly to the engine to spin the compressor.

Starting System

The starting system consists of an electric starter motor and a starter solenoid. When you turn the ignition key, the starter motor spins the engine a few revolutions so that the combustion process can start. It takes a powerful motor to spin a cold engine. The starter motor must overcome:

- All of the internal friction caused by the piston rings
- The compression pressure of any cylinder(s) that happens to be in the compression stroke
- The energy needed to open and close valves with the camshaft
- All of the "other" things directly attached to the engine, like the water pump, oil pump, alternator, etc.

Because so much energy is needed and because a car uses a 12-volt electrical system, hundreds of amps of electricity must flow into the starter motor. The starter solenoid is essentially a large electronic switch that can handle that much current. When you turn the ignition key, it activates the solenoid to power the motor.

Lubrication System

The lubrication system makes sure that every moving part in the engine gets oil so that it can move easily. The two main parts needing oil are the pistons (so they can slide easily in their cylinders) and any bearings that allow things like the crankshaft and camshafts to rotate freely. In most cars, oil is sucked out of the oil pan by the oil pump, run through the oil filter to remove any grit, and then squirted under high pressure onto bearings and the cylinder walls. The oil then trickles down into the sump, where it is collected again and the cycle repeats.

Fuel System

The fuel system pumps gas from the gas tank and mixes it with air so that the proper air/fuel mixture can flow into the cylinders. Fuel is delivered in three common ways: carburetion, port fuel injection and direct fuel injection.

- In carburetion, a device called a carburetor mixes gas into air as the air flows into the engine.
- In a fuel-injected engine, the right amount of fuel is injected individually into each cylinder either right above the intake valve (port fuel injection) or directly into the cylinder (direct fuel injection).

Exhaust System

The exhaust system includes the exhaust pipe and the muffler. Without a muffler, what you would hear is the sound of thousands of small explosions coming out your tailpipe. A muffler dampens the sound. The exhaust system also includes a catalytic converter.

Emission Control

The emission control system in modern cars consists of a catalytic converter, a collection of sensors and actuators, and a computer to monitor and adjust everything. For example, the catalytic converter uses a catalyst and oxygen to burn off any unused fuel and certain other chemicals in the exhaust. An oxygen sensor in the exhaust stream makes sure there is enough oxygen available for the catalyst to work and adjusts things if necessary.

Electrical System

The electrical system consists of a battery and an alternator. The alternator is connected to the engine by a belt and generates electricity to recharge the battery. The battery makes 12-volt power available to everything in the car needing electricity (the ignition system, radio, headlights, windshield wipers, power windows and seats, computers , etc.) through the vehicle's wiring.

Упр. 14. Выполните письменный перевод следующего текста.

The compression-ignition engine, designed by the German Rudolf Diesel in 1896, was equipped with the carburetor and sparking plugs of the petrol engine. The gas inside the cylinder on the compression stroke is pure air, which is compressed to 1:14 to 1:20 of its initial volume - a much higher compression ratio than is used in petrol engines. At the top of the compression stroke a fine spray of oil fuel is injected into the cylinder. As gas compressed its temperature increases, so that the oil spray meets the air charge at a temperature sufficiently high to ignite it spontaneously. Because of its high compression ratio the compression-ignition or diesel engine is more efficient than a petrol engine. But for the same reason it must be more heavily built, thus offsetting the advantage somewhat. Diesel engines offer economies in fuel consumption at the expense of a loss in performance, they are particularly suited to frequent stop and start duties, and as a result are widely used in taxis, busses and lorries.

Упр. 15. Составьте письменный реферат об основных системах автомобиля и их функциях, используя следующие выражения:

The text is concerned with … . … are considered. It should be noted that … . The fact that … is stressed. It should be remembered that … .

Unit 4

Producing More Power

Упр. 1. Запомните новые слова и выражения их значения.

1. displacement - рабочий объем
2. compression ratio – коэффициент сжатия
3. cram (v) - втолкнуть
4. expand (v) - расширять(ся)
5. lessen (v) - уменьшать
6. intake valve - впускной клапан
7. back pressure - обратное давление
8. lightweight - легковесный
9. inject (v) - впрыскивать
10. mileage - пробег
11. density - плотность
12. intercooler - промежуточный охладитель
13. intake manifold - впускной коллектор
14. muffler - глушитель
15. high-performance - с высокими эксплуатационными характеристиками
16. header - головная часть; сборник коллектора
17. two-stroke - двухтактный
18. rotation - вращение
19. eliminate (v) - устранить, исключить

Упр. 2. Прочтите и переведите интернациональные слова.

Information, efficient, cylinder, limit, compression, octane, sort, intercooler, radiator, filter, effect, start, energy, meter, diesel, motor, cycle, turbine, qualification, special, distance, center.

Упр. 3. Переведите предложения на русский язык обращая, внимание на новые слова.

1. More displacement means more power because you can burn more gas during each revolution of the engine. 2. An intercooler is a special radiator through which the compressed air passes to cool it off before it enters the cylinder. 3. If the exhaust pipe is too small or the muffler has a lot of air resistance, this can cause back-pressure. 4. High-performance exhaust system use headers, big tail pipes and free-flowing mufflers to eliminate back pressure in the exhaust system. 5. High-performance cars are generally using higher compression ratios to get more power. 6. A two-stroke engine produces a lot of power for its size because there are twice as many combustion cycles occurring per rotation. 7. As piston moves down in the intake stroke, air resistance can take power from the engine.

Упр. 4. Переведите выделенные слова на английский язык, используя активный словарь урока.

1. Higher (коэффициенты сжатия) produce more power, up to a point. 2. Higher-octane gasoline (предотвращает) this sort of early combustion. 3. If you can (втолкнуть) more air into a cylinder of a given size, you can get more power from the cylinder. 4. The hotter air is, the less it will (расширяться) when combustion takes place. 5. (Легковесные) parts help the engine perform better. 6. (Дизельное топливо) has a higher energy (плотность) than gasoline, so a diesel engine gets better (пробег). 7. (Дизельное топливо) (впрыскивается) into the cylinder and the heat and pressure of the compression stroke (заставляют) the fuel to (воспламеняться).

Упр. 5. Выберите правильное определение для каждого данного слова и переведите их на русский язык.

intercooler, cylinder, fuel injection, ratio, manifold.

1. the tube within which a piston moves towards and backwards in an engine.
2. relation between two amounts determined by the number of times one contains the other.
3. special radiator through which the compressed air passes to cool it off before it enters the cylinder.

4. pipe or chamber with several openings, for connections, e. g. for leading gases into or out of cylinders.
5. method by which liquid is converted to vapour and sprayed into the cylinders of an internal combustion engine.

Упр. 6. Переведите предложения на русский язык, обращая внимание на употребление многофункционального слова "that".

1. In 1890s, Rudolf Diesel, a German, invented the engine that bears his name. 2. Their vehicles are equipped with special devices that give them independent mobility without any assistance. 3. Since the density of titanium is about half that of steel, titanium can perform the same task as steel springs. 4. Today that price has dropped to around $500 per kW - but that means that a fuel-cell engine still costs about $25,000. 5. The fatigue of welded joints puts a limit on the strength of the steel that can be used in forming parts. 6. The center of the axle is bent down, so that it is the lowest point of the car. 7. Besides the compressed mixture produced more power than that uncompressed.

Упр. 7. Переведите предложения на русский язык, обращая внимание на перевод модальных глаголов.

1. Albion Automotive is to supply rear axles for Renault Trucks' commercial vans. 2. A brand new electric power-steering system should improve controllability. 3. The car can be equipped with one of four turbo engines, the gasoline engines, and a 1.9-litre diesel engine. 4. Like it or not, the automobile world had to get used to the car's new appearance. 5. Mass production of the model was to begin in a year. 6. It should be remembered that although Distronic system can reduce stress it cannot replace the human driver. 7. You might be disappointed that New Beetle is indistinguishable from standard Beetle. 8. Each diesel engine can be fitted with a manual or an automatic gearbox. 9. Daimler-Chrysler is to use special lightweight doors made by Wagon for its cars. 10. Modern roads should be designed according to the anticipated volume and speed of the traffic. 11. Keeping the distance may save your life.

Упр. 8. Переведите предложения на русский язык, обращая внимание на перевод герундия.

1. Each component is designed to reduce weight without compromising safety strength, stiffness and durability. 2. Black and white arrow-

indicator navigation systems are popular because they have the advantage of being much simpler. 3. The engine is capable of being developed to provide required levels of performance vehicle meeting or exceeding the world's strictest emission standards. 4. Dips, sprays and different coatings are among the methods for preventing contact between hostile environmental elements and metals. 5. Being unfamiliar or inexperienced with the motorcycle increases the risk of being involved in an accident. 6. The first engines appeared in the 17th century and people began using them to operate factories, irrigate lands, supply water to town.

Упр. 9. Переведите предложения на русский язык, обращая внимание на перевод причастие I и причастие II.

a) 1. Turbochargers and supercharges pressurize the incoming air to cram more air into a cylinder. 2. Many turbocharged and supercharged cars have an intercooler, through which the compressed air passes. 3. Some newer cars are using polished intake manifolds to eliminate air resistance. 4. A blocked filter decreases the air flow to the carburetor, thus increasing the amount of fuel in the mixture. 5. A gas burnt during each revolution of the engine gives more power. 6. The compressed air passes through the intercooler. 7. Kerosene is the fuel used in jet engines. 8. You can cram more air and fuel into a cylinder of a given size. 9. A two-stroke engine has no moving valves.

b) 1. Compressing air raises its temperature. 2. Using the mechanism called gearbox different speeds can be obtained. 3. Making the cylinder bigger or adding more cylinders you can increase displacement. 4. Air resistance can be lessened by putting two intake valves in each cylinder. 5. Burning in the engine the fuel-air mixture produces energy. 6. Starting a V-8 engine, you are only driving two cylinders through their strokes. 7. Increasing the size of the cylinder, you can get more power from it. 8. Using more gasoline and burning lots of oil, the two-stroke engine is far more polluting.

Упр. 10. Переведите цепочки однокоренных слов.

1. purpose – purposeful – purposeless – purposed
2. radiate – radiation – radiator
3. distribute – distributor – distributing – distribution
4. reduce – reduction – reducing – reduced
5. require – required – requirement – requiring

6. adjust – adjustable – adjuster – adjustment – adjusted
7. essence – essential – essentially – essentiality

Упр. 11. Образуйте от данных прилагательных существительные и переведите.

Smooth -… . Powerful - … . Different - … . Hard - … . Available - … . Reliable - … . Useless - … . Active - … .

Упр. 12. Назовите новые слова с окончанием –able/-ible и переведите их на русский язык.

1. that can be moved	5. that can be solved
2. that can be reached	6. that can be used or obtained
3. that can be managed	7. that can be permitted
4. that can be changed for new needs	8. that can provide comfort

Упр. 13. Прочитайте и переведите текст, обращая внимание на степени сравнения прилагательных и конструкции типа the …, the… .

Using all of this information, you can begin to see that there are lots of different ways to make an engine perform better. Car manufacturers are constantly playing with all of the following variables to make an engine more powerful and/or more fuel efficient.

Increase displacement. More displacement means more power because you can burn more gas during each revolution of the engine. You can increase displacement by making the cylinders bigger or by adding more cylinders. Twelve cylinders seem to be the practical limit.

Increase the compression ratio. Higher compression ratios produce more power, up to a point. The more you compress the air/fuel mixture, however, the more likely it is to spontaneously burst into flame (before the spark plug ignites it). Higher-octane gasoline prevents this sort of early combustion. That is why high-performance cars generally need high-octane gasoline - their engines are using higher compression ratios to get more power.

Stuff more into each cylinder. If you can cram more air (and therefore fuel) into a cylinder of a given size, you can get more power from the cylinder (in the same way that you would by increasing the size of

the cylinder). Turbochargers and superchargers pressurize the incoming air to effectively cram more air into a cylinder.

Cool the incoming air Compressing air raises its temperature. However, you would like to have the coolest air possible in the cylinder because the hotter the air is, the less it will expand when combustion takes place. Therefore, many turbocharged and supercharged cars have an intercooler. An intercooler is a special radiator through which the compressed air passes to cool it off before it enters the cylinder.

Let air come in more easily. As a piston moves down in the intake stroke, air resistance can rob power from the engine. Air resistance can be lessened dramatically by putting two intake valves in each cylinder. Some newer cars are also using polished intake manifolds to eliminate air resistance there. Bigger air filters can also improve air flow.

Let exhaust exit more easily. If air resistance makes it hard for exhaust to exit a cylinder, it robs the engine of power. Air resistance can be lessened by adding a second exhaust valve to each cylinder (a car with two intake and two exhaust valves has four valves per cylinder, which improves performance - when you hear a car ad tell you the car has four cylinders and 16 valves, what the ad is saying is that the engine has four valves per cylinder). If the exhaust pipe is too small or the muffler has a lot of air resistance, this can cause back-pressure, which has the same effect. High-performance exhaust systems use headers, big tail pipes and free-flowing mufflers to eliminate back-pressure in the exhaust system. When you hear that a car has "dual exhaust," the goal is to improve the flow of exhaust by having two exhaust pipes instead of one.

Make everything lighter. Lightweight parts help the engine perform better. Each time a piston changes direction, it uses up energy to stop the travel in one direction and start it in another. The lighter the piston, the less energy it takes.

Inject the fuel. Fuel injection allows very precise metering of fuel to each cylinder. This improves performance and fuel economy.

Difference between a gasoline engine and a diesel engine. In a diesel engine, there is no spark plug. Instead, diesel fuel is injected into the cylinder, and the heat and pressure of the compression stroke cause the fuel to ignite. Diesel fuel has a higher energy density than gasoline, so a diesel engine gets better mileage.

Difference between a two-stroke and a four-stroke engine. Most car and boat motors use two-stroke engines. A two-stroke engine has no

moving valves, and the spark plug fires each time the piston hits the top of its cycle. A hole in the lower part of the cylinder wall lets in gas and air. As the piston moves up it is compressed, the spark plug ignites combustion, and exhaust exits through another hole in the cylinder. You have to mix oil into the gas in a two-stroke engine because the holes in the cylinder wall prevent the use of rings to seal the combustion chamber. Generally, a two-stroke engine produces a lot of power for its size because there are twice as many combustion cycles occurring per rotation. However, a two-stroke engine uses more gasoline and burns lots of oil, so it is far more polluting.

Advantages of steam engines and other external combustion engines. The main advantage of a steam engine is that you can use anything that burns as the fuel. For example, a steam engine can use coal, newspaper or wood for the fuel, while an internal combustion engine needs pure, high-quality liquid or gaseous fuel.

Types of cycles used in car engines. The two-stroke engine cycle is different, as is the diesel cycle described above. The engine in the Mazda Millennia uses a modification of the Otto cycle called the Miller cycle. Gas turbine engines use the Brayton cycle. Wankle rotary engines use the Otto cycle, but they do it in a very different way than four-stroke piston engines.

Eight cylinders in an engine are better than one big cylinder of the same displacement. There are a couple of reasons why a big 4.0-liter engine has eight half-liter cylinders rather than one big 4-liter cylinder. The main reason is smoothness. A V-8 engine is much smoother because it has eight evenly spaced explosions instead of one big explosion. Another reason is starting torque. When you start a V-8 engine, you are only driving two cylinders (1 liter) through their compression strokes, but with one big cylinder you would have to compress 4 liters instead.

Упр. 14. Выполните письменный перевод следующего текста.

The power gas engine

The gas turbine, a completely different kind of engine, was first designed at the beginning of the twentieth century and perfected in the 1930s. It usually has a single shaft carrying a series of propeller-like fans divided into two groups, the compressor and the turbine. In

an operating gas turbine air is drawn in the compressor fans and its pressure increased. The compressed air is mixed with fuel and ignition takes place, further increasing temperatures and pressures. The burned mixture leaves the engine through the turbine, driving the blades round. The compressor, which is often driven directly by the turbine, takes up much of the power produced, but enough is left to make the gas turbine exceedingly powerful form of engine. Efficiencies are not high, but the good power-to-weight ratio of a gas turbine makes it suitable for aircraft propulsion. A gas turbine is about three times as powerful as a piston engine of the same weight.

