



# FAWLEY POWER STATION



An **RWE** company

## FLEXIBLE POWER FROM OIL

Fawley is an oil-fired power station, owned and operated by RWE npower. The station was built in the 1960s, and is located on the shores of Southampton Water in Hampshire. Fawley has the ability to generate 1070MW of electricity. This is enough power to meet the needs of over 1 million people – equivalent to the working population of Hampshire.

Fawley is one of the most efficient oil-fired stations in the UK and its short start-up time means it can begin generating electricity very quickly, providing crucial additional power to the National Grid at times of peak demand. It began operation as a 2000MW power station, although two of its 500MW units were closed during the 1990s.

Fawley Power Station operates as an opted out station under the Large Combustion Plant Directive (LCPD). The LCPD enforces strict environmental compliance, setting limits for the amount of sulphur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>) and dust particulates that each coal or oil-fired plant can emit. As an 'opted out' plant, Fawley's main units must close by the end of 2015, but the Open Cycle Gas Turbine (OCGT) will continue to play an important role in keeping the National Grid system balanced.

RWE npower, part of the RWE Group, is a leading integrated UK energy company. We operate and manage a diverse portfolio of flexible coal-, oil-, biomass- and gas-fired power stations, with the capacity to produce over 11,000MW of electricity.

npower, one of the UK's leading energy suppliers, serves around 6.5 million residential and business customers. We are also committed to developing innovative products which allow our customers to improve their energy efficiency and make sustainable energy choices.

RWE npower renewables is the UK subsidiary of RWE Innogy and is one of the leading developers and operators of renewable energy in the UK.

# NPOWER BRIGHTER FUTURES

The aim of our npower Brighter Futures programme is to inspire young people, from their first day at school to their first day at work. We develop their skills and knowledge to help make their own choices, and empower them to reach their vision of a 'brighter future' for themselves and for the environment.

npower Brighter Futures brings together npower's education programmes – from primary schools through to universities. This includes our Power Technician Traineeship and Graduate recruitment schemes.

Our programmes focus on environmental education – energy generation, energy efficiency, climate change and sustainability – and includes our award winning npower Climate Cops programme.

We are committed to increasing the pool of Science, Technology, Engineering and Maths talent and meeting the recruitment challenges we face in the energy industry. To find out more about our education commitment and initiatives visit [www.npower.com/education](http://www.npower.com/education). Young children can visit [www.npower.com/climatecops](http://www.npower.com/climatecops) to play our interactive energy saving games.



# CARING FOR THE COMMUNITY AND THE ENVIRONMENT

Through links maintained with local authorities, conservation groups and educational establishments, Fawley Power Station plays an active role in its neighbouring community.

We support local educational initiatives, environmental projects, and encourage visits to our power station from schools and other groups from the region.

We work closely with our local stakeholders. Through our Local Liaison Committee, which brings together representatives from wards of Fawley Parish Council, we ensure an open dialogue with the communities close to our operations. We also ensure that Fawley Power Station is represented at meetings of the New Forest Environmental Protection Liaison Committee and the South Hants Responsible Care Cell.

We have always strived to support projects and charitable causes and over the years have provided assistance and funding to various projects, including local schools, sporting groups, and charitable projects such as local hospices and support centres.

We also have a long history of working with the local Emergency Services to provide realistic training opportunities.

We are committed to minimising the environmental impact of our operations.

Fawley Power Station is located within the New Forest National Park, near ecologically sensitive areas on Southampton Water. We work closely with local organisations – including the Hampshire and Isle of Wight Wildlife Trust, Natural England, the New Forest District Council and the Hampshire County Council Countryside Service – to conserve and enhance the rich biodiversity which surrounds the Station.



