

# Engineering?

## What are Engineers?

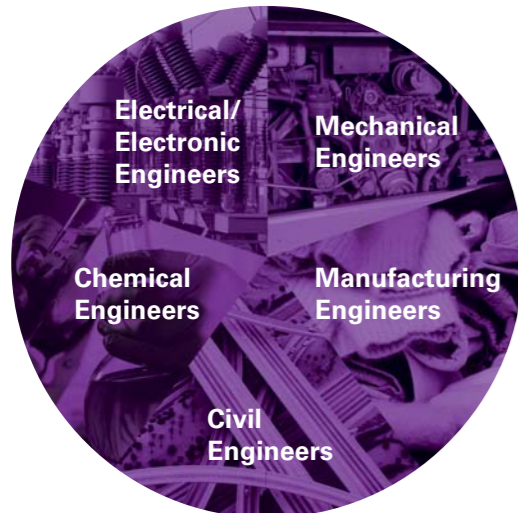
There are many types of Engineers in our world today and the following pages will tell you about some of the types of work they get involved in. The main reasons people are attracted to Engineering are because it is:

- EXCITING** often trying out new things not tackled before
- INNOVATIVE** exploring new ideas
- DIVERSE** the vast variety of activities makes everyday different
- CREATIVE** opportunity to put ideas creatively into practice
- CHALLENGING** finding ways to do things bigger, better, cheaper, faster, more environmentally friendly, etc.
- HANDS ON** not always being trapped behind desks, often practically involved out and about
- REWARDING** trouble shooting / problem solving, putting things into practice that can make a real difference.

### Sounds good doesn't it!

Engineers certainly make our lives better - they benefit you, your family, work forces, the wider community and the global environment.

Although there are many types of Engineers, they can be divided into five main groups:



## Information

### For Engineering careers at BP visit:

- [www.bpfutures.com](http://www.bpfutures.com) - BP Careers website
- [www.bp.com](http://www.bp.com) - BP Corporate website
- [www.bpes.com](http://www.bpes.com) - BP Educational Service website.

### For general information on Engineering visit:

- [www.engc.org.uk](http://www.engc.org.uk)  
Engineering Council UK
- [www.raeng.co.uk](http://www.raeng.co.uk)  
Royal Academy of Engineering
- [www.semta.org.uk](http://www.semta.org.uk)  
Science, Engineering, Manufacturing and Technologies Alliance
- [www.setnet.org.uk](http://www.setnet.org.uk)  
The Science, Engineering, Technology and Mathematics Network
- [www.wisecampaign.org.uk](http://www.wisecampaign.org.uk)  
Women into Science and Engineering Campaign.

### Scotland specific:

- [www.setpointscotland.org.uk](http://www.setpointscotland.org.uk)
- [www.careers-scotland.org.uk](http://www.careers-scotland.org.uk)

### For information on each specialist field visit:

- [www.ingeniuty.org.uk](http://www.ingeniuty.org.uk)  
Engineering Careers Information
- [www.icheme.org](http://www.icheme.org)  
The Institution of Chemical Engineers
- [www.ice.org.uk](http://www.ice.org.uk)  
The Institution of Civil Engineers
- [www.iee.org](http://www.iee.org)  
The Institution of Electrical Engineers
- [www.iie.org.uk](http://www.iie.org.uk)  
The Institution of Incorporated Engineers
- [www.imeche.org.uk](http://www.imeche.org.uk)  
The Institution of Mechanical Engineers
- [www.sme.org](http://www.sme.org)  
Society of Manufacturing Engineers.

