

**Planned obsolescence**

Is when a product is deliberately designed to have a specific life span. This is usually a shortened life span. The product is designed to last long enough to develop a customer's lasting need. The product is also designed to convince the customer that the product is a quality product, even though it eventually needs replacing. In this way, when the product fails, the customer will want to buy another, up to date version.



<http://www.technologystudent.com/prddes1/plannedob1.html>

**Sustainability**

It is about meeting our own present-day needs without compromising the needs of future generations.

Sustainability means meeting present-day needs without compromising the needs of future generations.

Designers need to think about the life cycle of a product and its environmental impact.

<https://www.youtube.com/watch?v=QJC2GtM56rc&list=PLC1VCzU4q6og3DDpjLgAVE5HTn6xDJe2w&index=3>

<https://www.youtube.com/watch?v=B5NiTN0chj0&list=PLC1VCzU4q6og3DDpjLgAVE5HTn6xDJe2w&index=4>



**Fairtrade**

<https://www.youtube.com/watch?v=o6pcJxFen8Y>

**Carbon footprint**

[https://www.youtube.com/watch?v=8q7\\_aV8eLUE](https://www.youtube.com/watch?v=8q7_aV8eLUE)



**Product evolution**

<https://www.youtube.com/watch?v=Y8E4ICk49Bs>



**Finite resource:** a resource that does not renew itself quickly enough to meet the needs of future generations.

**Non-finite resource:** a resource that can replenish quickly enough to meet our needs.

**Global warming:** the gradual increase in the average temperature of the Earth's atmosphere and oceans that is affecting the Earth's climate.

**Planned obsolescence:** when a manufacturer plans or designs a product to have a short useful life.

**Recycle:** a material is reprocessed so that it can be used again.

**Biodegradable:** a material that breaks down naturally without causing harm.

**Showrooming** a trend in which shoppers visit shops to examine a product before buying it online at a lower price.

**Crowd funding** raises money for a project by using the internet to get lots of people to contribute small amounts of money. This method of funding has been made possible by the development of the internet and social media.

**Virtual marketing** uses social networks and websites to increase brand awareness, by getting websites or users to pass on marketing messages to other websites and users.

**Co-operative** is a business owned and self-managed by its workers. work in the business govern it manage it set production schedules determine working conditions.

**Technology push** is where new technology or materials are developed, and designers take this as an opportunity to design new products.

**Market pull** is where users want a product to be improved or redeveloped to meet their needs.

## Design movements and designers

<https://www.youtube.com/playlist?list=PLC1VCzU4q6oitxvAEKNsXIKPDCI7KFSz0>

Arts and crafts – William Morris <https://www.youtube.com/watch?v=CBq73yxha0o>

Art Nouveau – Charles Rennie Mackintosh <https://www.youtube.com/watch?v=qMMEPA3HRPU>

Modernism – (Bauhaus) Marcel Breuer <https://www.youtube.com/watch?v=ZQa0BajKB4Q>

Memphis – Ettore Sottsass <https://www.youtube.com/watch?v=iMDwp03xDvI>

Harry Beck <https://www.youtube.com/watch?v=Bg3pfUqdlp4>

Philippe Starck <https://www.youtube.com/watch?v=cwbljVmt660>

Norman Foster <https://www.youtube.com/watch?v=8Opdmq66OmM>

Coco Chanel <https://www.youtube.com/watch?v=AKZ6lu37jik>

## Ettore Sottsass (1917-2007)

An Italian architect and designer during the 20th century. His body of work included furniture, jewelry, glass, lighting, home objects and office machine design, as well as many buildings and interiors



## Gerrit Reitveld (1888-1964)

Gerrit Thomas Rietveld was a Dutch furniture designer and architect. One of the principal members of the Dutch artistic movement called De Stijl, Rietveld is famous for his Red and Blue Chair



## Charles Rennie Macintosh (1868-1928)

A Scottish architect, designer, water colourist and artist. His artistic approach had much in common with European symbolism. His work, alongside that of his wife Margaret Macdonald was influential on European design movements such as Art Nouveau



## William Morris (1834-1896)

A wallpaper, furniture and furnishings designer. His designs were often based on nature.



## Vivienne Westwood (1941-Present)

Her iconic clothing became popular during the punk rock movement in the 1970s. She has since become a world famous fashion designer. Her designs often take inspiration from traditional British clothing and historical paintings.



