



The photocopier

ACTIVITIES

1 Choose the correct heading for each paragraph.

- A What a photocopier is made up of
- B The invention of the photocopier
- C The importance of photocopiers
- D How a photocopy is made
- E The way a photocopier works

1
The photocopier, also known as a xerox machine, is a device that has radically changed the way in which we work. In the pre-photocopier days, duplicate copies of a document were usually made at the source, either by using carbon paper or manual duplicating machines. Today it would not be possible to think of an environment – business, school or other – without a photocopier. In fact, it allows users to make copies of any type of documents that has to be stored, attached or simply examined.

2
All this is made possible by an invention which occurred in October 1937: Chester Carlson, a patent attorney in New York, invented a process called electro photography, a year later renamed Xerography and the first known photocopy was the '10-22-38 Astoria'. This copying process went on to become one of the most well-known inventions of the 20th century.

3
A photocopier works on two fundamental principles: the fact that opposite charges attract and the tendency of certain materials to become more electrically conductive after absorbing electromagnetic radiation, such as UV, infrared, visible light, etc. Most modern photocopiers rely on a technology known as xerography, which is essentially a dry photocopying technique. It involves using electrically-charged particles to attract and then deposit toner particles onto a piece of paper.

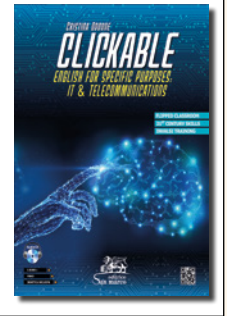
4
A typical photocopier consists of the following components: a photoreceptor drum (or belt), which is covered by a layer of a semiconductor material, such as selenium, silicon or germanium; a toner, which is basically just pigmented liquid, a dry mixture of fine, negatively-charged plastic particles and colouring agents that create the duplicate image on a piece of paper; corona wires, which transfer a field of positive charge to the surface of the photoreceptor drum and the copy paper when subjected to a high voltage; a light source and a few lenses,

which shine a bright beam of light on the original document and focus a copy of the image onto a specific place, respectively;

a fuser that melts and presses the toner image onto the copy paper and imparts the final touches to the duplicate image just before it is ejected from the machine.

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In order to make a photocopy, the master copy is placed face-down on the glass surface, where a bright light beam will scan the entire document. White areas on the paper reflect more light, while black areas reflect little or no light. An electrical shadow (or image) of the master copy is formed on the photoconductor. As the conveyor belt moves, it takes the electrical shadow along with it too. The negatively-charged toner particles stick to the electrical shadow and an inked impression of the master copy is made on the conveyor belt. A strong positive charge is imparted to the blank piece of paper that is fed into the photocopier from the other side and a duplicate image of the master copy is formed. Finally, a fuser unit supplies heat and pressure so the toner particles are permanently attached/fused onto the paper.





2 Read the text and complete the sentences with the correct information.

- 1 The two principles on which a photocopier works are
- 2 The dry photocopying technique called xerography involves
- 3 The toner is responsible for
- 4 The light source and lenses focus a copy of the image by
- 5 It is the fuser that

3 Put the following actions in the correct order.

- A An electrical shadow (or image) of the master copy is formed on the photoconductor.
- B A strong positive charge is imparted to the blank piece of paper that is fed into the photocopier
- C The toner particles are permanently attached onto the paper by the fuser unit supplying heat
- D A bright light beam scans the master copy placed upside down on the glass surface
- E An inked impression of the master copy is made on the conveyor belt

4 Read the text again and find words or phrases with the following meanings.

- 1 Brevetto
- 2 Carica
- 3 Infrarossi
- 4 Campo
- 5 Raggio, fascio
- 6 Ombra
- 7 Vuoto, in bianco
- 8 Fornito, alimentato

5 Are scanners based on the same principle of photocopiers? Do an internet search and write a short paragraph.