### For information about qualifications in Engineering visit:

- [www.dfes.gov.uk](http://www.dfes.gov.uk)  
Department for Education and Skills
- [www.ecitb.org.uk](http://www.ecitb.org.uk)  
Engineering Construction Industry Training Board
- [www.qaa.ac.uk](http://www.qaa.ac.uk)  
The Quality Assurance Agency for Higher Education
- [www.qca.org.uk](http://www.qca.org.uk)  
Qualification and Curriculum Authority
- [www.scotland.gov.uk](http://www.scotland.gov.uk)  
Scottish Executive
- [www.edexcel.org.uk](http://www.edexcel.org.uk)  
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# What is

## Engineering.... how can it make a difference?

Well, first of all let's look at you – your life, your world and see where engineering fits in. Ask yourself these things:

- Do you eat food?
- Do you wear clothes?
- Do you use cosmetics?
- Do you take medicines?
- Do you travel by car, train, boat or plane?
- Do you live in a building, have furniture?
- Do you drink or wash with water?
- Do you listen to radio or watch television?
- Do you use a computer or a mobile phone?

If you've answered NO to all those then don't read anymore, you don't need engineering!!! But seriously, Engineering makes a difference to almost everything we eat, use or do!

## So what exactly is this thing - Engineering?

Well, it's about bringing good ideas into reality; it's about using a range of problem solving and creative skills to make useful things.

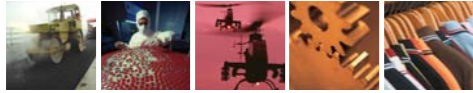
The word 'Engineer' originates from the latin word 'ingenium' meaning talent, genius and cleverness...

It's a great interpretation of the people who become engineers!

# Engineers making a world of difference...



# INNOVATIVE EXCITING DIVERSE



## Civil Engineers

**Civil Engineers create, improve and protect the environment in which we live: constructing bridges, tunnels, roads, railways, dams, pipelines, buildings, utilising their skills in 'hands on' situations after earthquakes, during droughts, floods or at times of war – rebuilding or creating conditions to maintain and protect life.**

*"This world can only support one billion people. The fact that it is supporting six billion at the moment is in part due to the resilience of nature, in part thanks to civil engineering"* David Bellamy.

**The main sectors that Civil Engineers can work in are:**

- transportation
- natural resources
- manufacturing and production.

At BP the following types of Engineers link into the field of Civil Engineering:

### Petroleum / Reservoir Engineering

Petroleum and Reservoir Engineers at BP deal with oil and gas field development, as well as production from the reservoir to a well site and in some cases to the process plant. This can involve designing and evaluating reservoir and well production processes plus performance and drilling operations.

### Drilling Engineering

Drilling Engineers at BP are responsible for planning, designing and maintaining oil and gas wells to safely manage oil and gas reserves. This can include working on drilling sites in a variety of locations, for example on land or on offshore oil platforms.

Joe Mellor studied Mechanical Engineering at university and also went on to do a Masters. He is now a Drilling Engineer based at BP Exploration at Aberdeen in Scotland. Joe feels he is a real part of the team and proud to say that he played a part in their success. His various roles at BP have included working:

- in a small multidisciplinary team on a new field development
- in close communication with people from commercial departments right through to geologists
- at a well site in a team that needs to come up with innovative solutions to problems
- as an offshore drilling engineer.



## Chemical Engineers

**Chemical Engineers design processes that change raw materials such as acids, oils, gases, rubbers and plastics into everyday products like packaging, medicine, food and drink, sports equipment, energy and fuels. The term Process Engineering is often used to describe their work as they are more interested in the design and operation of the process than the chemical reaction itself.**

**Key industries that Chemical Engineers work in can include:**

- brewing
- chemicals
- energy production
- fuels refining
- manufacturing
- petrochemicals
- pulp and paper
- ceramics
- construction and design
- food and drink processing
- healthcare
- pharmaceuticals
- plastics
- water.

Chemical Engineers at BP are responsible for designing, improving and operating process plants safely and efficiently. This can involve researching and testing processes, for example the hydro-treating process, where sulphur is removed from oil products such as petrol and diesel fuels. A small selection of roles in this area of engineering also includes working in teams to design a multi-million pound chemical plant, working shifts on site to commission a refinery unit and undertaking hazard analysis for a proposed modification to a chemical process.