Упр. 15. Составьте письменный реферат, рассказывающий об основных способах увеличения мощности двигателя, используя следующие выражения:

The text is devoted to … . … are given. The importance of … is stressed. There is no doubt that … . It is pointed out that … .

Unit 5

The New Golf R32

Упр. 1. Запомните новые слова и выражения и их значения.

1. accelerate (v) – разгоняться, ускоряться
2. adjustable - регулируемый
3. alloy wheels – литые диски
4. anti-dazzle - противоослепляющий
5. built-in head restraints – встроенные подголовники
6. camshaft - распредвал
7. cylinder knock – детонация в цилиндре
8. exhaust system – выхлопная система
9. four-wheel drive – привод на 4 колеса (полноприводный)
10. gearbox – коробка передач
11. gear gate (reduced) – кулиса коробки передач (укороченная); уменьшенные промежутки между передачами
12. gear lever – рычаг переключения передач
13. headlights - фары
14. heated seats – сиденья с подогревом
15. intake manifold – впускной коллектор

16. naturally aspirated engine – атмосферный двигатель
17. performance – эксплутационные качества
18. rear (adj) – задний
19. running gear - шасси
20. steering wheel – рулевое колесо
21. top-of-the-range - высококлассный
22. top speed – предельная скорость
23. torque – крутящий момент

Упр. 2. Прочтите и переведите интернациональные слова.

Sport car, luxury-class technology, market segment, cylinder, technical, geometry, standard, model, design modifications, aluminium components, pedal, centre console, dynamic design, electronically controlled air conditioning, radio system, multi-function display, dynamic potential, compact class, unique, class, sensor.

Упр. 3. Переведите предложения на русский язык обращая, внимание на новые слова.

1. The technical features include an adjustable intake and exhaust camshaft, cylinder-selective knock control and variable intake manifold geometry. 2. The new R 32 is a top-of-the-range car with a manual six-speed gearbox. 3. The new front sport seats with built-in head restraints and special leather steering wheel were designed for more sporty drivers. 4. The R32 is the combination of naturally aspirated six-cylinder engine and a four-wheel drive. 5. The new model of the car has automatic air-conditioning, alloy wheels, multi-function computer and some other elements. 6. It also possesses a gearbox with interior reduced gear gate.

Упр. 4. Переведите выделенные слова на английский язык, используя активный словарь урока.

1. The new Golf R32 has (предельную скорость) of 247 kmh with 320Nm (крутящий момент). 2. Golf is characterized by significant design modifications to the (передний и задний) section. 3. Golf R32 can (разгоняться) to 100 kmh in just 6.6 seconds. 4. The power of the engine is transmitted via a six-speed (коробка передач). 5. The R32 has double (выхлопную систему) with twin chrome-plated (выхлопные трубы). 6. Golf has a range of standard equipment including (противо-

ослепляющее) interior mirror, (сидения с подогревом), and (фары) with washer system. 7. Brushed aluminum components include the pedals, centre console and (рычаг переключения передач).

Упр. 5. Выберите правильный перевод словосочетаний, где слово "DRIVE" является определяющим.

1) twin-camshaft chain drive	a)шестеренный привод клапанного механизма
2) camshaft drive	b) привод счетчика пробега
3) camshaft gear drive	c) привод от двигателя
4) rear-axle gear drive	d) цепной привод с двумя распредвалами
5) pneumatic drive	e) поршневой привод
6) engine drive	f) привод с тремя ведущими мостами
7) valve-gear drive	g) шестеренный привод распредвала
8)odometer drive	h) привод распредвала
9) multiple strand drive	i) пневматический привод
10) piston drive	j) шестеренная передача
11) tri-axle drive	k) передача с несколькими клиновыми ремнями

Упр. 6. Выберите правильное определение для каждого данного слова и переведите их на русский язык.

piston rings, gear, torque, accelerate, console.

1. the force of power that makes something turn around a central point, especially in an engine.
2. increase the speed, cause to move faster.
3. a set of toothed wheels working together in a machine, to connect a motor car engine with the road wheels.
4. a flat board that contains the controls for a machine, piece of electrical equipment.
5. a circular metal spring used to stop gas or liquid escaping from between piston and the tube that moves in.

Упр. 7. Переведите предложения на русский язык, обращая внимание на перевод глаголов в пассивном залоге.

1. A Ford Fiesta is being equipped with VTES (Visteon's torque enhancement system). 2. Much effort has been applied to the interior: new decorating materials have been used and the colour palette revised. 3. The company was founded in 1889 and since then it has been engaged in the construction of coach work for passenger transport. 4. Technology developed for the aeronautical industry has been used, giving an aerodynamic design full of elegance and clarity of line. 5. Research is being conducted to develop well-designed in-vehicle human/machine interfaces for safe driving. 6. The instrument panel has also been newly designed.

Упр. 8. Переведите предложения на русский язык, обращая внимание на перевод Perfect Participle и Passive Participle.

a) 1. Having noticed a fuel warning light on the instrument panel of your car you should fill up the tank with more petrol. 2. Having entered the engine, impurities damaged the cylinders, piston and piston rings. 3. Having pressed the brake pedal, you can stop the car immediately. 4. Having been cleaned the air filter increases the airflow. 5. Having discovered a broken pump, it's a good idea to repair it. 6. Having been pushed forwards and backwards, the car couldn't be released. 7. Having been carefully tested, the new braking system was approved.
b)1. Being designed by Volkswagen, R32 can accelerate to 100 kmh in just 6.6 seconds. 2. Being equipped with the adjustable intake and exhaust camshaft, the new R32 has an advantage. 3. Being oiled, the moving parts work almost without any friction. 4. Being redesigned completely, the new R32 became more efficient. 5. Being repaired by a skillful mechanic, the exhaust system is now in order. 6. Being covered with oil the spark plugs didn't give any spark. 7. Being provided with batteries, an electric car can develop a speed of 50 miles an hour.

Упр. 9. Образуйте существительные, используя различные суффиксы и переведите их.

-ment:	to arrange, to improve, to move, to achieve, to measure, to require, to develop, to adjust, to manage

-ness:	tough, bright, thick, effective, tight, smooth, affective, sharp
-age:	to break, to pass, to use, volt, leak, link, mile, store
-ion:	to attract, to reflect, to discuss, to indicate, to insulate, to ignite, to actuate, to reduce
-ation:	to combine, to examine, to inform ,to install, to implement
-or:	to resist, to conduct, to compress, to accelerate, to ventilate, to create, to generate,

Упр. 10. Образуйте прилагательные, используя различные суффиксы и переведите их на русский язык.

-ic:	atmosphere(e), period, metal, electron
-al:	experiment, natur(e),physic(s), mechanic, environment convention, practice
-able:	value(e), change, measure(e),compare(e), rely, suit, reason, comfort, adjust, vary
-ant**:**	import, resist, pollute

Упр. 11. Переведите цепочки однокоренных слов.

1. rear – rearward – rewards – rear view – rear view mirror
2. improve – improvement – improved – improving
3. replace – replacement – replaced – replacing
4. power – powerful – powerless
5. imitate – imitation – imitative –imitator
6. consider – considered – considerable – considering
7. ignite – igniter – ignition

Упр.12. Прочитайте и переведите текст. Найдите 5 предложений в пассивном залоге. Найдите ключевые слова и выражения для составления аннотационного перевода.

The new Golf R32 has a top speed of 247 kmh, having the same 3.2-litre **V6** engine, with 320 Nm torque, as the VW Phaeton.

Never before has there been a standard Golf with such a powerful engine as the new **R32.** Its 177 kW, 3.2-litre V6 engine - which is also used in the new Phaeton -gives it a performance comparable to that of a sports car. This means that the R32 designed by Volkswagen can accelerate to 100 kph in just 6.6 seconds, and has a top speed of 247 kph. With this sporty top-of-the-range Golf, Volkswagen is introducing luxury-class technology into other market segments.

The technical features of this compact six-cylinder model include a continuously adjustable intake and exhaust camshaft, cylinder knock control and variable intake manifold geometry. The torque of the engine (up to 320 Nm) is transmitted to the standard 4motion four wheel drive via a six-speed gearbox with reduced gear gates. The R32's double exhaust system with twin chrome-plated tailpipes gives it a suitably distinctive sound.

Visually, the new Golf is characterized by a sports running gear 20 mm lower than that of the standard model, 18-inch alloy wheels with 225/40 ZR 18 tyres, and significant design modifications to the front and rear sections.

Inside, brushed aluminium components including the pedals, centre console and gear lever, emphasized the dynamic design of the R32. The new front sport seats with built-in head restraints and the special R32 leather steering wheel were designed for more sporty driver.

The R32, which is initially only available as a two-door model, has a comprehensive range of standard equipment, including electronically controlled air conditioning, a radio system with eight speakers, a multifunction display, a rain sensor, an automatic anti-dazzle interior mirror, heated seats and Xenon headlights with a headlight washer system.

The R32 is the top-of-the-range model in the Golf series, and its overall drive characteristics provide an impressive demonstration of the dynamic potential of the best selling car in the compact class. Not only that, but the R32 also shows what is possible when luxury class technology is transferred to smaller classes of vehicle. This is because the R32's combination of such a powerful, naturally aspirated six-cylinder engine and four-wheel drive as standard is still unique in this sector.

Упр.13. Выполните письменный перевод следующего текста.

Fuel and exhaust pass in and out of a four-stroke engine using a more sophisticated system of valves, controlled automatically by camshaft

driven direct from the engine's crankshaft. As the engine operates, the valves are successively opened and closed, the moment of ignition of the fuel must also be accurately controlled. This is done by a distributor, again mechanically connected to the crankshaft which directs a current of electricity successively to each of the cylinders. This current "fires" a spark in the spark plugs and the fuel is ignited. Otto's engines ran on coal gas, a perfectly satisfactory fuel but one that is difficult to store. The gas engine was greatly improved by the use of liquid fuels such as petrol (gasoline) made by refining crude oil. To turn petrol into a combustible vapor it is mixed with air to form a fine mixture of droplets that can be drawn into the cylinders. The mixing is carried out in a carburetor.

Упр.14. Составьте аннотацию текста "The new Golf R32", используя следующие выражения:

It is reported … . … are noted. It should be stressed that … . The basic approach of the author is that … .

Unit 6

Vectra Aims For New Image

Упр. 1. Запомните новые слова выражения и их значения.

1. available – доступный, имеющийся в наличии
2. clutch - сцепление
3. enhance(v) – повышать, увеличивать, улучшать
4. ensure (v)- обеспечивать, гарантировать
5. exterior – внешний вид
6. feedback – обратная связь
7. gearbox – коробка передач
8. head restraints- подголовники
9. injury - повреждение
10. impact - столкновение
11. launch (v) – запускать, выпускать
12. manual shift – ручное переключение
13. occupancy detector – датчик присутствия
14. power output – выходная мощность
15. predecessor – предшественник
16. provide (v) -обеспечивать

17. safety - безопасность
18. spacious – обширный
19. steering – управление, рулевое управление, рулевой механизм
20. throttle – дроссельная заслонка
21. torsional stiffness – торсионная жесткость, (жесткость на кручение)
22. tyre pressure monitoring system – система контроля давления в шинах

Упр. 2. Запомните перевод и объяснение следующих сокращений.

1. GM (General Motors) – автомобильная компания "Дженерал Моторс"
2. IDS (Interactive Driving System) - интерактивная система управления
3. CBC (Cornering Brake Control) – контроль тормозов при повороте
4. ESP (Electronic Stability Programme) - программа электронной стабильности
5. EBD (Electronic Brake Force Distribution) – электронное распределение тормозной силы
6. ps (pherdestaerken (German) – horse power – лошадиная сила
7. ABS (Anti-lock Braking System) – анти-блокировочная тормозная система.
8. VVT (Variable Valve Timing) – регулирование времени открытия/закрытия клапана
9. CVT (Continuously Variable Transmission) – бесступенчатая коробка передач, вариатор

Упр. 3. Прочтите и переведите интернациональные слова.

Chassis, electronic stability programme, pedal, monitoring system, aerodynamics, computer, simulation, charisma, interactive, comfort, positive, detector, type, typical, model, tunnel, automatic, function.

Упр. 4. Переведите предложения на русский язык обращая, внимание на новые слова.

1. The Mitsubishi Eclipse 2006 includes such notable features as four-wheel disc brakes with ABS and side-impact airbags. 2. The Jaguar X-type Estate will have a sedan engine (2-litre diesel or 3-litre V6) and a choice between front-wheel drive and four-wheel drive. 3. The base model of BMV X5 comes with a six-speed trans-

mission and a new 218hp/500Nm, 3-litre turbo diesel engine. 4. The basic specification level in the Opel Corsa includes ABS braking and an emergency braking system. 5. A new electric power-steering system should improve controllability. 6. IDS is an electronic management system that interacts with the chassis, steering and braking for increasing driver feedback, comfort and safety. 7. There is also a seat occupancy detector and a tyre pressure monitoring system. 8. GM Europe is particularly pleased with the electro-hydraulic power steering.

Упр. 5. Переведите выделенные слова на английский язык, используя активный словарь урока.

1. The car is equipped with (безопасность) features, including (воздушную подушку) and (подголовники-ограничители). 2. In the event of (столкновения) the (педали тормоза и сцепления) are disengaged to protect the driver from injuring. 3. Electro-hydraulic power steering (обеспечивает) a positive response to the driver. 4. Electronic (контроль дроссельной заслонкой) has improved (управляемость) and a lighter pedal action. 5. The five-speed automatic active select (коробка передач) with (функция ручного управления) first appeared on the Vectra. 6. Opel Vectra proved for its drivers (интерактивную систему управления) for safety and comfort. 7. There are three petrol and diesel engines with (выходная мощность) from 122ps to 211ps. 8. The body has (торсионную жесткость) greater than its previous model. 9. Two (коробки передач) first appeared on the Vectra: the five-speed automatic and CVTronic.

Упр. 6. Выберите правильное определение для каждого данного слова и переведите их на русский язык.

mirror, spark plug, chassis, brake, throttle(v), mode.

1. device for reducing speed or stopping motion, e.g. of a bicycle, motor-car, train.
2. to control the flow of steam, petrol, vapour, etc. in an engine; lessen the speed of an engine by doing this.
3. polished surface reflecting images: in a car to enable the driver to see what is behind him.

4. framework of a motor-car or aircraft on which the body is fastened or built.
5. a part in a car engine that produces an electric spark to make the petrol mixture start burning
6. a manner in which a process is carried out.

Упр. 7. Переведите предложения, обращая внимания на выделенные слова.

1. In case of an impact **both** the brake **and** clutch pedals are disengaged. 2. Two gearboxes are used on the Vectra: the five-speed automatic with manual shift function and the CVTronic. **The former** which is adaptive is available on both the petrol and diesel engine while **the latter** is available with petrol engine. 3. The bending stiffness of the body has increased **due to** the greater use of high-strength steels. **In total** 15 different types of steel are used. 4. Initially there are three petrol and two diesel engines, with power output ranging from 122 hp to 211 hp, available, but **these** will be topped by some performance versions in the range powered by a petrol and diesel engine.

Упр. 8. Переведите предложения на русский язык, обращая внимание на перевод эмфатических конструкций.

1. It is in this regime that there is now the greatest call from customers for engines that can pull away at 100 rpm with a rising torque level. 2. Never before has there been a standard Golf with such a powerful engine as the new R32. 3. It was not until 1886 that two scientists separately but simultaneously invented the electrolytic process that is the basis of all aluminium production today, the Hall-Heroult process. 4. It was not until 1808 that Sir Humphrey Davy established the existence of aluminium and named it. 5. Never before has a new class of vehicles been attended so much publicity as Land Rover. 6. Nowhere can we see such a rapid development as in automobile designing.

Упр. 9. Переведите предложения на русский язык, обращая внимание на перевод герундия.