## Marcel Breuer (1902-1981)

A modernist architect and furniture designer. Some of his best works include- tubular steel furniture and concrete sculpted buildings.



## Aldo Rossi (1931-1997)

An architect who published work on architectural theory. He also worked for the company Alessi.



## Philippe Starck (1949-Present)

An architect and product designer. He is famous for designing furniture, kitchenware and vehicles. One of his best known products is his lemon squeezer for Alessi.



## Coco Chanel (1883-1971)

A fashion designer known for introducing practical casual-chic clothing for women who had traditionally worn corsets and long skirts.



## Harry Beck (1902-1974)

He redesigned the London Underground map in the 1930's. It's simplified layout made it a huge success and maps of many other transport networks now use Beck's style.



### Key words

**Computer aided design (CAD)** using computer software to draw, design and model on screen.

**Computer aided manufacturing (CAM)** manufacturing products designed by CAD.

**Flexible manufacturing system (FMS)** a system in which production is organised into cells of machines performing different tasks.

**Computer numerically controlled (CNC)** machine tools that are controlled by a computer.

**Just in Time (JIT)** a production method that means materials and components are ordered to arrive and the product assembly point just in time for production.

**Lean manufacturing** focusing on reduction of waste when manufacturing.

### Scales of production

**One-off products** - are also known as bespoke products and are produced for a particular situation or client  
Bespoke products include wedding dresses, jewellery, custom made suit  
The cost of a prototype product is high as it is a labour and time intensive

**Batch production** - a limited number of the product is made during a particular period of time. Batch sizes can vary from 3 to 3000 or more – it depends on the product being manufactured. Batch production will make use of jigs, templates, patterns and moulds to ensure that there is a consistency in the product being made

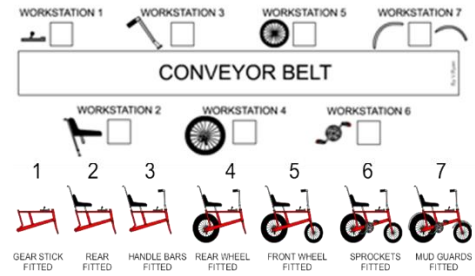
**Mass production** - Products are manufactured in large quantities over a long period of time. Typically products are manufactured using an assembly line method. Specialist machinery is used, but the workforce is low skilled as the operation of the machinery is quite simple. Lots of standard components are used in order to keep costs of the products low. Example products could be mobile phones, clothes, stationary, printed circuit boards and packaging

**Continuous production** - Products are made continuously for 24 hours a day, 7 days a week, 365 days a year  
The cost of stopping production is high, so it is important to keep the machines running as much as possible with shutdown being annually or biannually. The process doesn't really change, but continually produces the same product. Products tend to be simple single component items eg. Pencils, screws, rubbers, paper.

### Production lines

**ADVANTAGES:** A production line is a very efficient way of manufacturing and assembling a product. A car is composed of thousands of components and yet hundreds of cars roll off the production line of a typical car plant every day.

**DISADVANTAGES:** However, the workers on production lines often complain that little skill or training is required to complete their individual tasks and that working on a production line is extremely boring and unfulfilling.



[Ford – created the production line](https://www.youtube.com/watch?v=qFbsDArAWj8)  
<https://www.youtube.com/watch?v=qFbsDArAWj8>

**Production aides** are another name given to items that help you make things faster, easier, more accurately.

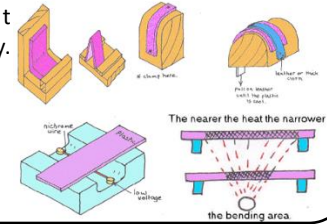
Examples include;

Templates

Moulds

Stencils

Jigs



**Automation** uses machines and robots (controlled by computers and processors) to replace human operators to carry out repetitive tasks. The use of automatic equipment in manufacturing.

**Robotics** technology involved in the design, building, operation and use of robots.

### 3D printing

Small-scale car production is now being developed where all the exterior body parts are 3D printed and assembled.

