



The Fourth Industrial Revolution

Many technologies are being incorporated into aircraft manufacturing plants in order to **optimise processes, boost efficiency and enhance safety**



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Automation

The automation and control of different systems improves the production. It relieves workers from simple, repetitive tasks and boosts energy efficiency.



RFID environments

A remote data storage and recovery system. RFID labels include an aerial and are stuck onto any product or physical element in the factory, thus allowing their location, time scales and flows to be precisely controlled.



Gamification

The application of animation design techniques and dynamics used in video games to resolve real problems that may arise in the industry. They are especially used in training, repetitive and precision tasks, as well as in e-training and motivation.



Production environment simulation

The application of virtual reality and 3D simulation techniques to model the production chain and make modifications to it in order to foresee the proper integration of all processes, resources and products to be manufactured.



Haptic environments

Interfaces which add the sense of touch to visual environments. They allow devices to be operated remotely with full perception of tactile and kinaesthetic information.



Remote assistance

Remote queries made to experts which encourage collaborative work regardless of their physical location.



Automated Production Tool Management

Provides real time visibility of the equipment and its tools condition and location, as well as the evolution of its cycles.



Sustainable lighting

Plant layouts that allow for a greater use of sunlight or hybrid systems using LED technology which increase facilities' efficiency and the quality of the work carried out.

////////// Collaborative environments These involve all departments and human teams that take part in a product's life cycle. They provide a continuous and shared environment of visibility for all development stages. They are supported by PLM systems //////////

1

Reconfigurable and flexible stands

Assembly areas that can be adapted flexibly and quickly to the production of different elements, depending on the plant's needs.

2

RFID beacons

Radio frequency readers which identify when a label is in their vicinity. They recover associated information and send it to the data processing system.

3

Cobots

Cutting edge tools that increase human capacities for the accomplishment of certain tasks. They cannot work independently.

4

Security & Safety automated systems

Automated safety systems monitor the working environment in real time to warn workers of any possible risky situations.

5

Augmented reality systems

A set of devices which add virtual information to physical reality to aid in the production process. They do not replace physical reality but rather complement it by overlaying related data.

6

Interactive workbench

An interactive workbench onto which plans and updated data are projected through projection and augmented reality techniques. It provides timesaving and ensures good quality. It is especially useful in the manufacturing of electric wire harnesses.

7

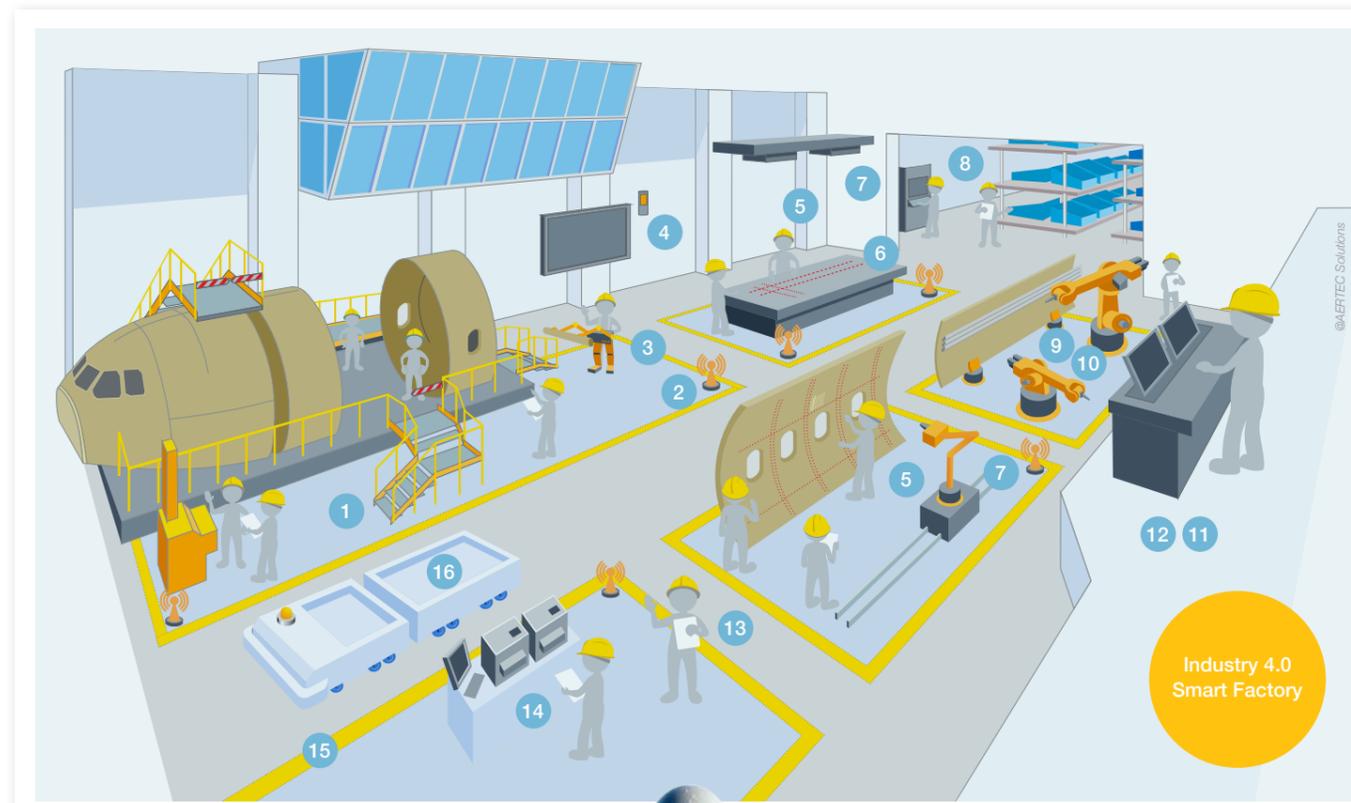
Laser projection for assembly

An augmented reality technique that helps in the assembly of elements.

8

Warehouse

Automated warehousing system integrated with PLM systems to optimise stock and enhance the supply chain's efficiency.



Industry 4.0
Smart Factory

9

Robots

Robotic production cells allow for flexible manufacturing and production optimisation.

10

Collaborative robots

Robotic devices which collaborate directly with a human worker in a shared space.

11

PLM Systems

Systems to manage the life cycle of products, allowing them to be administered from conception until their entry into service and disposal, including their design and manufacturing. This system can manage all of a product's information and its industrialisation. It fosters collaborative, concurrent engineering.

12

SCADA

Supervisory control and data acquisition systems allow different production parameters to be monitored and controlled in real time and historical data to be stored to aid in decision-making.

13

Tablets

Devices that replace paper in a production plant, allowing data to be accessed and gathered in real time. They reduce errors resulting from outdated information, saving on the costs of data gathering on paper and the subsequent updating of systems.

14

3D Printing

A set of manufacturing technologies capable of printing three-dimensional objects through the use of different materials. It is a cheaper and quicker manufacturing technology when working with a small series of parts.

15

Laser projection of plant layout

Projecting distribution and safety lines on the plant's floor by laser facilitates the plant's quick and flexible adaptation.

16

AGV

Autonomous automatic guided vehicles which allow materials to be transported along a predetermined route, following the production plan that has been set.



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