1. On examining the car before starting on a long journey a driver can be sure that he will get to his destination without accidents. 2. By summing up the information about the speed and distance of various objects on the

road, the computer detects all possible dangers. 3. In future in switching over to the new Earth satellite a driver can be sure of coming safely to his destination. 4. At low speeds the engine can use turbines for compressing the air before mixing it with the fuel in the combustion chamber. 5. Cryogenic fuels will vaporize before being injected into combustion chamber. 6. A new carburetor offers easier starting in cold weather. 7. By using the automatic guidance system a driver will be able to make long journeys without concentrating on the road conditions. 8. It is impossible to solve economic problems without using the achievements of the scientific and technological revolution.

Упр. 10. Переведите предложения на русский язык, обращая внимание на перевод условных предложений.

1. The experiment would have been carried out a week ago, if the device hadn't been broken. 2. It would take too much time to carry heavy loads unless the cars were constructed. 3. If the charge of air and fuel cannot be compressed properly, the combustion process will not work like it should. 4. If your spark plug or the wire is leading to it is worn out, the spark will be weak. 5. If someone sticks a potato up your tailpipe, exhaust cannot exit the cylinder soothe engine will not run. 6. If gears are in a neutral position, the power of the engine will end at the end of the secondary shaft of transmission.7. If the base structure of a vehicle is designed to accommodate loads, then it will be overdesigned when running unloaded.

Упр. 11. Переведите следующие слова с префиксами dis-, in-, im-, il-, un-.

charge – discharge
continuous – discontinuous
close – disclose
connect – disconnect
advantage – disadvantage
regular – irregular
complete – incomplete
appear – disappear
correct – incorrect
placement – displacement

accurate – inaccurate
movable – immovable
logical – illogical
important – unimportant
credible – incredible
like – unlike
notice – unnoticed
possible – impossible
familiar – unfamiliar
expensive – inexpensive

Упр. 12. Прочитайте и переведите текст. Найдите и переведите предложения, характеризующие технологические особенности автомобиля.

The Vectra is a familiar sight on European roads. So what does Opel/Vauxhall provide for its drivers? One feature is its interactive driving system (IDS). This is an electronic management system that interacts with the chassis, steering and braking for increasing driver feedback, comfort and safety. GM Europe is particularly pleased with the electro-hydraulic power steering. Its main aim is providing a positive and class-leading response to the driver.

The brake systems comprise Anti-lock brakes (ABS), cornering brake control (CBC), electronic brake force distribution (EBD) and an enhanced electronic stability programme (ESP). This is the most important way of ensuring that the new Vectra has a dynamic and yet safe feel to it, especially when being driven at speed.

Another driving feature is the drive-by-wire electronic throttle control for all petrol engines, for improved driveability and a lighter pedal action.

The car is equipped with safety features, including front, side and curtain airbags and active head restraints. There is also a seat occupancy detector and a tyre pressure monitoring system. In the event of an impact, both the brake and clutch pedals are disengaged to protect the driver from injuring to the feet and lower legs.

A great attention has been given to the exterior. The second-generation Vectra is the first model in Opel/Vauxhall's new design line. It is famous for having good aerodynamics, the result of hard work in the wind tunnel and in computer-aided simulation.

The body has a torsional stiffness 74 per cent greater than previous model and the bending stiffness has increased by 62 per cent due to the greater use of high-strength steels. In total 15 different types of steel are used.

Initially there are three petrol and two diesel engines, with power output ranging from 122 ps to 211 ps (90-163 kW) available, but these will be topped by some performance versions in the range powered by a petrol 3.2 litre V6 and diesel 3.0 litre V6.

Two gearboxes first appear on the Vectra: the five-speed automatic Active Select with manual shift function, and the CVTronic.

The former, which is adaptive, is available on both the petrol and diesel-engined 2.2 16-valve and the new 3.2 litre V6, while the latter is available with the 1.8 16-valve petrol engine. Described as a six-speed, there are three gearshift modes: fully stepless automatic; manual, using the six predefined gears; and full automatic transmission mode, in which the six gear steps can be activated so the CVTronic acts like a conventional six-speed box.

In fact, the new model that has recently been launched is an example of what can be achieved with cars the main purpose of which is having been designed with mass sales in mind. It is efficient, spacious, pleasant to drive, well built and has reasonable running costs. It is far superior to the predecessor model. It is just lack of the quality called charisma.

Упр. 13. Выполните письменный перевод следующего текста.

Keeping your distance may save your life – this is a road safety truth. By ensuring that you have a sufficient stopping distance at all times, even should the driver ahead suddenly slam on the brakes for no apparent reason, you can eliminate a major cause of accidents. Out on the road, however, people often fail to maintain the necessary minimum gap; after all, it costs a great deal of concentration to observe this rule at all times. With the DISRTONIC distance monitoring system, proximity to the vehicle in front can be kept to the limit without the driver right to decide. This new system is based on radar technology. DISTRONIC's invisible radar signals constantly measure the distance to the vehicle in front. A computer processes the data and prompts the reaction if necessary. If the driver's car is too close, it will be gently braked, automatically, until sufficient distance is restored. In this process, deceleration is limited to one-fifth of the maximum available braking power, so sudden sharp braking by the system is not be feared. Heavy braking is not used even if the driver in front panic-brakes: In that case, DISTRONIC is automatically deactivated, a warning light shows up on the speedometer, and an acoustic signal urges the driver to promptly assume command over the brakes.

Упр.14. Составьте аннотацию к тексту. Расскажите об основных составляющих "Vectra aims for new image", используя следующие выражения:

The text deals with … . The text gives a valuable information on … . Attention is drawn to the fact that … . …are discussed. Underlined is the conclusion that … .

Unit 7

Hybrid Cars

Упр. 1. Запомните новые слова и выражения и их значения.

1. emissions - выбросы
2. fuel consumption – потребление топлива
3. green house effect – парниковый эффект
4. mileage – пробег
5. parallel hybrid – гибрид с параллельным приводом
6. pollution - загрязнение
7. propulsion – движущая сила; силовая установка
8. provide(v) – обеспечивать, снабжать
9. reduce(v) – снижать
10. regenerative braking – рекуперативное торможение
11. series hybrid – гибридный автомобиль с последовательным приводом
12. set of batteries – блок батарей
13. sophisticated - сложный
14. supply(v) - поставлять
15. turn(v) – приводить в движение, вращать
16. twofold – двоякий , двусторонний
17. tyre(tire) - шина
18. vehicle – транспортное средство
19. efficiency – производительность, продуктивность
20. storage – накопление, хранение, хранилище

Упр. 2. Прочтите и переведите интернациональные слова.

Hybrid, technology, version, effect, automobile, plan, to combine, moped, type, locomotive, diesel-electric, transmission, electricity, electric motor, structure, parallel, generator, energy, machine, generate, percent.

Упр. 3. Переведите предложения на русский язык обращая, внимание на новые слова.

1. Any vehicle that combines two or more sources of power that can directly or indirectly provide propulsion power is a hybrid. 2. Both the engine and the electric motor can turn the transmission at the same time, and the transmission then turns the wheels. 3. The fuel tank in a hybrid is the energy storage device for the gasoline engine. 4. The amount of pollution allowed does not depend on the mileage your car gets. 5. That pollution will have to be removed by the emissions control equipment on the car. 6. The engine on a hybrid is smaller and uses advanced technologies to reduce emissions and increase efficiency. 7. The generator is similar to an electric motor, but it acts only to produce electrical power. 8. Instead of just using brakes to stop the car the electric motor can also slow down the car.

Упр. 4. Переведите выделенные слова на английский язык, используя активный словарь урока.

1. A gas-powered car has a fuel tank which (снабжает) gasoline to the engine. 2. The reason is (двоякий): (сократить) tailpipe (выбросы) and to improve mileage. 3. Any (транспортное средство) is a hybrid when it combines two or more sources of power. 4. But a car that burns twice as much gas to go a mile will generate approximately twice as much (загрязнение). 5. The motor (приводит в движение) a transmission and the transmission (приводит в движение) wheels. 6. So decreasing (потребления топлива) of the car is one of the surest ways of decreasing (выбросы). 7. As a result in a parallel hybrid both the electric motor and gas engine can (обеспечить) propulsion power. 8. Hybrid cars use special (шины) that are both stiffer and inflated to a higher pressure than conventional (шины).

Упр. 5. Выберите правильное определение для каждого данного слова и переведите их на русский язык.

generator, gasoline, electricity, submarine, hybrid, emission.

1. ship that can be used under the surface of the sea.
2. all the phenomena associated with electrons (negative charge) and protons (positive charge).

3. machine or apparatus that generates, produces (electricity, steam, gas, vapour, energy).
4. something that consists of or comes from a mixture of two or more other things.
5. a liquid obtained from petroleum, used mainly for producing power in the engines of cars.
6. a gas or other substance that is sent into he air.

Упр. 6. Выберите правильный перевод словосочетаний, где слово "TRANSMISSION" является определяющим.

1. lever transmission	a)бесступенчатая коробка передач
2. belt transmission	b) дифференциальная передача
3. hydraulic transmission	c) коробка передач с двумя промежуточными валами
4.infinitely variable transmission	d) ступенчатая коробка передач
5. twin countershaft transmission	e) коробка передач с промежуточным валом
6. chain transmission	f) ременная передача (привод)
7. gear transmission	g) бесступенчатая коробка передач, вариатор
8. differential transmission	h) передача со свободным ходом
9. fixed-ratio transmission	i) рычажная передача
10. manual transmission	j) зубчатая передача, коробка передач с шестернями
11. stepless transmission	k)трансмиссия с гидротрансформатором
12. countershaft transmission	l) гидропривод
13. free transmission	m) коробка передач с ручным управлением
14.torque-converter transmission	n) цепная передача

Упр. 7. Переведите предложения на русский язык, обращая внимание на употребление многофункционального слова “that”.

1. The car night vision system uses a camera that can be placed close to the driver's head. 2. The reality of today is that the automobile engineer should know about more than just mechanical engineering. 3. Besides the fuel consumption of a diesel is much less than that of gasoline engine. 4. The company presents a climatic wind tunnel that the company regards as the most technically advanced of its type in the world. 5. The weight of diesel engines is more than that of a gasoline engine of the same power and it occupies much space. 6. Another important problem is that of fuel. 7. The steering spindles are that part of the front axle on which the front wheels revolve.

Упр. 8. Переведите предложения на русский язык, обращая внимание на перевод герундия.

1. One of the main problems of a driver on the road is keeping the speed constant and watching the cars ahead. 2. Monitoring and adjusting air pressure in tyres is one of the newest developments of the car designers. 3. Detecting an object in front of a car in the dark is the purpose of the “night vision” system. 4. On detecting danger on the road, the computer signals the driver. 5. One of the best ways of keeping the speed steady is using the computer for this purpose. 6. On being turned on the radar will warn the driver about the stationary or slow-moving objects on the road. 7. The function of a car computer is detecting and summing up the information about the road conditions. 8. The white line in the center of the road is one of the most effective means of controlling traffic. 9. A driver may avoid collisions on the road by using a radar system.

Упр. 9. Переведите предложения на русский язык, обращая внимание на перевод инфинитива.

1. This in-house system is designed to meet the needs of turbocharged engines. 2. The correct wood detail to match the car is achieved by a careful matching of the veneers. 3. The events to be analyzed are the actions taken during the operation of a car. 4. A small battery is used to power accessories and provide a boost during hand acceleration. 5. Lord Montagu’s farther was the first person in England to be fined by

the police for speeding. 6. To ensure maximum safety for the transportation system, it is necessary to plan and design highways on sound engineering techniques.

Упр. 10. Переведите предложения на русский язык, обращая внимание на перевод инфинитивного оборота "сложное дополнение".

1. There's a special knob on the centre console that enables you to choose of one of the five settings: general driving, slippery conditions and three special off-road modes. 2. This in-house system allows Saab to carry out a speedier, more effective development work. 3. Certain tests may require the test vehicle to be equipped with particular devices to ensure reliable results. 4. Differential is the device that permits the rear wheels to revolve at different speeds independently on of the other. 5. The scientists considered hands-free equipment to be significantly less risky to use than hand-held mobile phones while driving.

Упр. 11. Заполните таблицу, образуя указанные части речи.

Verbs	Adjectives	Nouns
…	transmissible	transmission
…	…	power
…	…	engine
drive	…	…
…	rechargeable	….
…	…	replacement
install	…	
…	ignition	…

Упр. 12. Переведите цепочки однокоренных слов.

1. mean – meaning –means – meaningful
2. move – moving – moved - movement
3. adapt – adapted – adapting – adaptable – adaptability – adaptation.
4. achieve – achievement – achieved – achievable

5. energy – energize – energized – energetic
6. charge – chargeable – recharge – rechargeable – discharge – dischargeable
7. electrify – electrified – electric – electrical - electrification

Упр. 13. Прочитайте текст. Сократите его до 1/3, оставив наиболее важную информацию для составления реферативного перевода.

Currently, Honda and Toyota have the technology that might answer all of the customers needs like the high price of gasoline or the contribution to the greenhouse effect. It's the hybrid car, and both manufacturers are selling their versions in the United States. In fact, most automobile manufacturers have announced plans to manufacture their own versions.

Any vehicle is a hybrid when it combines two or more sources of power. In fact, many people have probably owned a hybrid vehicle. For example, a moped (a motorized pedal bike) is a type of hybrid because it combines the power of a gasoline engine with the pedal power of its rider.

Hybrid vehicles are all around us. Most of the locomotives we see pulling trains are diesel-electric hybrids. Giant mining trucks are often diesel-electric hybrids. Submarines are also hybrid vehicles - some are nuclear-electric and some are diesel-electric. Any vehicle that combines two or more sources of power that can directly or indirectly provide propulsion power is a hybrid.

Hybrid structure

You can combine the two power sources found in a hybrid car in different ways. One way, known as a parallel hybrid, has a fuel tank, which supplies gasoline to the engine. But it also has a set of batteries that supplies power to an electric motor. Both the engine and the electric motor can turn the transmission at the same time, and the transmission then turns the wheels.

In a typical parallel hybrid you'll notice that the fuel tank and gas engine connect to the transmission. The batteries and electric motor also connect to the transmission independently. As a result, in a parallel hybrid, both the electric motor and the gas engine can provide propulsion power.

By contrast, in a series hybrid the gasoline engine turns a generator, and the generator can either charge the batteries or power an elec-

tric motor that drives the transmission. Thus, the gasoline engine never directly powers the vehicle.

Hybrid cars contain the following parts: gasoline engine, fuel tank, electric motor, generator, batteries and transmission.The hybrid car has a gasoline engine much like the one you will find on most cars. However, the engine on a hybrid is smaller and uses advanced technologies for reducing emissions and increasing efficiency.

The fuel tank in a hybrid is the energy storage device for the gasoline engine. Gasoline has a much higher energy density than batteries do. For example, it takes about 1,000 pounds of batteries to store as much energy as 1 gallon (7 pounds) of gasoline.

The electric motor on a hybrid car is very sophisticated. Advanced electronics allow it to act as a motor as well as a generator. For example, when it needs to, it can draw energy from the batteries to accelerate the car. But acting as a generator, it can slow the car down and return energy to the batteries. The generator is similar to an electric motor, but it acts only to produce electrical power. It is used mostly on series hybrids.

The batteries in a hybrid car are the energy storage device for the electric motor. Unlike the gasoline in the fuel tank, which can only power the gasoline engine, the electric motor on a hybrid car can put energy into the batteries as well as draw energy from them.

The transmission on a hybrid car performs the same basic function as the transmission on a conventional car. Some hybrids, like the Honda Insight, have conventional transmissions. Others, like the Toyota Prius, have radically different ones.

The reason for building such a complicated machine - when most people are perfectly happy with their gasoline-powered cars - is twofold: to reduce tailpipe emissions and to improve mileage. The amount of pollution allowed does not depend on the mileage your car gets. But a car that burns twice as much gas to go a mile will generate approximately twice as much pollution. That pollution will have to be removed by the emissions control equipment on the car. So decreasing the fuel consumption of the car is one of the surest ways of decreasing emissions.