<https://www.youtube.com/watch?v=VxOZ6LplaMU&list=PLC1VCzU4q6ogw7n2oNjXkgFRzP86VvU&index=6>

How Its Made - Newspapers

[https://www.youtube.com/watch?v=\\_ovQm5Jb0j8](https://www.youtube.com/watch?v=_ovQm5Jb0j8)

How it's made – MDF flat pack furniture

<https://www.youtube.com/watch?v=yLCCni trgwE&list=PLC1VCzU4q6oh01DrVv7YXjZZrgARjdlR&index=4>

How are plastic toys made

<https://www.youtube.com/watch?v=w5KRawOxy4U>

### Where do the fossil fuels come from?

#### Coal

Coal was formed over 300 million years ago. Plants die and decay, forming layers of peat. Over time, this was covered with more sediment, which was compressed and heated to form coal.

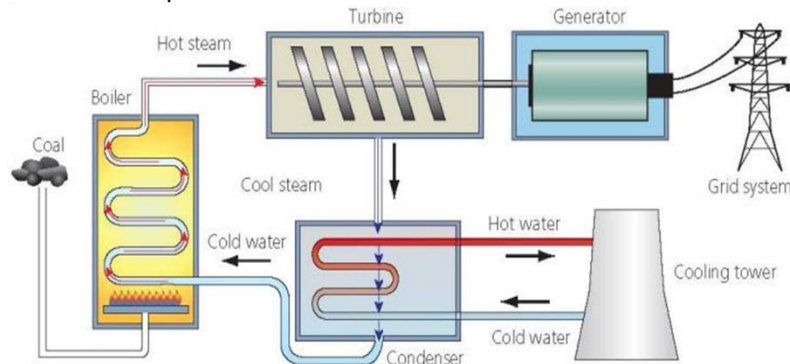
#### Oil and gas

The remains of animals and plants that lived millions of years ago under the sea got covered in sand and silt. Heat and pressure from the Earth's core turned them into oil and gas. The oil and gas were trapped between layers of impermeable rocks.

Thermal power plants explained

<https://www.youtube.com/watch?v=ldPTuwKEfMA>

### Coal-fired power station



### What are the advantages of nuclear power?

Nuclear power is one of the most controversial methods of generating energy.

However, there are a number of advantages to using this method over fossil fuels:

- It is a clean and efficient energy source.

- It provides over 10 per cent of the world's energy.

- Very little pollution is produced during the generation of the energy, and it reduces carbon dioxide.

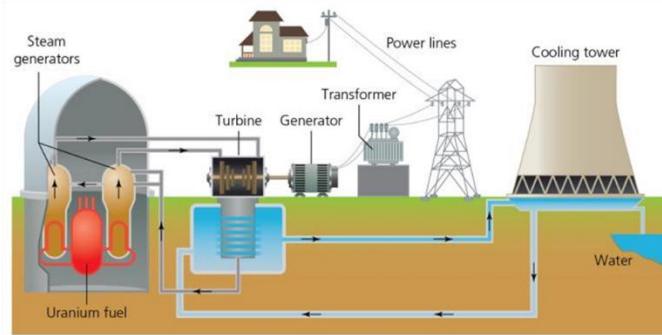
- Lots of investment is being put into developing nuclear technology.

<https://www.youtube.com/watch?v=pVbLlnxlbY>

Using energy and materials responsibly is a really important aspect of designing

<https://www.bbc.com/bitesize/guides/zf8ck2p/video>

### How is nuclear power generated?



### Renewable energy

Is energy generated from natural resources—such as sunlight, wind, rain, tides and geothermal heat.

Renewable energy is energy that is generated from natural processes that are continuously replenished.

Alternative energy is a term used for an energy source that is an alternative to using fossil fuels.

<https://www.youtube.com/watch?v=1kUF0BZtTRC>

### How is power generated from solar power?

Solar energy is captured by a photovoltaic cell, and converted into electricity.

The amount of solar energy that reaches the Earth on a yearly basis outstrips the amount of fossil fuel reserves that we have available.

<https://www.youtube.com/watch?v=Xf6E0Mb15Q>



### How is power generated from the wind?

Turbines are often grouped together as 'wind farms'.

The technology is quite simple – a large turbine blade turns a generator, which generates electricity.

The best place to site these wind farms is on the coast, offshore, on a hill top or between hills where the wind tends to be more reliable.



### How is power generated from tides?

Tidal power relies on the movement of water through a turbine, which then in turn generates electricity.

Tidal barrages can be used to keep the tide at bay, and then allow the water to flow through and generate electricity.

The advantage is that tides will always exist and are reliable.

<https://www.youtube.com/watch?v=xwQUKhvwwKY>