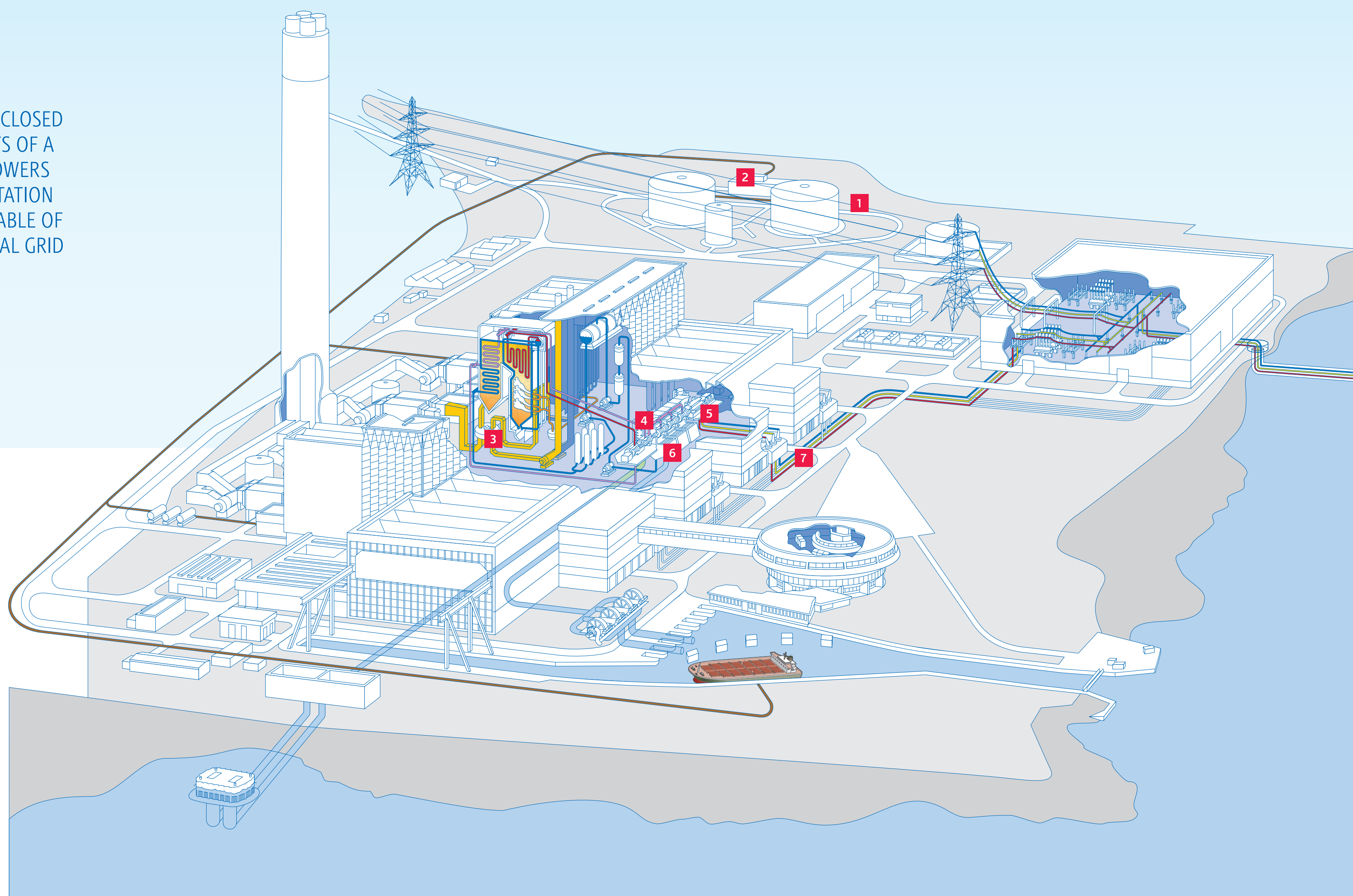
Fawley's glass-panelled  
boiler house



Fawley has many distinctive architectural features, including the striking glass-panelled boiler house and the futuristic, circular control and administrative building.



FAWLEY HAS FOUR GENERATING UNITS, TWO ARE CLOSED AND TWO ARE OPERATIONAL. EACH UNIT CONSISTS OF A BOILER, SUPPLYING STEAM TO A TURBINE THAT POWERS AN ASSOCIATED GENERATOR. IN ADDITION, THE STATION HAS TWO OPERATIONAL GAS-TURBINE UNITS CAPABLE OF PROVIDING ADDITIONAL SUPPORT TO THE NATIONAL GRID SYSTEM WHEN REQUIRED.



#### 1 Oil supply

Delivery of heavy fuel oil is made by sea tanker into the dedicated dock facility at the power station and piped to large storage tanks, each holding up to 15,000 tonnes.

There is a road tanker unloading facility as a back up to deliveries by sea.

#### 2 Oil preparation

When it is about to be used, the oil is filtered, heated to 130°C and pressurised up to 80 bar. It is then atomised as it is sprayed into the boiler, where it burns like a gas.

#### 3 Boiler

Each boiler, which can burn up to 2,600 tonnes of heavy fuel oil per day, is lined with over 400 kilometres of steel tubing. The heat produced in the boiler furnace converts ultra pure water within the tubes to superheated steam, which leaves the boiler at up to 165 times atmospheric pressure and at a temperature of 541°C.

The steam passes through the boiler twice to maximise the electricity produced from each tonne of oil.

#### 4 Turbine

The steam from the boiler passes through the high pressure section of the steam turbine, turning the blades and shaft at 3,000 revolutions per minute.

The steam returns to the boiler for reheating, and then to the turbine intermediate pressure stage, and then passes to the three low pressure stages. The turbine, which can produce more than 670,000 horse power, is connected to the electrical generator.

#### 5 Generator

Inside the generator, the rotor (an electromagnet) turns inside the stator (made up of copper bars) and creates an electric current. Each generator has an output of 500MW of electricity.

#### 6 Condenser

The water used in the boilers is extremely pure and too valuable to be lost. Therefore, as the steam leaves the turbine, it is cooled back to water by large condensers before passing back to the boiler. The condensers are cooled by sea water, pumped from Southampton Water, which is then returned to the Solent through tunnels 1,540 metres long and 4.3 metres in diameter. The returned water is a few degrees warmer but otherwise unchanged.

#### 7 Generator transformer

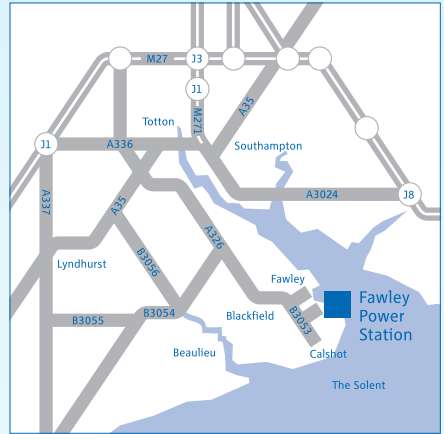
Electricity from the generator is produced at a voltage of 22,000 volts. For transmission along the National Grid system, the voltage is increased to 400,000 volts in the generator transformer.

# HOW TO FIND US

Fawley Power Station is located on the western shore of Southampton Water just beyond Fawley village.

## By Car

Take junction 3 from the M27 onto the M271 for Totton and Southampton. From Totton take the A326 south until it joins the B3053 at Holbury. A private road from the B3053 between Holbury and Calshot gives access to the power station.



## RWE npower

Fawley Power Station  
Fawley  
Southampton  
Hampshire  
SO45 1TW

T +44 (0)2380 893051  
F +44 (0)2380 245617  
E [fawley@rwenpower.com](mailto:fawley@rwenpower.com)  
I [www.rwenpower.com](http://www.rwenpower.com)