The key to a hybrid car is that the gasoline engine can be much smaller than the one in a conventional car and therefore more efficient. The gas engine on a conventional car is sized for the peak

power requirement In fact, most drivers use the peak power of their engines less than one percent of the time. The hybrid car uses a much smaller engine, one that is sized closer to the average power requirement than to the peak power.

Упр. 14. Выполните письменный перевод следующего текста.

Toyota has named its gasoline-electric hybrid car Prius. The Prius is Japan's first, and one of the world's first, series production internal-combustion engine/electric motor-driven passenger cars. Prius, according to Toyota, means "pioneering" in Latin. The Prius employs a parallel hybrid system, using both the internal combustion engine and electric motor for propulsion. Toyota, by the way, preceded the Prius with a series hybrid vehicle, an electrically driven mini bus. The main purpose of its gasoline engine is generating electricity and recharging the batteries. The engine 1 NZ-FXE has dual overhead camshaft, 16 valves, inline four cylinders and it was designed for the hybrid application. It is an extremely compact unit to be installed inline with the electric motor and CVT. The VVT-1 improves low- and middle-speed torque and fuel economy, and reduces exhaust emissions and minimizes power train vibrations during engine start-up (the vehicle normally moves off on electric power, and the engine comes in when accelerating.

Упр. 15. Составьте реферативный пересказ об основных составляющих и преимуществах гибрида, используя следующие выражения:

The text is concerned with…. … are considered. It should be noted that…. The fact that…is stressed. It should be remembered that… .I find the text rather/very …

Unit 8

Internal Combustion Engine Valves and Valve Train

Упр. 1. Запомните новые слова и выражения и их значения.

1. air-pumping capacity – производительность воздушного насоса
2. cam-follower=valve-lifter – толкатель клапана
3. seat – седло клапана
4. capacity – способность, мощность, производительность

5. convex(adj) – выпуклый
6. draw(v) in - втянуть, втащить
7. jacket – чехол, кожух, рубашка
8. helical spring – цилиндрическая пружина
9. inward-opening poppet valve type – клапан тарельчатого типа, открывающийся вовнутрь
10. lever – рычаг, коромысло
11. linkage – сцепление, рычажный механизм
12. non-scaling – не деформирующийся
13. pivot(v) – вращать(ся) вокруг своей оси
14. poppet valve – тарельчатый клапан
15. push rod – штанга толкателя клапана
16. reciprocating pump – поршневой насос
17. reciprocation engine – поршневой двигатель
18. rocker arm – рокер, рычаг клапана (зд: коромысло)
19. tightness – непроницаемость, герметичность
20. valve guide – направляющая клапана
21. valve head ground – основание головки клапана
22. valve stem – стержень (шток) клапана
23. valve train – клапанный механизм

Упр. 2. Прочтите и переведите интернациональные слова.

Temperature, diameter, type, automotive, effect, extreme, design, to construct, metal, mechanism, mechanical, minute, to combine, cylinder, conical, block, distance, effective, roller, to activate, standard, automobile, operator, center.

Упр. 3. Переведите предложения на русский язык обращая, внимание на новые слова.

1. Poppet valves are cooled by transferring heat to the engine jacket, mostly through the valve stem. 2. Mechanically, an internal combustion engine is a reciprocating pump, able to draw in a certain amount of air per minute. 3. In most four-stroke engines, the valves are of the inward-opening poppet type, with the valve head ground to fit a conical seat in the cylinder block or cylinder head. 4. A follower or valve-lifter is riding on each cam, which may be a flat or slightly convex surface. 5. By valve train, we mean the valves and valve-operating mechanism by which the fuel/air mixture is taken into the cylinders and the combustion products

are discharged to the exhaust. 6. The operating linkage consists of cam follower, push rod and rocker arm.

Упр. 4. Переведите выделенные слова на английский язык, используя активный словарь урока.

1. (Головка клапана) is held concentric with its seat by a cylindrical (шток) running in the (направляющая клапана) 2. Since the fuel takes up little space but needs air with which to combine, the power output of an engine is limited by its (производительность воздушного клапана). 3. (Тарельчатые клапаны) are generally 2 inches in diameter or smaller. 4. (Выхлопные клапаны) are subject to the effects of extreme temperature and must be most carefully designed. 5. (Клапан) is opened by forces applied to the end of the (шток клапана) through a mechanical linkage activated by the (толкателем клапана). 6. (Шток толкателя клапана) is a light rod or tube with ball ends which carries the motion of the (толкателя кулачка) to the (коромысло). 7. (Коромысло) is a lever, pivoted near its center.

Упр. 5. Выберите правильное определение для каждого данного слова и переведите их на русский язык.

crankshaft, jacket, internal combustion engine, diesel engine, valve.

1. a part of a tube or pipe that opens and shuts like a door to control the flow of air, gas, liquid passing through it.
2. a cover that surrounds and protects some type of machines.
3. an engine that produces power by burning petrol used in most cars.
4. oil-burning engine in which ignition is produced by the heat of suddenly compressed gas.
5. a long piece of metal in a vehicle that is connected to the engine and helps to turn the wheels.

Упр. 6. Выберите правильный перевод словосочетаний, где слово "VALVE" является определяющим.

1. poppet valve	a) выпускной (выхлопной) клапан
2. metering valve	b) клапан с кулачковым приводом
3. intake valve	c) обратный клапан
4. throttle valve	d) шаровой клапан

5. ball valve	e) дроссельная заслонка
6. conical (seated) valve	f) наклонно расположенный клапан
7. flat valve	g) тарельчатый клапан
8. tappet valve	h) дозирующий клапан
9. exhaust valve	i) инжекторный клапан
10. muffler cutout valve	j) пластинчатый клапан
11. back-pressure valve	k) поворотная дроссельная заслонка
12. rotary throttle valve	l) впускной клапан
13. sloping valve	m) клапан выключения глушителя
14. injection valve	n) клапан с коническим седлом

Упр. 7. Переведите предложения на русский язык, обращая внимание на перевод прилагательных.

1. Vehicle design at the concept stage can result in optimum radiator location and frontal area as well as necessary mounting provision. 2. For comfort, the optimum damping should be as low as possible, and for safety the damping should be higher at high damper velocity. 3. The closer integration of the new engines and transmission has given a far more sophisticated and refiner level of performance. 4. Mercedes-Benz is the world's biggest maker of trucks, a leading van manufacturer and one of the world's largest builder's of buses. 5. One of the biggest contributors to increased fuel efficiency is the all-aluminium block. 6. The lighter vehicle could use smaller and lighter springs and shocks. 7. Two of the biggest benefits are its remote maintenance and diagnostic features. 8. Though weighing significantly less, variable single seats in the rear of the V-class provide even greater comfort and even more safety.

Упр. 8. Переведите предложения на русский язык, обращая внимание на употребление многофункционального слова "since".

1. Since the end of the World War II there has been a rapid development of jet engines. 2. The fuel economy improvement is considered relative to other means of improving economy, since weight reduction is not easy to achieve. 3. Since the first electric car appeared many changes have

taken place in the field of automobile industry. 4. Since the jet engine is a powerful source of energy, it is widely used for machines flying at supersonic speed. 5. In early days many of the cars broke since transmission were still unreliable and often went out of operation. 6. Since conventional headlights are not very effective, a new system has to be developed.

Упр. 9. Переведите предложения на русский язык, обращая внимание на перевод глаголов в пассивном залоге.

1. The camshaft is placed in the crankcase. 2. Poppet valves are used almost exclusively in internal combustion reciprocation engines. 3. The valve is opened wide by lifting it from its seat a distance equal to 25% of the valve diameter. 4. Valves are usually made of a stainless alloy which will keep its shape at high temperature. 5. The ignition system is divided into two circuits, low tension and high tension. 6. Two valves per cylinder are mounted vertically in the cast iron cylinder head. 7. The camshaft is supported by three bearings located directly in cylinder block. 8. As the engine operates, the valves are successively opened and closed. 9. The gas engine was greatly improved by the use of liquid fuels. 10 Engine valves are usually opened by means of cams.

Упр. 10. Переведите предложения на русский язык, обращая внимание на перевод причастия.

1. The design draws heavily on advanced research being conducted by Ford Advanced Vehicle Technology and its wealth of experience gained from motosports. 2. This is the biggest produced development programme carried out in Saab's history. 3. Honda knows the significance of the fast-growing C-segment diesel market. 4. Positioned in a market niche between conventional road-going cars and classic off-road vehicles, allroaders are gaining increasing importance. 5. Having decided to develop it own Research and Development Department, the company has produced some highly successful products over the years. 6. The axle shaft of the outside wheel being attached to the wheel, must revolve faster than the axle shaft of the inside wheel when turning to the right, and slower if turning to the left.

Упр. 11. Заполните таблицу, образуя указанные части речи.

VERB	NOUN	ADJECTIVE
….	design	…
….	…	constructive
compress	…	….
…	requirement	
…	…	strong
power	…	…
…	follower	…
…	…	applicable
link	…	…
activate	…	…
…	pivot	…
…	…	effective

Упр. 12. Переведите цепочки однокоренных слов.

1. associate – association – associated – associative
2. vary - variable – variety – variant – various
3. compete –competition – competitor – competitive – compatibility
4. simulate – simulated – simulator – simulation
5. convert – converter – conversion – convertible – convertibility
6. emit – emitted – emission –emissive
7. sense – senseless – sensibility – sensible – sensitive – sensor

Упр. 13. Прочитайте и переведите текст. Обратите внимание на перевод атрибутивных сочетаний (N+N), в которых главным является последнее слово.

Poppet valves are used almost exclusively in internal combustion reciprocation engines because of the demands for tightness with high operating temperatures and pressures. The valves are generally 2 inches in diameter or smaller on high-speed automotive-type engines. They are cam-operated and spring-loaded. They are cooled by transferring heat to the engine jacket, mostly through the valve stem. Exhaust valves are subject to the effects of extreme temperature and must accordingly be most carefully designed and constructed of alloy metals.

By valve train, we mean the valves and valve-operating mechanism by which an internal combustion engine takes air or a fuel-air mixture into the cylinders and discharges the combustion products to the exhaust. Mechanically, an internal combustion engine is a reciprocating pump, able to draw in a certain amount of air per minute. Since the fuel takes up little space but needs air with which to combine, the power output of an engine is limited by its air-pumping capacity.

It is essential that the flow through the engine can be restricted as little as possible. This is the first requirement for valves. The second is that they close off the cylinder during the compression and power strokes.

In most 4-stroke engines, the valves are of the inward-opening poppet type, with the valve head ground to fit a conical seat in the cylinder block or cylinder head.

The valve head is held concentric with its seat by a cylindrical stem running in the valve guide. The valve is held closed by a compressed helical spring. The valve is opened wide by lifting it from its seat a distance equal to approximately 25% of the valve diameter. Valves are usually made of a stainless, non-scaling alloy which will keep its strengthened shape at high temperature. Exhaust valves sometimes are made hollow and partially covered with metallic sodium to permit more effective cooling.

Engine valves are usually opened by means of cams.

A follower or valve-lifter is riding on each cam. It may be a flat or slightly convex surface, or a roller. The valve is opened by forces applied to the end of the valve stem through a mechanical linkage activated by the cam follower. The camshaft placed in the crankcase is usual in standard automobiles. The operating linkage consists of cam follower, push rod and rocker arm. The push rod is a light rod or tube with ball ends which carries the motion of the cam follower to the rocker arm. The rocker arm is a lever, pivoted near its centre so that as the push rod raises one end, the other end depresses the valve stem, opening the valve.

Упр. 14. Выполните письменный перевод следующего текста.

The engine that is fitted to all models in the Ford Fiesta is the four cylinder overhead valve engine, available in the following versions: 950

cc, 1100 cc, 1300 cc and 1600 cc. Variations in capacity are achieved by different crankshaft strokes and connecting rod length. All units are similar in design and different only in the size of certain components and the number of main bearings. Two valves per cylinder are mounted vertically in the cast iron cylinder head and run in valve guides. They are operated by rocker arms, push rods and cam follower which is located at the base of the cylinder bores in the right hand side of the engine. The correct clearance of valve stem to rocker arm pad (колодка) can be obtained by the adjusting screws in the ends of the rocker arms. The cylinder block and upper half of the crankcase are cast together with he open half of the crankcase.

Упр.15. Составьте аннотацию текста "Internal Combustion Engine Valves and Valve Train", используя следующие выражения:

The text deals with … It draws our attention to … Of special interest is the fact that … It is specially noted that …

Unit 9

The Light Green Powerhouse

Упр. 1. Запомните новые слова и словосочетания и их значение.

1. air-gap insulated manifold – изолированный патрубок с воздушным промежутком
2. bulkhead – поперечно расположенный (перемычка, перегородка)
3. coupe - купе
4. cracking process – процесс крекинга (образования трещин)
5. crankcase – картер двигателя
6. cure(v) – исправлять, устранять
7. cylinder liner – гильза цилиндра
8. cylinder bank – блок цилиндров
9. dual ignition – двойное зажигание
10. ignition timing – опережение зажигания
11. inherent drawbacks – присущие недостатки
12. intake/exhaust manifold – впускной/выхлопной коллектор
13. misfiring – перебои в зажигании
14. part load – частичная загрузка
15. power output – выходная мощность

16. powerplant –силовая установка
17. ram pipe – прямоточная труба
18. retain (v) – сохранять, удерживать
19. roller-type rocker arm – коромысло роллерного типа
20. sheet steel – листовая сталь
21. shut off - выключение
22. smooth(adj) – плавный, однородный
23. torque – крутящий момент
24. throttle valve – дроссельный клапан

Упр. 2. Прочтите и переведите интернациональные слова.

Detail, model, technical, technology automatic, modern, design, process, aluminum, magnesium, laser, emission, mechanism, microcomputer, control, harmonious, period, catalytic, to identify, to control, standard, to deactivate, maximum, efficiency, hydraulic, sensor, special, diagnostic system.

Упр. 3. Переведите предложения на русский язык обращая, внимание на новые слова.

1. The technical features of this 5,789 cc powerplant are known to have a power output of 367 ps (270 kW) at 5,500 rpm and an impressive torque of 530 Nm. 2. The crankcase is made of aluminium, with magnesium used for the intake manifold. 3. The new engine can instantly identify and cure any misfiring, which helps protect the catalytic converters. 4. Each cylinder bank features two bulkhead catalytic converters. 5. Automatic cylinder shut-off is expected to interrupt the link between the valves and camshaft hydraulically by locking the valve control arms. 6. One camshaft in each of the two cylinder banks operates the valves via low-friction roller-type rocker arms.

Упр. 4. Переведите выделенные слова на английский язык, используя активный словарь урока.

1. This includes (двойное зажигание), three valve technology, automatic (выключение цилиндра) and low friction (гильзы цилиндра). 2. The (выхлопной коллектор) is made of laser welded, high-pressure formed (листовая сталь). 3. Because of the three valve technology and the (изолированный коллектор с воздушным промежутком) the (по-

перечно расположенный катализатор) reaches its operating temperature just a few seconds after the engine is started from cold. 4. During (частичной загрузки) operation this cures the (присущие недостатки) of large-displacement engines. 5. (Выпускные клапаны) help reduce heat loss inside the engine. 6. (Плавность) and low noise emissions are fully retained during (выключение цилиндра).

Упр. 5. Выберите правильное определение для каждого данного слова и переведите их на русский язык.

coupe, cylinder, camshaft, valve, friction, throttle valve.

1. a car with two doors and a slopping back.
2. when one surface rubs against another; the natural force that prevents one surface from sliding easily over another surface.
3. a part of a tube or pipe that opens and shuts like a door to control the flow of air, gas, liquid passing through it.
4. shaft to which cams are attached.
5. the tube within which a piston moves towards and backwards in an engine.
6. valve controlling the flow of steam, petrol, vapour in an engine.

Упр. 6. Переведите предложения на русский язык, обращая внимание на употребление многофункционального слова “as”.