Kerry Scott is a Chemical/Process Engineer at BP's Grangemouth refinery based in Scotland and studied Chemical Engineering at university. Kerry enjoys the new and different challenges which make her job interesting and the learning curve steep. Kerry is responsible for:

- a project to construct a common storage facility for oil and chemicals or the polymer plants on site
- plant optimisation - to see the status of the process
- checking anything abnormal – temperatures, effluent quality, etc.
- investigating and liaising with the operations team to make changes.



## Electrical / Electronic Engineers

**Electrical / Electronic Engineers – Electrical Engineers are concerned with all aspects of electrical power from generating, supplying, measuring and controlling this power. For example, designing wind turbines and solar panels which supply power into our homes, the community and industry.**

**Electrical Engineers work mainly in:**

- power stations
- power generating plants.

Electronic Engineering is a branch of Electrical Engineering that deals with designing devices that use electricity, for example, CD players, hairdryers, shavers and personal computers. Electronic Engineers work in a wide range of industries that use electricity which can include:

- aviation
- computers
- medical
- telecommunications
- broadcasting
- defence
- meteorology
- transport
- communications
- entertainment
- robotics.

At BP, Instrumentation, Control and Electrical Engineers link into the field of Electrical/Electronic Engineering. These Engineers are responsible for delivering new technical advances in electrical equipment and systems. This can involve working with control systems to measure process conditions, analysing process performances, safety checking and improving reliability of equipment and services to deliver effective production and manufacturing operations.

Ian Livingston studied Electronics and Communications Systems Engineering at university. He is now an Instrument, Control and Electrical Engineer based at BP Chemicals in Hull. Since joining BP, Ian has completed two placements and is now in his third. He has:



- gained knowledge of a number of manufacturing processes as well as a variety of instrument electrical equipment
- maintained high voltage switch gear
- configured distributed control systems
- reviewed maintenance manpower requirements
- been a testing and commissioning engineer
- been asked to train an operations team.

## Mechanical Engineers

**Mechanical Engineers deal with designing, developing, producing, installing and operating machinery and mechanical products of many types. Examples include machinery and processes designed to make engines for cars and aeroplanes or motors found in refrigerators, air-conditioning equipment, elevators and escalators.**

**Mechanical Engineers are employed in almost every sector of industry including:**

- aerospace
- food processing
- engineering construction
- manufacturing
- oil and gas
- building and construction
- automotive
- cosmetics
- armed forces
- medicine
- energy and power
- sports.

Mechanical Engineers at BP are involved with the development, design and construction of processes at oil and gas production facilities, refineries or chemical process plants. This can include becoming involved in projects concerned with drilling, reservoirs, reliability, maintenance and other specialist support.

Dan Young studied Mechanical Engineering at university and is now a Mechanical Engineer with experience of working at BP's refineries in Grangemouth and Coryton. Dan enjoys getting to practice some of the theory from university in his day-to-day work. Some of his roles have involved:

- the day-to-day running of a refinery
- focusing on delivering projects on time and on budget
- working in an exciting new small projects organisation
- taking control of his own projects
- dealing with issues arising direct from the project workforce
- completing budget and project execution documentation.



## Manufacturing Engineers

**Manufacturing Engineers are involved with the efficient production of goods and services. For example, planning, designing and maintaining automated production lines in factories that make electrical devices, computers or food and drink products. For example, this could include analysing the performance of systems and processes (computerised production, computer controlled assembly robotic systems and flexible manufacturing systems) and the reporting of key information.**

**Manufacturing Engineers can work in industries such as:**

- aerospace
- clothing and footwear
- pharmaceuticals
- textiles
- automotive
- electronics
- steel
- tobacco
- chemical
- food and drink
- shipbuilding.

At BP, working as part of the trading team can involve elements of Manufacturing Engineering.

Will James studied Manufacturing Engineering at university. He is now a performance analyst based at BP Shipping's offices in London. Will's role includes:

- quickly communicating various actions and results to different people within the company
- providing analysis for the Group Financial Outlook
- judging how accurate each set of information he gathers needs to be and allocating time accordingly
- attending courses and other types of training of benefit.



# CHALLENGING CREATIVE REWARDING

