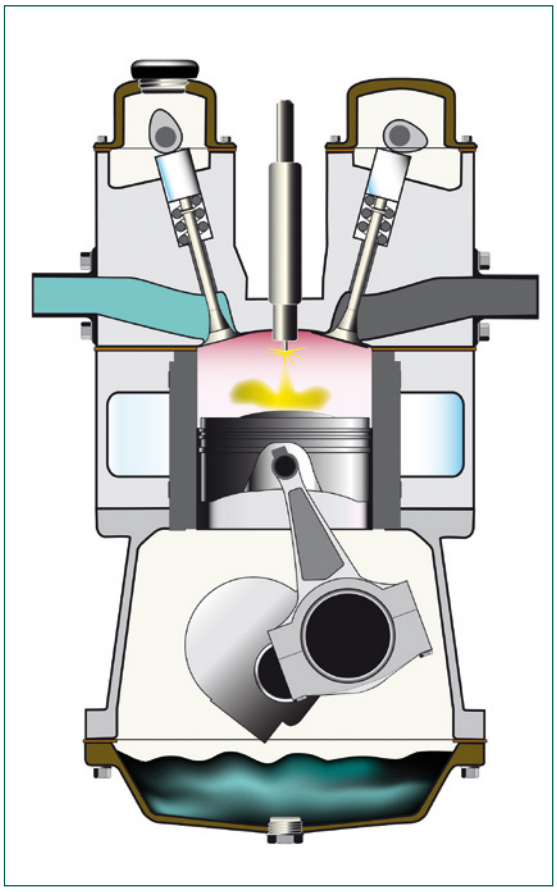
Diesel engines

The diesel engine was developed by the German engineer Rudolph Diesel in 1893. The diesel engine is heavier and more powerful than petrol engines. Diesel engines are widely used in heavy machinery, locomotives, ships, and automobiles.

A diesel engine is very similar to a petrol engine and it is also based on the four-stroke system.

The main difference in a diesel engine is that it has no spark plug to ignite the fuel. The diesel engine exploits the extreme heat generated by compression of air in the cylinder to ignite the fuel which is injected or sprayed into the cylinder at the end of the compression stroke, when the compression of the air is sufficiently strong to ignite the fuel in the combustion chamber. The fuel first enters the cylinder and vaporizes. Then it must mix with oxygen. The better the fuel is atomized the better the fuel and hot air mix together. At that point the fuel burns immediately because of the high temperature of air in the cylinder. For this reason the diesel engine is also known as **compression-ignition engine**.

Let's have a look at the main differences between a petrol engine and a diesel engine.



The power stroke in a diesel engine

Petrol engine	Diesel engine
Air-fuel mixture is sucked during intake phase	Only air is sucked during the intake phase
A spark plug is needed	No spark plug is needed; the engine is fitted with a fuel injector
Low efficiency	High efficiency
Light weight	Heavy weight
Little noise and vibration	Much noise and vibration
Fuel consumption is higher	Fuel consumption is lower
Lower initial cost and lower maintenance cost	Higher initial cost and higher maintenance cost

ACTIVITIES

1 *Answer the following questions.*

1 Who invented the diesel engine?
2 Where are diesel engines used?
3 What is the main difference between a petrol engine and a diesel engine?
4 Why does the fuel burn immediately?

2 *Scan the text and find synonyms for the following words and expressions.*

1 Gasoline .....
2 Devised .....
3 Cars .....
4 Uses .....
5 Cause something to catch fire .....
6 Reduced to fine particles .....

3 *Sum up the main advantages and disadvantages of diesel engines.*