1. As airbags were added for frontal and side impact, more crash sensors and accelerometers were added to control airbag deployment. 2. As the concern for front seat passengers has grown so has the need for sensors if the passenger airbag needs to deploy. 3. As engineers have moved beyond antilock braking and traction control into electronic stability control (ESC), more sensors are required. 4. As more sensors become electronic or digital, they are interconnected and their output is used for more than one vehicle system. 5. To attract the best and the brightest, the industry needs to project an image of the automotive engineer as someone with skills and knowledge beyond mechanical engineering. 6. The modern automobile has often been described as a computer on wheels. 7. In 1997, Michelin made automotive history as the first tire company to offer zero-pressure or run-flat tires. (шины, обеспечивающие движение с нулевым давлением). 8. As a result air-conditioning is now standard on most new vehicles in the USA.

Упр. 7. Переведите предложения на русский язык, обращая внимание на перевод инфинитивного оборота "сложное подлежащее".

1. The principle of lightweight design is certain to be evident for Mercedes cars. 2. The cylinder liners are reported to provide additional weight savings up to 46 percent compared with the previous V12 engine. 3. The three-valve technology is also known to have helped in weight loss. 4. The new engine proves to be controlled by an innovative alternating current ignition system. 5. The deactivated combustion chamber is noticed to become fully operational once the accelerator is pushed. 6. One of the most noticeable technical feature of the new V12 engine is considered to be its exhaust system. 7. Emissions for the engine comply with Euro 4 is concluded to be introduced next year. 8. The ignition system is sure to be controlled both mechanically and by a vacuum operated system. 9. The transmission assembly is known to consist of the clutch, gearbox, final drive and several other units. 10. All models are supposed to use a floor mounted handbrake (parking brake) lever located between the front seats.

Упр. 8. Переведите предложения на русский язык, обращая внимание на перевод герундия.

1. The car doesn't give the impression of being huge and heavy. 2. Apart from its striking design and functionality, the Eclipse 2006 has incredible power and easy handling. 3. Modifying and fine-tuning the vehicle's suspension system made the Porsche 911 the best sport car. 4. Although the risk of being involved in a traffic accident is the same for motorcyclists as compared to other road users, the risk of a motorcyclist being injured in an accident much higher. 5. GM stated that meeting the wishes and needs of European drives was the first priority in designing the car. 6. The first engine appeared in the 17th century and people began using them to operate factories, irrigate lands, supply water to towns.

Упр. 9. Переведите цепочки однокоренных слов.

1. product –produce – produced – production –productive –productivity
2. separate – separation – separated – separately – separator
3. note – notice – noticeable – noticeably
4. advance – advantage – advantageous – disadvantage
5. occupy – occupier – occupation – occupational – occupant

6. imply – implicate – implication – implicit
7. attract - attractable –attractive –attraction – disattraction

Упр. 10. Образуйте существительные и переведите их .

-sion:	to divide, to convert, to explode, to activate, to compress, to emit, to transmit, to provide
-er:	to drive, to boil, to contain, to convert, to condense, to roll to follow to research
-ance:	to resist, to appear, to assist, to perform
-ence:	to depend, to differ, to exist, to occur
-ity:	electric, resistive, active, productive, possible, dense

Упр. 11. Образуйте прилагательные и переведите их.

-ive:	to effect, to act, to respect, induction, to affect, to alternate
-ful:	use, power, help, wonder, care
-less:	power, weight, motion, stain, effect
-ent:	to differ, to insist

Упр. 12. Прочитайте и переведите текст, обращая внимание на перевод инфинитивных конструкций.

Mercedes-Benz has shown details of its new V12 engine which is stated to be intended to go into the S-Class.

The technical features of this 5,789 cc powerplant are known to have a power output of 367 ps (270 kW) at 5,500 rpm and an impressive torque of 530 Nm available from 4,250 rpm. These technical features are reported to include dual ignition, three-valve technology, automatic cylinder shut-off, low-friction cylinder liners and modern lightweight design. It is sure to have a significant improvement on fuel economy.

The principle of lightweight design of Mercedes cars is certain to be evident: the new V12 weighs 222 kg. This is known to have been achieved by modern construction processes and intelligent material selection. The crankcase is made of aluminium, with magnesium used for the intake manifold, while the exhaust manifold is made of laser-welded, high-pressure formed sheet steel. Cylinder liners are said to use a special

aluminium-silicon alloy and connect rods manufactured in the so-called cracking process. They are also claimed to provide additional weight savings.

The three-valve technology is also known to have helped in weight loss, although its main advantages really revolve around fuel consumption and exhaust emissions.

One camshaft in each of the two cylinder banks operates the valves via low-friction roller-type rocker arms. A microcomputer-controlled adjustment mechanism is suggested to adapt camshaft control times to the appropriate road conditions, so help harmonious torque development, which is further followed by the complex geometry of the innovative ram pipe. Removing one of the outlet valves helps reduce heat loss inside the engine and creates the space to introduce two spark plugs for each combustion chamber.

The new engine proves to be controlled by an innovative alternating current ignition system. It can instantly identify and cure any misfiring, which helps protect the catalytic converters.

The V12 engine's standard cylinder shut-off system is mentioned to deactivate valve actuation and fuel injection for an entire cylinder bank when only part of the maximum output of torque is needed. During part-load operation this cures the inherent drawbacks of large-displacement engines, namely inadequate filling of the cylinder, low cylinder pressure and greater friction, which in turn adversely affect efficiency and fuel consumption. So smooth is the shut-off due to the electronic engine management system changing the throttle valve position and adjusting the ignition timing to prevent any sudden jump in torque, that it remains totally unnoticeable by the passengers. The deactivated combustion chambers are noticed to become fully operational once the accelerator is pushed.

Smoothness and low noise emissions are proved to be fully retained during cylinder shut-off. A valve in the mixing tube, leading to the underfloor catalytic converters, closes immediately when six of the 12 cylinders are shut off to prevent higher pressure waves occurring in the exhaust system. Automatic cylinder shut-off is expected to interrupt the link between the valves and camshaft hydraulically by locking the valve control arms. At the same time fuel supply and ignition on the left cylinder bank seem to be shut off.

Another technical feature of the new VI2 engine is considered to be its exhaust system: a total of six catalytic converters - four bulkhead catalysts plus two underfloor catalysts - and eight oxygen sensors reliably ensure that exhaust gas pollutants are purified.

Each cylinder bank has two bulkhead catalytic converters. Because of the three-valve technology and the air-gap insulated exhaust manifold the bulkhead catalytic converters is certain to reach their operating temperature just a few seconds after the engine is started from cold. Oxygen sensors are expected to monitor emissions going to and from the bulkhead converters. The data they provide is evaluated not only by the engine control unit but also by a special onboard diagnostic system. Emissions for the engine are concluded to comply with Euro 4.

Упр. 13. Выполните письменный перевод следующего текста.

VW's NEW POLO has the new gasoline direct injection 1.4-litre four cylinder engine which was first seen in the Lupo at the IAA show in Frankfurt in September. Available in three states of tune - 60 ps (44 kW), 75 ps (55 kW) and 100 ps (74 kW) - it features Boschs MED 7 Motronic engine management system. Bosch is the first European manufacturer of such a system for direct injection engines that work according to the stratified charge principle (принцип накопления заряда). Not only does this technology provide elastic, efficient and particularly dynamic - gasoline engines, it also has significant advantages in terms of consumption: depending on the load and engine speed, the Bosch system allows a reduction in consumption of fuel between 15 and 20 per cent - as measured in the European driving cycle for passenger cars - compared with conventional intake manifold injection systems. Unlike simpler systems, in which the engine is converted to direct injection but is only operated in stratified charge mode to a very limited extent. Bosch fully uses the savings potential of direct injection with this sophisticated concept: more than 70 per cent of road load (according to the European driving cycle) can be covered in the economical stratified charge range.

Упр. 14. Составьте аннотацию текста о двигателе V12, используя следующие выражения:

The text is concerned with … . … are considered. It should be noted that … . The fact that … is stressed. It should be remembered that … .

Unit 10

Lexus SC 430

Упр. 1. Запомните новые слова и выражения и их значения.

1. air bag – воздушная подушка
2. acceleration performance – динамический показатель (время разгона)
3. brake pedal – педаль тормоза
4. gate – кулиска
5. maintain(v) - поддерживать
6. pressure – давление
7. pretensioner – предварительный натяжитель
8. race car – гоночный автомобиль
9. rear-wheel drive – заднеприводный
10. semi-manual shifting – ручное полуавтоматическое переключение
11. slippery – скользкий
12. seat belts – ремни безопасности
13. skidding – занос, пробуксовывание
14. steer(v) - управлять
15. tire - шина
16. torque – крутящий момент
17. traction control – регулировка тягового усилия
18. wheel spin – пробуксовывание колеса

Упр. 2. Прочтите, запомните перевод следующих сокращений.

1. EBD (Electronic Brake-Force Distribution) – электронное распределение тормозной силы
2. VSC (Vehicle Skid Control) – контроль транспортного средства при заносе
3. mph (miles per hour) – миль в час
4. ABS (Anti-lock Braking system) – анти-блокировочная система
5. 5 rpm (revolutions per minute) – обороты в минуту
6. ESP (Electronic Stability Program) – программа электронной стабильности
7. AWD (All Wheel Drive) – привод на все колеса
8. SUV (Sport Utility Vehicle) – спортивный автомобиль
9. ASR (Anti-Slip Regulation) – антипробуксовочная система

Упр. 3. Прочтите и переведите интернациональные слова.

Comfortable, automatic, transmission, console, active, physical, technology, pedal, balance, resource, problem, proportion, universal, battery, indicator, energy, central, signal, project, acceleration, distance.

Упр. 4. Переведите предложения на русский язык обращая, внимание на новые слова.

1. The semi-manual gearshift can sense changes in engine performance. 2. The V8 engine with double-overhead cam produces 300 hp at 5600 rpm. 3. The five-speed automatic transmission shifts smoothly. 4. Active safety system includes ABS, EBD, traction control, VCS and Brake Assist. 5. When you suddenly take a maneuver, press down firmly on the brakes and steer in the direction you want to go and maintain hard pressure on the brake pedal. 6. Electronic Brake Force Distribution maintains the proper balance of braking force to all four tires.

Упр. 5. Переведите выделенные слова на английский язык, используя активный словарь урока.

1. The Lexus SC 430 has excellent (ремни безопасности) and side-impact (воздушная подушка). 2. ABS prevents brakes from locking up so that the driver (поддерживает) steering control. 3. The Lexus is not intended to be driven like (гоночный автомобиль). 4. The car has a very flexible engine with strong (крутящий момент) at low rpm so it's always ready to deliver smooth power. 5. The 18-inch (литые диски) are fitted with Dunlop summer tyres. 6. Brake Assist helps (поддерживать) hard pressure on the (педаль тормозов) when the system detects the driver is making mistake of relaxing (давление) on the brake pedal. 7. (Регулирование тягового усилия) reduces (пробуксовывание задних колес) when accelerating on (скользкой) surfaces. 8. The shifter has a C-shaped (кулиска) allowing (полуавтоматическое переключение). 9. (Динамические показатели) of Lexus SC is comparable to that of Mercedes and Jaguar. 10. (Самая высокая скорость) is about 156 mph more than fast enough.

Упр. 6. Выберите правильный перевод словосочетаний, где слово "DRIVE" является определяющим .

1. cam drive	a) кулисный привод
2. variable-speed drive	b) сервопривод
3. single camshaft chain drive	c) передача двумя валами
4. link drive	d) реечная передача
5. universal-joint drive	e) червячная передача
6. servo drive	f) кулачковый [эксцентриковый] привод
7. rack-and-pinion drive	g)передача от полуоси к колесу
8. quill drive	h) передача с плавно регулируемым числом оборотов
9. worm gear drive	i) карданный привод
10. double shaft drive	j) передача в заднем мосте
11. hub drive	k)ординарный цепной привод распредвала
12. rear-axle drive	l) передача с полым валом

Упр. 7. Выберите правильное определение для каждого данного слова и переведите их на русский язык.

maneuver, horsepower(hp), steer(v), interior transmission, safety valve, air-bag.

1. the inner part or inside of the car.
2. the parts of a vehicle that take power from the engine in the wheels.
3. a unit for measuring the power of an engine.
4. a part of a machine that allows gas, steam etc. to escape when the pressure becomes too great.
5. a skilful or careful movement that you make, for example in order to avoid something or go through a narrow space.
6. to control the direction a vehicle is going, for example by turning a wheel.
7. a bag in a car, that fills with air to protect the driver or passenger in an accident.

Упр. 8. Переведите предложения на русский язык, обращая внимание на употребление многофункционального слова “one”.

1. A universal joint is a flexible connection between two shafts, which permits one to drive another. 2. The cost of a heavier fuel is much less than that of a light one. 3. One more important problem worked at by the designers is the engine reliability. 4. Ford cars are equipped with an electronic instrument panel that calculates how far one can drive on the fuel left in the tank. 5. One assumes that lots of people were impressed by the new of Mercedes presented at the show. 6. One of many systems, affecting customer satisfaction and environmental impact, is air-conditioning.

Упр. 9. Переведите предложения на русский язык, обращая внимание на перевод инфинитива.

1. One of the best ways to keep the car speed steadily is to use a computer. 2. A special electronic device signals the engine to stop. 3. Radar may control the brakes to avoid collisions with other cars. 4. High temperature alloys make it possible for jet engines to be operating under severe conditions for a long period of time. 5. Recently a radar to be mounted on cars has been developed. 6. In a new Japanese car the information to be received by the driver will come through a navigation earth satellite. 7. The radar detects the stationary objects ahead of the car to warn the driver about the danger and slow down the speed. 8. There remains one more test to be carried out before using the device. 9. In internal combustion engines the pressure of gases forces the piston to go down. 10. The “night vision” system is to be small enough to be used in automobiles. 11. Infrared rays emitted by any object on the road are to be intensive enough for sensors to pick them up. 12. The Voice Warning system for cars requires the connection of 18 wires, but it is simple enough to be installed in a car.

Упр. 10. Переведите предложения на русский язык, обращая внимание на перевод инфинитивного оборота “сложное подлежащее”.

1. On tests Golf proved to be well built, spacious for its size. 2. The sedan version is supposed to be the fastest way of finding new customers. 3. Diesel sales are expected to make up some 70 percent of Superb sales. 4. The reality of today is that the automotive engineer is expected to know about far more than just mechanical engineering. 5.

Audi 2 is claimed to be the world's first aluminium car to be signed off for volume production. 6. Parents who were more liberal concerning traffic rules were also more likely to allow their children to travel without safety belt. 7. People's emotions are stated to play the most important role in the purchase of their automobile.

Упр. 11. Образуйте от данных слов слова с противоположным значением, используя суффиксы, и переведите их.

un-:	desirable, solved, natural, limited, able, noticeable
non-:	metallic, ferrous, breakable
in-:	complete, ability, expensive, effective, convertible, adequate
im-:	possible, permanent, measurable
ir-:	regular, respective
il-:	legal
dis-:	order, advantage, to connect, to like, to charge, to appear
mis-	use, understanding, firing
pre-:	heated, determined, set

Упр. 12. Прочитайте и переведите текст. Найдите ключевые слова и выражения, которые передают основную мысль текста. Составьте аннотационный перевод.

The Lexus SC 430 is a luxurious roadster that converts to a hardtop coupe with a the press of a button. It's smooth and quiet, powerful and enjoyable to drive. Its interior is beautiful, comfortable, and luxuries. It's a terrific two-seats car for a long drive for all practical purposes,

The Lexus SC 430 is enjoyable to drive. Its rear-wheel-drive is the proper layout for a performance car; it is not intended to be driven like a race car. It is, after all, a Lexus, designed to excel in the areas of comfort and refinement.

The SC 430 is quick, but not lightning quick. It's capable of accelerating from 0-60 mph in 5.9 seconds, according to Lexus. The double overhead-cam 4.3-liter all-aluminum V8 produces 300 horsepower at 5600 rpm and 325 pounds-feet of torque at 3400 rpm. The

SC 430 offers acceleration performance comparable to that of the Mercedes SL 500 and Jaguar XK8. Top speed of the SC 430 is about 156 mph more than fast enough. When driving around town the Lexus is smooth, quiet and sophisticated. It's a very flexible engine, with strong torque at low rpm, so it's always ready to show its power when you are pressing the accelerator and it’s never struggling to deliver smooth power.

