

# Tilbury Power Station and Energy & Environment Centre

## Engineering Diploma Level 2 visit for 14-16 year olds



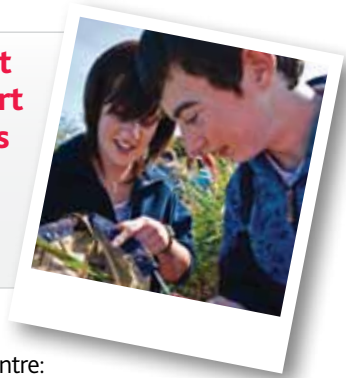
**Tilbury Power Station uses coal to generate electricity.**

### Come to our power station to see:

1. Go inside a real boiler
2. See inside a real turbine and grinding mill
3. See the jetty where Supertankers (Panamax vessels) can unload up to 70,000 tonnes of coal

### Come to our Energy & Environment Centre where students can take part in a whole range of activity sessions including:

- water purity and pollution
- natural habitats
- science experiments
- maths trails



### Visit Tilbury Power Station and Energy & Environment Centre, Essex

Please use the following contact details to arrange a visit to Tilbury Power Station and Energy & Environment Centre:

Tilbury Energy & Environment Centre Liaison Officer  
Tilbury Power Station, Fort Road, Tilbury, Essex, RM18 8UJ

T: 01375 852704 F: 01375 852768 E: [TilburyEECentre@rwenpower.com](mailto:TilburyEECentre@rwenpower.com)

Please provide a minimum notice period of 4 weeks when booking your tour so we can ensure your visit to our power station and Energy & Environment Centre is as beneficial as possible.

We look forward to welcoming you to Tilbury Power Station and Energy & Environment Centre to help your students gain a real insight in to how electricity is generated and the natural environment!

### The visit consists of

This visit around our power station is free of charge and will include:

- Introduction/Presentation/DVD/Health & Safety briefing – issue 'Personal Protective Equipment' (PPE).
- Guided tour of the power station where groups could see/visit (age of group and time allowing): the coal stocking area, jetty, water treatment plant, mills, boiler, turbine hall and control room. Groups could see other areas if requested when booking, such as our stores, offices and lab.
- Review & Feedback session.

The full duration of this visit is approx. 2 hours.

A half day power station visit could be combined with a half day environment session at our Energy & Environment Centre to make a full day visit.

As part of our Health & Safety policy we offer our power station visits to Year 4 pupils (8-9 year olds) upwards. Year 4 will have a specialist session and the station tour is reduced, but still visits various departments.

We offer our Energy & Environment Centre visits to all ages from nursery schools through to universities and community groups.

Your views and those of your students are important to us and help us to develop our education commitment. We will ask your students some questions after the visit and will provide you with a short feedback form.

We would be grateful if you would complete the form and send it back to us.



## This visit helps to deliver parts of the following KS4 Learning Objectives of the Key Stage 4 Level 2 AQA Engineering Diploma Principal Learning Specification

- Inputs and Outputs to an operating system
- Scale of production
- The use of control systems in real world contexts

### Level 2 Unit 1: The Engineering World

Know about Sectors that make up the Engineering industry, and their products and services

Typical Technologies Include:

Electrification and the National Grid

Water Treatment, distribution and waste management

### Level 2 Unit 3: Engineering Applications of Computers

Understand the use and advantages of Computer Aided Engineering systems for different activities

Explain the advantages of Computer Aided Engineering compared with traditional methods

### Level 2 Unit 4: Producing Engineering Solutions

Know the Health and Safety and Quality Standards, and be able to apply them in the context of the process required for the solutions

### Level 2 Unit 5: Construct Electronic and Electrical Systems

Calculate and specify component values for:

- i. Frequency Rates
- ii. Voltage, current, and resistance

### Level 2 Unit 7: Maintenance

Be able to describe and evaluate the operation of a simple maintenance system

### Level 2 Unit 8: Innovation, enterprise and technological advance

Know about innovation and the impact of technology

Understand enterprise in the world of engineering

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## Size of group

Visits for a power station tour combined with another session (full day visit) are limited to 64 persons.

A power station tour, is limited to 32 persons.

This tour is booked on the strict understanding that the group visiting adheres to our Health & Safety requirements and to their Local Authority's regulations regarding off site visits including the adult:child ratio to provide adequate supervision during this visit.\*

\* Please advise us of your Local Authority's adult:child ratio when arranging your tour as in some cases our ratio may be more cautious, therefore we would require you to adhere to npower's ratio.

