

Robots in the automotive industry

■ What is the automotive industry?

The automotive field covers a wide range of companies that deal with the design, production and the sale of motor vehicles (cars, trucks, motorcycles) and their components, excluding batteries and tyres which belong to a different industrial sector. Today, the automotive industry is one of the world's most important economic sectors by **revenue**, with 60 million cars and trucks produced per year. Mass production confers a strong cost advantage which has always encouraged the construction of large and expensive **plants**. Robots have increased the capacity and efficiency of plants, thereby reducing production time, making the advent of robotic process automation a real **milestone** in the development of the automotive industry.

■ Automated assembly lines

A modern car plant has replaced many workers with robots for the assembly of

cars on automated assembly lines; the job of many of the human operators working on production lines today is to check computer-controlled machines and read technical schematics.

Assembly lines have been developed into a series of workstations: each station has a specific step to complete and when it is finished the car passes along to the next workstation. By having three stations, three cars can be operated on at the same time, each at a different stage of assembly. Starting with the underbody, which is pressed from sheet steel, the car passes along through the workstations where parts and components are welded together, and the finished frame, or body, undergoes **sealing**. The body of the car is then **rustproofed** and spray painted by cartesian and 6-axis articulated robots. Finally, the engine, transmission, axles, suspension, seats, doors, windows and wheels are installed before the completed car **rolls off** the production line.

The word "automotive" comes from the Greek *autos* (self) and the Latin *motivus* (motion), referring to any form of self-powered vehicle. This term first came into use with reference to automobiles in 1898.

flaw: *difetto*
milestone: *pietra miliare*
plant: *fabbrica*
revenue: *ricavo*

to roll off: *rotolare fuori (uscire)*
to rustproof: *trattare con antiruggine*
sealing: *sigillatura*

Mass production was a direct consequence of the introduction of the moving assembly line by the Henry Ford Motor Company in 1913.



Automated workstations in a Nissan car assembly plant

1 Write appropriate questions to these answers.

1.
It deals with the design, production and the sale of motor vehicles (cars, trucks, and motorcycles) and their components.
2.
Because tyres and batteries belong to a different industrial sector.
3.
A strong cost advantage, large and expensive plants and extra capacity.
4.
Robots have improved quality, reduced scrap and **flaws**, increased capacity and efficiency by reducing production times.
5.
It has been developed into a series of workstations.
6.
The last components added to the body of the car are the engine, transmission, axles, suspension, seats, doors, windows and wheels.

2 Match each term with its synonym.

- | | | |
|----------------|--------------------------|--------------------|
| 1. Revenue | <input type="checkbox"/> | a. Factory |
| 2. Plant | <input type="checkbox"/> | b. Important event |
| 3. To roll off | <input type="checkbox"/> | c. Profit |
| 4. Milestone | <input type="checkbox"/> | d. Sector |
| 5. Underbody | <input type="checkbox"/> | e. Structure |
| 6. Field | <input type="checkbox"/> | f. To get out |



HOW LONG DOES IT TAKE TO MAKE A CAR?

The process of making a car can be divided into approximate stages for the stamping, welding, painting, assembly and inspection. In total, the entire process takes about 17-18 hours. The number of hours obviously depends on the number of cars made in a factory; however, if we consider that each car is made of about 30,000 parts, each of which takes time to be produced, the time that it takes to build a car is not very long.



13 Put the words in the correct order to form sentences.

1. their / is / automotive / specialised / cars / the / manufacturing / components / in / of / and / sector / the
2. in / dangerous / plants / used / repetitive / protect / robots / workers / from / the / tasks / or
3. the / through / workstations / cars / while / different / line, / the / parts / moving / of / are / an / on / assembly / the / assembled
4. working / on / assembly / operators / machines/ the /use / computer-controlled / line /