The five-speed automatic transmission shifts smoothly. It features three shift modes (Normal, Sport, Winter). Mounted on the floor console, the shifter has a C-shaped gate, allowing semi-manual shifting. The Lexus transmission is designed to be smooth, not quick, however, so it does not respond as quickly as a Mercedes or Porsche transmission, even in Sport mode.

The SC 430 features the latest in active safety system that will do everything physically possible to keep the car headed in the direction the driver is steering : anti-lock brakes (ABS), electronic brake-force distribution (EBD), traction control. Vehicle Skid Control (VSC) and Brake Assist. This is great technology to have as it can help you to avoid an accident. While it's good to have at least a proper understanding of what these systems do, it's less important to understand how they work. The important thing to know is that when faced with having to suddenly take a maneuver, you should press down firmly on the brakes, remember to look and steer in the direction you want to go, all the while maintaining hard pressure on the brake pedal.

ABS prevents the brakes from locking up so that the driver maintains steering control. Electronic brake-force distributions (EBD) maintains the proper balance of breaking force to all four tires. Brake Assist (BA) help maintain hard pressure on the brake pedal when the system detects the driver is making the mistake of relaxing pressure on the brake pedal. Vehicle Skid Control (VSC) reduces skidding in a corner by correcting for oversteer or understeer. Traction control reduces rear wheel spin when accelerating on slippery surfaces. If that doesn't save you the SC 430 has excellent seat belts with pretensioners so be sure and use them. It has side-impact airbags in addition to the dual frontal airbags. The 18-inch alloy wheels are fitted with P245/40z R18 Dunlop summer tires. The Lexus SC 430 is very smooth and very pleasant and costs much less than other cars in this class.

Упр. 13. Выполните письменный перевод следующего текста.

Controlling the exhaust gas behavior in low consumption lean mode is a great challenge for direct fuel injection. The resulting nitrogen oxide emissions are lower as they leave the engine than with conventional gasoline engines and are lowered further through high exhaust gas recirculation rates: however, they cannot be reduced by the familiar three-way catalytic converter. The new NOx storage catalytic converter required for compliance with the strict exhaust emission laws must be regenerated every minute. To do this, the mode is briefly switched from 'lean stratified' to 'normal homogeneous'. The most difficult task here relates to the engine management system which has to switch back and forth between the two modes instantaneously and unnoticed by the driver. The Motronic MED 7 engine management system - the first series concept of this type - specially developed by Bosch for direct injection gasoline engines is intended for these management tasks. Its task is to control the fuel quantity, throttle valve and ignition angle in such a way that the engine torque remains constant during the switchover. In conjunction with the electronic EGAS throttle valve controller, the MED 7 system represents the decisive basis for the introduction of BDE into series-type production.

Упр. 14. Составьте аннотацию текста, рассказывающего об основных технических и эксплуатационных характеристиках Lexus SC 430, используя следующие выражения:

The text deals with… . Attention is drawn to the fact that… .It is pointed out that… . It should be noted that… **.**

Unit 11

VW New Beetle 1.8

Упр. 1. Запомните новые слова и выражения и их значения.

1. adapt (v) – регулировать, приспосабливать
2. adjust(v) – регулировать
3. bump – столкновение, удар
4. damping characteristics – амортизирующие характеристики

5. dashboard – приборная доска
6. disc brakes – дисковые тормоза
7. distinguish (v) – отличать. различать
8. fender – крыло автомобиля
9. flat cornering – небольшой крен на поворотах
10. folding key - складной ключ, (чип)
11. fuel consumption – потребление топлива
12. grip – сцепление
13. intrusion – внедрение, вмешательство
14. pads - колодки
15. pollen filters – фильтры тонкой отчистки
16. pop-up – приподнятый, выдвижной
17. power windows with front one-touch down feature – электростекло-подъемники
18. rain sensing windshield wipers – стеклоочистители, реагирующие на дождь
19. rear – задний
20. remote control – пульт дистанционного управления
21. self-dimming – самозатемняющееся
22. shift knob – кнопка переключения
23. spoiler – спойлер, закрылка
24. suspension – подвеска
25. tilt telescoping steering wheel – серворуль (рулевое колесо на телескопической колонке с переменным углом наклона)
26. traction control – контроль тягового усилия
27. transferable power train warranty – гарантия, допускающая замену силового агрегата
28. torque – крутящий момент
29. washer nozzles (windshield) – форсунки стеклоомывателя

Упр. 2. Прочтите и переведите интернациональные слова.

Standard, lamp, bumper, virtual, tachometer, model, sport, litre, comfort, automatic transmission, season, disc, control, regulate, plastic, cruise control, simulate, principle, hydraulic, project, distance.

Упр. 3. Переведите предложения на русский язык обращая, внимание на новые слова.

1. The new model has some standard features such as light alloy wheels, front fog lamps, perforated leather seats . 2. The New Beetle 1.8T's suspension is similar to the Golf. 3. A safety feature on the new Beetle 1.8T is EDL low speed traction control. 4. Standard equipment on the GLS model includes front fog lamps, pop-up rear spoiler and full-size spare tire. 5. The New Beetle has 2year/40,000km warranty. 6. New Beetle is very comfortable on the highway and it's fun to drive around town. 7. The optional 4-speed automatic transmission can be adapted to the driver's style and it changes with gentle bump. 8. The EDL(electronic differential lock) and ABS(anti-lock brakes) automatically prevent front driving wheels from spinning in slippery conditions.

Упр. 4. Переведите выделенные слова на английский язык, используя активную лексику урока.

1. The New Beetle's turbocharged 1.8 litre engine's (потребление топлива) is 10.7 1/100 km (22 mpg) in the city. 2. The New Beetle exhibits very (небольшой крен на поворотах), excellent (амортизирующие характеристики) and a high level of (сцепление). 3. It also has speed-sensitive wipers, cruise control, (складной ключ) with remote control, (фильтры тонкой очистки) and rear-reading lights. 4. The 1.8T GLX adds (стеклоочистители, реагирующие на дождь), heated washer (форсунки стеклоомывателя) and (самозатемняющееся) rearview mirror. 5. Standard equipment of new Beetle includes five speed manual transmission, four wheel (дисковые тормоза), plastic (передние и задние крылья). 6. The ASR (anti-slip regulation) high-speed (контроль тягового усилия сцепления) can be turned on and off with the button on the (приборная доска). 7. The warranty for (тормозные колодки) is for the first 12 months.

Упр. 5. Выберите правильное определение для каждого данного слова и переведите их на русский язык.

bumper, tachometer, speedometer, traction, alloy, highway, grip.

1. a metal that consists of two or more metals mixed together.
2. a wide main road that joins one town to another.

3. a bar fixed on the front and back of a car to protect it if it hits anything.
4. power and control over something or someone.
5. the force that prevents something such as a wheel sliding on a surface.
6. a piece of equipment used to measure the speed at which the engine of a vehicle turns.
7. instrument in a vehicle that shows how fast it is going.

Упр. 6. Выберите правильный перевод словосочетаний, где слово "DRIVE" является определяющим.

1) twin-camshaft chain drive	a) шестеренный привод клапанного механизма
2) camshaft drive	b) цепной привод с двумя распредвалами
3) camshaft gear drive	c) привод от двигателя
4) rear-axle gear drive	d) привод счетчика пробега
5) pneumatic drive	e) поршневой привод
6) engine drive	f) привод с тремя ведущими мостами
7) valve-gear drive	g) шестеренный привод распредвала
8) odometer drive	h) привод распредвала
9) multiple strand drive	i) пневматический привод
10) piston drive	j) шестеренная передача
11) tri-axle drive	k) передача с несколькими клиновыми ремнями

Упр. 7. Переведите предложения на русский язык, обращая внимание на перевод глаголов с предлогами, стоящими после них.

1. This accounts for the fact that the world at large uses a great number of automobiles. 2. Charles Rolls was an aristocrat and businessman and he was especially interested in cars. 3. Stabilization can be carried out by adding substances that harden the soil, and greatly increase its comprehensive strength. 4. In the 1960s, vehicles were equipped with oil pressure, fuel level and temperature coolant sen-

sors. 5. The dynamometers can cope with front- , rear-, and four-heel drive configurations. 6. The first electrical cars were built at the end of the 19th century, but they couldn't compete against the internal combustion engine. 7. The valve train consists of the valves and a mechanism that opens and closes them.

Упр. 8. Переведите предложения на русский язык, обращая внимание на перевод причастия.

1. Staying true to its Scandinavian design heritage the 9-3 Saab is a pragramatic and functional car. 2. The new 2-litre petrol engine, developed at the company's plant in Sweden is 15 kg lighter than it predecessor. 3. Coupled with the new styling features is an abundance of chrome, including a chrome-plated side grille, fuel cap and twin tailpipes in the middle of the rear bumper. 4. Honda predicts that diesel sales will contribute to grow, especially with tax incentives and benefits being offered on alternatives to petrol. 5. The car was designed with the needs of young families leading an active way of life in mind. 6. Until now, Jaguar station wagons were relatively rare, appearing only as the result of modifications performed by British companies such as Lynx. 7. The car automatically adjusts the clearance, lowering the vehicle at high speeds and raising it the vehicle at for city driving. 8. Increasing road traffic intensifies the demands being made on drivers.

Упр. 9. Переведите предложения на русский язык, обращая внимание на перевод инфинитивного оборота "сложное дополнение".

1. I observed the 1.8T to have some standard features, typical for Volkswagen. 2. For its size, I found the 1.8 liter engine to develop a lot of power and a lot of torque. 3. I expected my test car to have the optional 4-speed automatic transmission with adaptive shift points that adapt to the driver's style. 4. I noted the New Beetle to exhibit excellent driving performance. 5. I assumed these automatically to prevent the front driving wheels from spinning in slippery conditions. 6. I also found standard equipment on the GLS model to include the turbocharged 1.8 litre four cylinder engine.7. I consider a 5 year/80,000 km transferable powertrain warranty to be also standard.

Упр. 10.Образуйте новые части речи и переведите их на русский язык.

re-:	to use, to take, to name, to charge, to create, to group, to equip, to move, to place, to generate
super-:	low, critical, to cool, man, car, to heat, conductive, cool
sub-:	to divide, division, station, way, group, normal, system
en-:	able, circle, large, close, force, rich
over-:	to estimate, to charge, to heat, to cool, to load, to pay, to value, to take
inter-:	to charge, to mix, to act, change, connection, dependence, communication, cooler
under-:	to charge, to value, to estimate

Упр. 11. Прочитайте и переведите текст. Пополните свой терминологический словарь.

If you were hoping to impress your friends with the 150 horsepower New Beetle 1.8T, you might be disappointed. The 1.8T is virtually indistinguishable from the standard New Beetle model with the 115 horsepower 2.0 liter four cylinder engine. I observed the 1.8T to have some standard features, such as alloy wheels, front fog lamps, perforated leather seats and a sport steering wheel.

For its size, I found the 1.8 liter engine to develop a lot of horsepower, and more importantly, a lot of torque. On the highway the engine turns over a comfortable 2800 rpm at a steady 100 km/h, a bit higher than average.

The New Beetle's turbocharged 1.8 litre engine's fuel consumption is 10.7 l/100 km in the city and 7.8 l/100 km on the highway. It uses Premium grade gasoline.

I expected my test car to have the optional 4-speed automatic transmission with adaptive shift points that adapt to the driver's style, whether it's gentle or aggressive. This transmission changes with a gentle bump. The New Beetle 1.8T's suspension is similar to the Golf. I noted the New Beetle to exhibit very flat cornering, ex-

cellent damping characteristics, a comfortable ride, and a high level of grip 205/55R-16 all-season tires are standard on 1.8T models.

Like all New Beetles, the Beetle 1.8T has standard four wheel disc brakes with ABS (anti-lock brakes). I was impressed with the power of these brakes and the added safety of standard ABS. A safety feature offered on the New Beetle1.8T is EDL (electronic differential lock), low-speed traction control, and ASR (anti-slip regulation) high-speed traction control. I assumed these automatically to prevent the front driving wheels from spinning in slippery conditions. For those who don't want this computerized intrusion into their driving style, the ASR can be turned on and off with a button on the dashboard.

Overall, I found the New Beetle 1.8T fun to drive around town and very comfortable on the highway. The extra power of the turbocharged engine helps when changing lanes, accelerating onto the freeway, and passing slower automobiles, and it makes the whole driving experience more enjoyable.

I also found standard equipment on the GLS model to include the turbocharged 1.8 litre four cylinder engine and five-speed manual transmission, four wheel disc brakes with ABS, power steering, ASR and EDL, body coloured bumpers, plastic front and rear fenders, tinted green glass, front fog lamps, power heated mirrors, pop-up rear spoiler, full-size spare tires and 205/55R-16 inch tires with steel wheels and wheel covers.

Also standard on the GLS are power windows with front one-touch down feature, speed-sensitive wipers, air conditioning, alarm and immobilizer, cruise control, tachometer, folding key with remote control, central door locking, height-adjustable front seats, tilt/telescoping steering wheel, pollen filters, and rear reading lights.

The 1.8T GLX adds the leather seats, Monsoon sound system, sunroof, heated front seats, leather-wrapped steering wheel and shift knob, rain-sensing windshield wipers, heated windshield washer nozzles, and self-dimming rearview mirror.

The New Beetle 1.8T has Volkswagen's 2 year/40,000 km warranty - wear and tear items like brake pads are included for the first 12 months. I consider a 5 year/80,000 km transferable powertrain warranty to be also standard.

Упр. 12. Выполните письменный перевод следующего текста.

With the DISRTONIC distance monitoring system, proximity to the vehicle in front can be kept to the limit without the driver right to decide. In practice, driving with the DISTRONIC system is like having one's own car linked to the vehicle in front by a virtual towbar. And since it is coupled with the TEMPOMAT cruise control function, hardly anything new needs to be learned: By means of the small lever on the steering column, the driver sets the desired speed initially in steps 10 km/h (about 6 mph) and with fine adjustments of 1 km/h, and if no one else is on the road, the car nicely maintains this speed thanks to the braking action.

Whenever the driver initiates braking, DISTRONIC is deactivated automatically, as there is also the case when the Electronic Stability Program(ESP) intervenes to avoid skidding. A little movement of the hand-operated lever reactivates the functions. But the distances alert can also be used without automatically triggering brake activation. The distance to the vehicle in front is still measured and shown on a scale in display; however, should the gap narrow to the hazardous degree, the system contents itself with issuing a visual warning and a double audible tone.

Упр. 13. Составьте письменный реферат об основных технических характеристиках автомобиля New Beetle 1.8T, используя следующие выражения:

The text deals with … . The text gives a valuable information on … . Attention is drawn to the fact that … . …are discussed. Underlined is the conclusion that … .

Unit 12

Transport for Tomorrow

Упр. 1. Запомните новые слова и их значение.

1. adjust (v)– регулировать
2. angle - угол
3. apply (v)– применять
4. avoid (v)- избегать

5. axis - ось
6. brakes – тормоза
7. buzzer – звуковой сигнал
8. current (adj)– современный, текущий
9. destination – пункт назначения
10. detect (v)- обнаруживать
11. directly - прямо
12. ensure (v)- обеспечивать, гарантировать
13. equip (v)- оборудовать
14. exceed (v)- превышать
15. exhaust - выхлоп
16. guidance – управление, наведение
17. ignition - зажигание
18. indicate(v)указывать, показывать
19. mount (v)- монтировать, устанавливать
20. sophisticated - сложный
21. withstand (v)- выдерживать

Упр. 2. Прочтите и переведите интернациональные слова.

Public, transport, efficient, office, problem, to plan, modern, electric, person, automatic, system, telephone, address, decade, automobile, radio, electronics, corporation, computer, monitor, carburetor, economy, instrument, panel, microelectronics, to control, radar, design, bumper, object, stationary.