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## These visits are available

The power station tours are generally available Monday – Friday (excluding Bank and Public Holidays), during working day-time hours. They can also be arranged for an occasional evening or on a Saturday for specialist groups. However, all tours are subject to advance booking and the availability of the Tour Guides.

Empowering the next generation from the first day of school to the first day of work



## Key words that may be referred to during the visit

Programming, Automation, Timing, Control, Feedback, Environment, Sustainable, Innovation, Power, Voltage, Transformer, Frequency, Alternative, Generation, National grid, Management, Service provider, Pollution, Current, Frequency, Resistance  
Kilo = Thousand (1 x 10<sup>3</sup>), Mega = Million (1 x 10<sup>6</sup>), Giga = 1 x 10<sup>9</sup>

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## Skills and concepts that may be referred to during the visit

- Be aware of the real world industrial application of chemistry principles in action
  - Understand the impacts on the local area of the process of electricity generation
  - Experience science in the workplace
  - Recognise the importance of finding / developing sustainable energy solutions
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## By the end of the visit students should be able to describe

- Why coal is ground to improve combustion
  - The water cycle and the different properties of water at each stage of the generation process
  - How the boiling point of water changes with pressure
  - How ash appears in two forms (furnace bottom ash and pulverised fuel ash and what these can be used for)
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## Health & Safety

As part of our commitment to safety, Personal Protective Equipment (PPE), which includes adjustable hard hat (with visor and ear defenders attached) and a high visibility vest will be provided to all visitors and must be worn during the site tour. If an individual is unable to wear a safety helmet, i.e. for religious reasons, the station will require this information as soon as possible.

An absolutely necessary requirement of a power station tour is also with regards to visitors clothing. All visitors must arrive wearing suitable, protective and comfortable clothing. All footwear must be flat, sturdy and closed toe (no flip-flops or sandals); visitors will not be permitted to take part in the power station tour if clothing is deemed to be inappropriate.

The use of photography and/or video equipment and/or mobile phones, within the power station is prohibited; photographs may be taken whilst visiting and taking part in sessions led from the Energy & Environment Centre, but with prior written permission from the power station manager.

Where parties include young people below 18 years of age, their taking part in the visit shall be regarded as an agreement by their parents or guardians to the conditions upon which this booking confirmation has been issued.

The site tour requires visitors to undertake a considerable amount of walking and some flights of stairs. If an individual has any access requirements, the Centre will require this information as soon as possible.

Due to magnetic fields on site, please inform the Centre as soon as possible if any visitor has a pacemaker, cochlea implant or items fitted that may be affected in these areas. We will also require all visitors to switch off their mobile phones whilst out on site.

Visitors must not touch any part of the machinery or instruments as serious damage and personal injury might result from so doing.

Visitors must follow the station guides and follow the designated footpaths and walkways at ALL times.

Refreshments (teas and coffees) will be offered to accompanying adults during the lunch break of their visit. Drinking water is also available for all visitors. There is no available canteen facility or shop on-site, all visitors staying for a full day, are required to bring a packed lunch with them.

*A Risk Assessment of the power station guided tour is available upon request.*

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## Follow up back in class

You/your students may find the following web sites/resources of help:

### 'Energy in Action' film

Access our short film that highlights how electricity was discovered and is generated.

Visit our STEM – power station visits section of [www.npower.com/education](http://www.npower.com/education)

### Tour a power station

Access our virtual tour of one of our power stations to see how electricity is generated.

Visit [www.brightergraduates.com/npower-plant-tour](http://www.brightergraduates.com/npower-plant-tour)



## npower Climate Cops teaching resources

Order our free of charge npower Climate Cops teaching resources for 4-7, 7-11 or 11-14 year olds which are mapped to the national curriculum for Science, Geography and Citizenship.

Our fun and engaging resources provide you with the learning tools you need to help you deliver fun and engaging lessons on energy, energy efficiency, renewable energy, climate change and sustainable development via worksheets, interactive presentations, games, full colour posters, information sheets and teacher notes.

The Teaching resources for 7-11 and 11-14 year olds are multi media.

Visit the Climate Cops section of [www.npower.com/education](http://www.npower.com/education) to order your free resource today.



## Apprenticeship and Graduate recruitment schemes/Job roles

Explore our web site to find out more about the exciting job roles within our company and our Apprenticeship and Graduate recruitment schemes.

Visit: [www.npowerjobs.com](http://www.npowerjobs.com)



For further information about the npower education programme, please visit [npower.com/education](http://npower.com/education)

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