Упр. 3. Переведите предложения на русский язык обращая, внимание на новые слова.

1. With an automatic guidance system for cars being developed, it will be possible for us to select our destination. 2. At present sophisticated electronics is playing a big part in current automotive research. 3. In every gasoline-powered car there is a small computer continuously monitoring the exhaust. 4. The device adjusts the vehicle carburetor fuel intake to get the best fuel economy. 5. Radar may control the brakes to avoid collisions and a display screen may show the car's position on the road. 6. The radar aerial looks like a third headlight placed directly above the bumper. 7. The red light and buzzer on the instrument panel warn that the speed should go down. 8. Another red light and sound signal

make the driver apply the brakes. 9. The car's four-wheel control system ensures movement diagonally and even sideways at right angles to the longitudinal axis.

Упр. 4. Выберите правильное определение для каждого данного слова и переведите их на русский язык.

radar, lane, monitor, collision, transport, navigation, traffic, destination, journey.

1. a system or method for carrying passengers or goods from one place to another.
2. a place that someone or something is going to.
3. one of the two or three parallel areas on a road which are divided by painted lines to keep traffic apart.
4. a time spent traveling from one place to another, especially over a long distance.
5. a piece of equipment that uses radio waves to find the position on things and watch their movement.
6. an accident in which two or more people or vehicles hit each other while moving in different directions
7. the science or job of planning which way you need to go when you are traveling from one place to another.
8. a television or part of a computer with a screen, on which you can see pictures or information.
9. (movement) of people and vehicles along roads and streets, of aircraft in the sky.

Упр. 5. Переведите предложения на русский язык, обращая внимание на употребление многофункционального слова "for".

1. Careful design of body panels and joins is the best starting point for corrosion prevention. 2. For corrosion resistance the following items should be considered by the designer. 3. Sensor manufacturers are searching for better ways to design and manufacture of sensors. 4. When a car turns a corner, it is necessary for the outside wheel to revolve faster, because it has a longer distance to travel than the inside wheel. 5. To insure maximum safety for the transportation system, it is necessary to plan and design highways on sound engineering techniques. 6. For this

reason the automobile is provided with four or five changes of gears. 7. Motorists had to carry large cans of fuel and separate spare parts, for there were no repair or filling stations to serve them.

Упр. 6. Переведите предложения на русский язык, обращая внимание на перевод сложных предлогов.

1. The word ”clutch”, as used in connection with automobiles, indicates a device attached to cars having changed speed gears of the sliding type. 2. Modern roads should be designed according to the anticipated volume and speed of the traffic. 3. The night vision system uses a unique camera that, due to its small dimensions, can be placed so close to the driver’s head that it duplicates his/her view as closely as possible. 4. In spite of the car having the larger engine, the price of new model has remained unchanged. 5. The differential is automatic mechanism which operates according to the resistance of the road against the revolving wheels.

Упр. 7. Переведите предложения на русский язык, обращая внимание на перевод причастий.

1. Having designed a car radar the engineers started complex tests. 2. While driving a car one should be very attentive. 3. A new electronic instrument calculates how far one can drive on the fuel left in the tank. 4. The engine tested showed that it needed no further improvement. 5. Scientists are experimenting with a system allowing drivers to see better after dark. 6. The system being tested will increase the safety and fuel efficiency of a car. 7. The night vision system designed was available in the 1990’s. 8. Recently there appeared battery-powered cars. 9. The radar used was of a completely new design. 10. Being provided with batteries an electric car can develop a speed of 50 miles an hour. 11. When mass produced, electric cars will help solve ecological problems of big cities. 12. A defect undetected caused an accident. 13. Though first developed for military purposes radar can be used in modern cars.

Упр. 8. Переведите предложения, содержащие независимый причастный оборот.

1. Today’s vehicles are composed of many systems, each affecting customer satisfaction and environmental impact. 2. The steam engine having been invented in 1825, a self-propelled vehicle was built. 3. The German N. Otto

having invented the gasoline engine, the application of this engine in motor cars began in many countries. 4. The cars at that time were very small, the engine being placed under the seat. 5. Brakes having become more efficient, cars achieved greater reliability. 6. Cars with internal combustion engines having appeared, the automobile industry began developing rapidly. 7. By 1960 the number of cars in the world had reached 60 million, no other industry having ever developed so quickly.

Упр. 9. Переведите предложения на русский язык, обращая внимание на перевод инфинитивного оборота "сложное дополнение".

1. This enables a large number of features to be incorporated including automatic air conditioning with a day/night function. 2. The system allows the driver to access various layers of functionality via easy-to-use menu. 3. Clutch is a device which permits the engine to be connected with, or disconnected from, the transmission mechanism. 4. A unique rear suspension and lowered floor allow for the batteries and electronics to be packaged behind the rear seat. 5. We suppose these new kinds of alloys to be used for the production of bearings and gears.

Упр. 10. Заполните таблицу, образуя указанные части речи.

VERB	NOUN	PERSON	ADJECTIVE
compete	….	….	….
…	action	….	….
….	…	transporter	….
…..	…..	….	productive
assemble	….	….	-----
….	manufacture	…..	-----
found	…..	….	-----
…	drive	….	….
…	….	----	reducible
…	….	….	indicative

Упр. 11. Переведите цепочки однокоренных слов.

1. restrain – restrained – restraining – restrains
2. absorb – absorbent –absorber –absorbing absorption
3. visibility – visible – visibly – vision – visual
4. enhance – enhancement – enhancing – enhanced
5. apply – application –applicable – applied – applied – appliance – applicant
6. rely – reliable –reliability – reliance
7. evolve – evolution – evolved – evolving
8. link – linkage – linked – linking

Упр. 12. Прочитайте текст. Поделите текст на смысловые части и переведите ту часть, которая наиболее точно выражает основную идею текста.

One thing is certain about the public transport of the future: it must be more efficient than it is today. The time is coming when it will be quicker to fly across the Atlantic to New York than to travel from home to office. The two main problems are: what vehicle shall we use and how can we plan our use of it?

There is already a number of modern vehicles which are not yet in common use, but which may become a usual means of transport in the future. One of these is the small electric car: we go out into the street, find an empty car, get into it, drive to our destination, get out and leave the car for the next person who comes along. In fact, there may be no need to drive these cars. With an automatic guidance system for cars being developed, it will be possible for us to select our destination just as today we select a telephone number, and our car will move automatically to the address we want.

For long journeys in private cars one can also use an automatic guidance system. Arriving at the motorway, a driver will select the lane he wishes to use, switch over to automatic driving, and then relax - dream read the newspaper, have a meal, flirt with his passenger - while the car does the work for him. Unbelievable? It is already possible. Just as in many ships and aircraft today we are piloted automatically for the greater part of the journey so in the future we can also have this luxury in our own cars.

Some decades ago, the only thing electronic on most automobiles was the radio. But at present sophisticated electronics is playing a big

part in current automotive research. For example, in every gasoline-powered car that General Motors Corporation makes there is a small compute continuously monitoring the exhaust. The device, about the size of a pack of cigarettes, adjusts the vehicle carburetor fuel intake to get the best fuel economy. Ford cars are equipped with an electronic instrument panel that, among other things, calculates how far one can drive on the fuel left in the tank. It also estimates the time of arrival at destination and. tell the driver what speed he has averaged since turning on the ignition.

According to specialists these features made possible by microelectronics are only the beginning. Radar may control the brakes to avoid collisions, and a display screen may show the car's position on the road. Recently a radar to be mounted on lorries and cars has been designed in the USA. The radar aerial looks like a third headlight placed directly above the bumper. Having summed up the information about the speed and distance of various objects ahead, the computer detects all possible dangers and their nature. A third component in the system is a monitor on the instrument panel. The radar only observes objects ahead of the vehicle. It is automatically turned on when the speed exceeds ten miles an hour. The green light on the panel indicates that the system is on. The yellow light warns of stationary objects ahead, or something moving slower than the car. The red light and buzzer warn that the speed should go down. Another red light and sound signal make the driver apply the brakes.

A Japanese company designed a car of a new generation which started running on the roads in the 90s. When completed, the new model has a lot of unusual characteristics. The car's four-wheel control system ensures movement diagonally and even sideways, like a crab, at right angles to the longitudinal axis. This is especially important when leaving the car in parking places. To help the driver get information while concentrating on the road the most important data is projected on the wind screen. A tourist traveling in such a car does not lose his way even in Sahara with its impossible roads: a navigation Earth satellite indicates the route.

Упр. 13. Выполните письменный перевод следующего текста.

A new vacuum-controlled constant velocity carburetor developed by an American company offers several advantages over ordinary

carburetors, including 25 percent gasoline economy, improved engine performance and easier starting. The device having only 54 parts compared with some 300 in conventional carburetors has no choke (дроссель). It constantly adjusts the mixture of fuel and air, which cannot be done in usual carburetors. Provided with special mechanism the carburetor helps the engine turn on at once in cold weather. Though developed quite recently it is already being used by cars and other kinds of public transport. With diesel engine becoming almost standard equipment, the vacuum carburetor will never be used on new cars. It may be said that present-day carburetors are a dinosaur and in 20 years they won't be any more. But there are some countries which are interested in importing the device as a replacement for existing carburetors.

Упр. 14. Составьте письменный реферат текста "Transport for tomorrow", используя следующие выражения:

The text is devoted to … … are discussed. It is spoken in detail … Much attention is given to … The author comes to the conclusion that …

ДОПОЛНИТЕЛЬНЫЕ ТЕКСТЫ ДЛЯ ПЕРЕВОДА

Extending the Benefits of ESC

In 2005, the automotive industry celebrated 10 years of manufacturing a technology that proved invaluable for increasing passenger vehicle safety. Electronic stability control (ESC) first came to market on the 1995 Mercedes-Benz S-Class. Since being introduced, ESC has received numerous accolades for its ability to reduce vehicle crashes by decreasing skidding and improving vehicle stability. Most recently, the National Highway Traffic Safety Administration (NHTSA) confirmed ESC's significant role in passenger safety, indicating that the technology reduced fatal SUV crashes by 67%, and fatal car crashes by 35%.

An important aspect of ESC is its ability to work in conjunction with other safety applications. Rollover mitigation (ROM) is one example of this flexibility at work. Through existing ESC sensors, ROM can help reduce rollover risk by determining when a vehicle is experiencing extreme lateral tire forces, and activate to reduce those forces. Additionally, trailer sway mitigation uses existing ESC system components to prevent unstable oscillations and trailer sway through brake interventions on the tow vehicle.

Looking further into the future, it is evident that ESC will serve as a gateway for other important safety systems. The range of data ESC provides can significantly influence the performance of technologies such as adaptive cruise control (ACC), airbags, collision mitigation, and automatic emergency brake systems. For example, while ACC can theoretically function without ESC, when ESC data is provided, the performance and benefits of ACC are expanded for the driver. Specifically, ESC provides an increased deceleration capability through active braking without sacrificing vehicle stability. Additionally, in the event of an emergency braking situation, ESC allows the vehicle to maximize braking, which in the future will assist collision-mitigation technologies in avoiding an accident or at least minimizing the effects of a collision.

Likewise, as ESC helps to maximize braking scenarios, it can also interact with airbags to result in more effective deployments. ESC has the ability to act as an early indicator, communicating to the airbags

that a vehicle is in an unstable condition (such as sliding sideways). By pre-arming the airbags with more comprehensive data, the airbags are then able to deploy more quickly and accurately.

Not only does performance improve when controllers from one system are able to communicate with controllers of another system, but this interaction also provides a way to reduce costs for automakers; further reason for the industry to become involved in initiatives such as Automotive Open System Architecture. Defining a worldwide industry standard for basic functions and interfaces in every automotive electronic control unit is a necessity to ensure the effective application of these future, system-to-system interfaces. This common standard is also the only way the industry is truly makes the shift from thinking about vehicle safety in terms of crash worthiness to thinking about it from the perspective of crash avoidance, which ultimately saves more lives. And ESC is a key starting point for this growth in system-to-system interface.

BMW's Drivetrain For Tomorrow

One of BMW's core competencies is the development of combustion engines. During recent years BMW has significantly reduced both fuel consumption and emissions in its engines, while simultaneously increasing performance and torque. The latest milestones from these efforts are the first-ever variable twin-turbocharger diesel power unit in a road vehicle, making its debut in the new BMW 535d, and the new BMW six-cylinder gasoline engine with 12% increased power and 12% less consumption. In the future, the introduction of spray-guided direct injection and the implementation of "lean combustion" will bring consumption in the gasoline engine closer to the values attained by modern diesel units.

An important component in developing drive technology lies in intelligent electric power for the drivetrain, for example through an "active gear" combined with high-performance capacitors. The function of an intelligently honed drive is to intervene electrically in the drivetrain and optimize driving situations like stop-and-go traffic or acceleration. However, all concepts geared towards intelligent electrification remain no more than an auxiliary solution for the internal combustion engine.

As shown in the BMW X5 experimental vehicle, an electric motor between the internal combustion engine and the gearbox supports the conventional drive during acceleration efficiently. The research vehicle was presented in 2003 and produced responses that had never been attained before, while also increasing torque to 1000 N-m (740 lb-ft) in the lower range. More important, the vehicle also reduced fuel consumption by up to 15% in the driving cycle compared to the conventional powertrain.

Over the long term, hydrogen is thought to be the fuel with the greatest potential for sustainable mobility in the future. BMW Group specialists are permanently working on improvements of the hydrogen combustion engine. Already, by setting nine records and reaching a top speed of 302.4 km/h (185.5 mph) with the BMW H2R research vehicle on September 19, 2004, the BMW Group has clearly proven its conviction that hydrogen is able to replace conventional fuel without requiring the driver to make compromises in terms of up-to-date dynamic performance.

The reliability and durability of the technology used clearly demonstrates the capability of BMW Group in developing the hydrogen engine to production standard. In this process, BMW is concentrating on the combustion engine simply because the combustion power unit, given the sum total of all its features and characteristics, still offers the largest number of advantages and benefits all in one.

BMW's future hydrogen engine for its premium saloon will be built for dual-mode operation. BMW will be launching a dual-mode version of the 7Series during the production cycle of the present model, thus introducing the first car of its kind able to run on both hydrogen and gasoline.

The Diesel Solution

The future of commercial vehicles is a subject that we at Navistar International focus on every day. In fact, it's our core business, as we are the nation's largest combined commercial truck, school bus, and mid-range diesel engine producer.

Today, I'm more convinced than ever that focusing on diesel was a smart decision, and that the leading engine technology for the foreseeable future, indeed for the 21st century, will be diesel.

We listen to our customers, and they tell us what they need. The companies who listen better tend to do better. The reason we chose diesel over gasoline was that our customers believed in diesel and understood its advantages, including:

•A longer driving range without refueling

•40 to 60% better mileage than gasoline, due to greater fuel efficiency

•Durability, since diesel engines typically last at least twice as long as gasoline engines

•Performance, with torque that is 30 to 50% higher than gasoline engines

•Increased safety, with reduced risk of flammability

•Extended idling capability, which is one reason virtually all ambulances are diesel.

The challenge is the perception that diesel is "dirty," an image many people still have. But in fact, we aren't making smoky trucks anymore, and haven't for many years. We introduced a smokeless engine in 1989, and haven't looked back since.

The reality is that today's diesel has 98% lower emissions than it did before regulation, and we have led the way in demonstrating that diesel engines in trucks and school buses can be as clean or cleaner than engines powered by any other fuel. Our company's path to low-emitting diesel technology is called International Green Diesel Technology, which combines efficient, high-tech engines that use fuel even more efficiently (and actually start the emissions clean-up in the cylinder); advanced aftertreatment that captures and burns emissions before they escape; and ultra-low-sulfur (ULS) diesel fuel that lets the aftertreatment work, similar to the way that removing lead from gasoline enabled catalytic converters to work in passenger cars.

In fact, diesel has already proven to be the preferred solution for consumers, business, environmentalists, school districts, and the military. From school buses to ambulances to an increasing number of passenger vehicles, the vehicles that people depend on are diesel-powered.

Diesel is already the solution for virtually all heavy-duty trucks and almost all medium-duty trucks. Heavy-duty pickup owners are now switching to diesel. With the technology and new fuel widely available, this trend will include diesel in SUVs and light pickups. In

the U.S. and Canada, we are on the way to what they are doing in Europe, where roughly 50% of new cars are diesels.

Diesel offers the U.S. the opportunity to save on both fuel economy and emissions. As to fuel economy, the Department of Energy estimates that if light-duty diesel achieved only 30% of its market potential—not 50% as in Europe—by 2020, we'd save 700,000 barrels of oil a day, or one-half the daily energy use of California. By my rough estimate, that translates to over half a billion pounds of CO_2 a day—more than 200 billion pounds a year.

At the national policy level, diesel offers immediate advantages over any other power source. New low-emitting diesel vehicles (such as school buses) are just as clean, if not cleaner, than those using natural gas. Hydrogen fuel cells sound exciting, but are decades away. By contrast, within a short time frame, diesel offers our nation the following opportunities:

- To reduce our cost per mile traveled
- To reduce our imports of foreign oil
- To reduce CO, emissions.

When you consider all these advantages, it's clear that the public and national interest stands to benefit from America's strengthening its commitment to low-emitting diesel vehicles. Yet as matters currently stand, the highest costs of making this move will fall on the truck and bus customers who buy new products in 2007.

That is why I believe government needs to do everything possible to provide incentives to help commercial vehicles make the transition to low-emitting diesel. We need to help people in the trucking business today make their purchase commitments for 2007. And we need to accelerate the trend toward diesel, which is in the long-term national interest. I am confident that the marketplace will make the right decision—as it did after we placed our bet on diesel in the mid-1980s.

From Speedometer to Modern Instrument Clusters

On October 7,1902, engineer Otto Schulze received a patent for an eddy-current speedometer. Modern driver information has come a long way since then, encompassing a whole history of automobile instrumentation that would be unimaginable without Schulze's speedometer and its technological successors.

The first automobiles had no "cockpit" as such. And there was simply no need for instruments. Even in motor racing events staged in France around 1895, the maximum speed was roughly 30 km/h (18 mph).

Things started to change around the turn of the century when accidents became a problem. Among the first solutions were speedometers with a small dial for driver use and a much larger display that was legible from a distance so police could enforce speed limits. One of Hasler's (a Swiss manufacturer) systems included a large speedometer indirectly illuminated by an acetylene flame.

The year 1905 saw the first mass-produced speedometers. Temperature sensitivity allowed for 4.3% error for every 10 degrees on the dial. The eddy-current speedometer came of age as early as 1910, and it featured a temperature-compensation system.

VDO was born of the 1928 amalgamation of the Deuta and OTA. By then, instruments were starting to take on a new look. Very soon, alternatives to the familiar round dial-and-pointer design with a concentric or eccentric scale showed up. The speedometer advanced in a number of ways over the following years. Along the way, tachometers and audio systems were introduced, and the idea of instrument clusters grew popular.

The first all-LCD cluster instrument appeared as early as 1986. The first all-electronic speedometer appeared in 1993. The head-up display is a more recent innovation, as is the electro and navigation capability.

Present and future instruments must keep drivers informed about growing range of vehicle systems and parameters without subjecting information overload. The challenge is to design a leaner, simplified human/machine interface (HMI) within the driver's visual field that still manages to convey all of this information. Designers have responded by teaming the familiar round-dial instrument with multifunctional displays that make the best use of the limited surface area of the dashboard.

Improvements in instrument clarity and electronic support systems have certainly resulted in a better physical environment and reduced stress, but these same instruments have also created a new challenge: All of those driving aids now have to be started, properly monitored by the driver. Much more than ever before, the field of cluster in-

strument ergonomics must focus on driver selection capability as part of an overall control concept. The key requirement is for a multifunctional display content to continuously match the driver's input. Speech input is one suitable option, as is the rotary/pressure controller instrument with freely programmable touch feedback. Then there is the important question of which input methods individual drivers actually prefer, so multi-mode interfaces can be featured more prominently in the future.

There is no doubt that, measured against the challenges posed by current and future traffic management requirements, the speedometer from 100 years ago appears antiquated. But it is, and remains, the point of origin of the concept of driver information and the very beginning of traffic management initiatives. Drivers needed to know their speed, and that's where it all started.

The Future of Vehicle Safety

Continental Automotive Systems is working aggressively on the developments in a project called the Total Safety Approach. Total Safety points the way to a vehicle that helps avoid accidents and prevent injuries, achieved by integrating environmental sensors to network active and passive vehicle safety systems. The goal is to incorporate active vehicle intervention technology to help prevent accidents from happening, and it represents a technology-driven shift in focus.

The shift of focus from passive to active vehicle safety has already moved beyond the safety community and into regulatory agencies such as the National Highway Traffic Safety Administration (NHTSA). NHTSA has recently taken steps in researching and testing active-safety technologies.

The best way to reduce injuries and fatalities is to avoid a crash in the first place, and great advances in microelectronics capability and functionality are making this possible. Continental has developed a portfolio of active-safety technologies designed to make individual mobility safer, preventing many rollovers and crashes from occurring. Advanced systems such as lane-departure warning, distance control, and pre-crash sensors can identify a potentially hazardous situation and help keep the vehicle on course, on the road, and in control.

The foundation of these active safety technologies is Electronic Stability Control (ESC), a system that can detect unstable driving situations and make an automatic correction to protect the driver from losing control. ESC has been a significant milestone in vehicle safety advancements, on par with seatbelts and airbags. ESC compares the driver's intended course with the vehicle's actual movement using a complex system of sensors that measure wheel speed, steering-wheel angle, yaw rate, and lateral acceleration. If these sensors detect the driver is losing control, ESC uses a combination of ABS, electronic brake force distribution, traction control, and active yaw control to stabilize the vehicle and help keep it on the road.

Continental is already working to take ESC and active safety to the next level with ESC1I, its next-generation system. Sometimes referred to as "steer-by-wire" ESCII monitors active steering control functions and is the next step along the technology integration path that is leading the industry to new dimensions in driving dynamics and stability.

Continental's Total Safety concept integrates active-safety with passive-safety technologies—such as seatbelts and air-bags—for a unified approach to vehicle safety. Networking these technologies into a single system allows them to work in tandem and provide the most efficient crash-avoidance options. At the same rime, comprehensive protection afforded vehicle occupants is maximized.

With Total Safety, active and passive systems are linked with environmental sensors through a Safety Control Module that monitors the driving environment for hazardous situations or potential vehicle collisions, and triggers the safety systems based on need.

The Total Safety system gauges dangerous situations and implements appropriate safety precautions much faster than a driver can. The system does not use crash-prevention systems to replace crash-protection systems, but rather complements their effectiveness by lessening the chance they will be needed. Said another way, the foundation of the approach taken by Continental safety systems engineers is that the best crash protection system is one that is never used. This approach contrasts with the traditional one in which safety efforts were focused mainly on crash protection.

Functionally, the active-passive integration transitions smoothly and happens transparently to vehicle occupants. When the system de-

tects a dangerous situation approaching, it warns the driver and then proactively takes action. If a collision cannot be avoided, occupants are automatically prepared. For example, if the vehicle is fast approaching another vehicle from behind:

• The system informs the driver of impending danger through force feedback in the accelerator pedal and a visual warning

• All windows and the sunroof are then automatically closed and the braking system is pre-filled in anticipation of maximum braking

• The seatbelts are tightened to reduce slack and the seatbelt tensioners are activated to hold vehicle occupants in their seats

• Power seats automatically adjust to an optimal safety position

• The brakes begin to automatically apply by the time the driver applies heavy pressure

• The ABS system activates and ESC applies if necessary.

The Total Safety concept car provides a glimpse into the future of automotive safety, and how much more advanced these individual systems can be for a voiding accidents and protecting vehicle occupants when they are integrated into one system.

The future of automotive safety is more than just developing new technology; it is shifting the approach to safety. By looking at safety in terms of avoiding accidents in the first place—and then protecting occupants when a crash is unavoidable—we can prevent more accidents, save more lives, and reduce insurance and medical costs to society. Continental's Total Safety approach represents a significant shift from the traditional approach to safety, but it is fundamental to achieving the substantial benefits.

Приложение

Реферативный перевод

Реферативный перевод является сокращенным вариантом полного письменного перевода. Реферат - это краткое изложение сущности какого-либо вопроса. Однако способы краткого изложения сущности вопроса могут быть разными.

Реферативный перевод - это полный письменный перевод заранее отобранных частей оригинала, составляющих связный текст.

Как правило, реферативный перевод должен быть значительно короче оригинала (в 5-10 раз), так как в процессе работы над реферативным переводом требуется вывод всей избыточной информации, количество которой, прежде всего, зависит от характера оригинала.

Работа над реферативным переводом состоит из следующих этапов:

1. Предварительное знакомство с оригиналом, ознакомление с данной областью знаний и ее терминологией, внимательное чтение всего текста.

2. Разметка текста с помощью квадратных скобок для исключения его второстепенных частей и повторений (исключаемые части текста берутся в скобки).

3. Чтение оригинала без исключенных частей в скобках.

4. Полный письменный перевод части оригинала, которая должна представлять собой связный текст.

Если в оригинале имеются чертежи, рисунки, то необходимо выбрать наиболее важные и объяснить их в переводе.

Аннотационный перевод

Аннотационный перевод - это вид технического перевода, заключающийся в составлении аннотации оригинала на другом языке.

Аннотация - это короткая, сжатая характеристика содержания и перечень основных вопросов книги, статьи, рукописи.

Для того чтобы сделать аннотационный перевод, необходимо прочитать книгу или статью, составить план, затем сформулировать основные положения, перечислить основные вопросы. Стиль аннотационного перевода книги или статьи отличается свободным переводом, т. е. дается главная характеристика оригинала.

Аннотация специальной статьи или книги - это краткая характеристика оригинала, излагающая его содержание в виде перечня основных вопросов и иногда дающая критическую оценку.

Из этого определения вытекает, что такая аннотация должна дать читателю представление о характере оригинала (научная статья, техническое описание и т. д.), о его строении (какие вопросы и в какой последовательности рассматриваются). При составлении аннотаций на печатные работы необходимо придерживаться определенных требований:

1. Аннотации должны быть составлены так, чтобы их содержание было доступно для усвоения при первом же прочтении, в то же время должны быть отражены все наиболее важные моменты первоисточника.

2. Аннотации должны быть научно грамотны, они не должны отражать субъективных взглядов автора.

3. Язык аннотации должен быть лаконичным, точным и в то же время простым, лишенным сложных синтаксических построений.

4. В текст аннотаций часто вводятся неопределенно-личные местоимения и страдательно-возвратные конструкции типа: «сообщается», «описывается», «излагаются» и т. д.

5. Употребление терминологии, сокращений, условных обозначений в аннотациях должно соответствовать нормам, принятым в конкретной области знаний.

При составлении аннотаций необходимо также учитывать следующее:

• в силу незначительного объема аннотация должна раскрывать, а не повторять иными словами заголовок источника информации;

• вид и объем аннотации зависят от значимости аннотируемого материала и его особенностей, а также от целевого назначения аннотации.

Для структуры описательной аннотации характерны следующие составные части:

1. Вводная часть, включающая название работы (оригинала) на русском языке, фамилию и имя автора, и название статьи на языке оригинала, название журнала или книги, место издания и издательство на иностранном языке, а также год, месяц, число, номер периодического издания, страницы.

2. Описательная часть, называющая тему и содержащая перечень основных положений оригинала или предельно сжатую характеристику материала.

3. Заключительная часть, подытоживающая изложения автора первоисточника. В этой же части приводятся ссылки на количество иллюстраций и библиографию.

The Engine

The word *engine* originally meant any ingenious device, and came from the word *ingenious,* clever. Any kind of vehicle must be able to move. The ability demands power. A machine that produces mechanical power or energy is an engine or a power plant.

Engines present one of the most interesting groups of problems considered in the engineering field. One of the main problems is receiving the maximum possible power or thrust for minimum weight. The weight is included in the factor called the weight/power ratio**,** which may be defined as the weight in pounds per horse power output.

Another important problem is that of fuel. Both in the past and today the designers work at the problem of getting lower specific fuel consumption. Specific fuel consumption is obtained by dividing the weight of the fuel burned per hour by the horse power developed.

Another possible problem considered in any engine is its flexibility. Flexibility is the ability of the engine to run smoothly and perform properly at all speeds and through all variations of atmospheric conditions.

One more important problem worked at by the designers is the engine reliability. The engine is to have a long life, with maximum of time between overhaul periods? In some cases the problem of balance is one of the main. Balance has several possible meanings but the principle factor is freedom from vibration. Besides any engine must be started easily and carry its full load in a few minutes. There are gasoline engines, diesel engines, gas turbines, steam engines, jet engines and rocket engines. Each of them has certain advantages and disadvantages over other forms of power plants.

Пример реферативного перевода

Двигатель

Слово “двигатель” первоначально означало хитроумное устройство. Машина, которая производит механическую энергию или мощность, называется двигатель или силовая установка.

Одна из основных проблем, связанных с двигателем – это получение максимально возможной мощности или силы тяги при минимальном весе двигателя.

Другая важная проблема – это проблема топлива. Удельная величина потребления топлива получается путем деления массы сжигаемого топлива в час на развиваемую мощность (в лошадиных силах).

Другая возможная проблема, которая принимается во внимание в любом двигателе, это его гибкость. Гибкость – это способность двигателя работать ровно и надежно при любых скоростях и при всех изменениях погодных условий.

Еще одна важная проблема, над которой работают конструкторы - это надежность двигателя. Двигатель должен иметь продолжительный срок службы с максимальным временем между его переборками. Кроме того, двигатель должен легко запускаться и выдерживать полную нагрузку в течение нескольких минут.

Существую бензиновый, дизельный, газовый, паровой, реактивный и ракетный двигатели.

Аннотация

В данной статье рассматриваются вопросы усовершенствования технических характеристик двигателя. Особое внимание уделено увеличению мощности при минимальном весе; потреблению топлива, гибкости и надежности двигателя.

Статья рассчитана на широкий круг читателей, интересующихся вопросами усовершенствования двигателя.

Литература:

1. Гвиненко, А. В. Современный автомобиль – как мы его видим. – М.: АСТ “Астерль”, Транзиткнига, 2005.
2. Гольд, Б.В. и др. Англо-русский словарь по автомобильной технике и автосервису. - Минск. Новая Звезда Лтд,1999.
3 Коваленко, А. Я. Общий курс научно-технического перевода: пособие по переводу с английского языка на русский. - Киев, «Фирма «ИНКОС»,2004.
4. Коваленко, А. Я. Науково – технічний переклад. – Тернопіль: Видавництво Карпюка 2004.
5. Орловская, И.В. Учебник англ. языка для технических университетов и вузов. - М., Изд-во МГТУ им. Н.Э.Баумана, 2001.
6. Слепович В.С. Курс перевода (английский - русский): Translation Course. - Мн.: ТетраСистемс, 2001.
7. Тверитнев М.В. Англо-русский и русско-английский автомобильный словарь. - М., “Russo”,1999.
8. Хоменко С.А. Основы теории и практики перевода научно – технического текста с английского языка на русский: учебное пособие.- Минск, БНТУ, 2004.

Статьи для перевода взяты из следующих аутентичных источников:

1. Automotive Engineering International. May-September,2002
2. Mercedes Magazine. Vol. 4,2000.
3. SAE 100 Future Look. A supplement to SAE International ,October 2005
4. Shiffer Michail Brian. Taking Charge. The electrical automobile in America. – Washington.: Smithson Press, 1994.
5. The MacMillan Visual Dictionary.- New York: MacMillan Publishing Company. 1992.
6. The Oxford-Duden Pictorial English Dictionary. – Oxford: Oxford University Press. 1985.
7. www.howstaffworks.com
8. www.onestopenglish.com
9. www.insideout.com

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