

### **The Power Hall**

The gallery contains the Museum's collection of stationary engines and railway locomotives. Most of the exhibits were made in the Manchester region and highlight the area's key role during and after the Industrial Revolution.

The gallery is housed in a former rail freight-handling shed built in 1855. Goods were brought into the building by rail and unloaded for road transport.

### **What's in the gallery?**

The gallery consists of two sections.

- Stationary engines
- Locomotives

### **Using the gallery**

Steam, gas and diesel engines are operated our Presenters who will start up the engines from mid-morning onwards. The Presenters wear turquoise tops and are available to explain and discuss the exhibits with visitors. They also deliver bookable presentations for school groups. Visit our website or contact the Learning Centre for more details.

There are two entrances to the Power Hall. The main entrance takes you into an introductory area displaying a horse gin, a model beam engine and a hand-on science interactive. From here, it is possible to follow a variety of routes through the gallery.

The other entrance is at the end of the Power Hall displaying railway locomotives and carriages. There are a number of possible routes through the gallery from this end of the Power Hall.

More guidance on routes through, and activities within, the Power Hall is available from the Education section of our website.

Some additional points to be aware of are:

- the gallery is fully accessible to wheelchair and pushchair users, although parts of the railway section are cobbled and may present difficulties for people with limited mobility,
- the noise from the machines can make it difficult to talk to large groups,
- the size, smells and sights of the Power Hall may be a little overwhelming for younger children without preparation.

### **National Curriculum**

The gallery is relevant to the following:

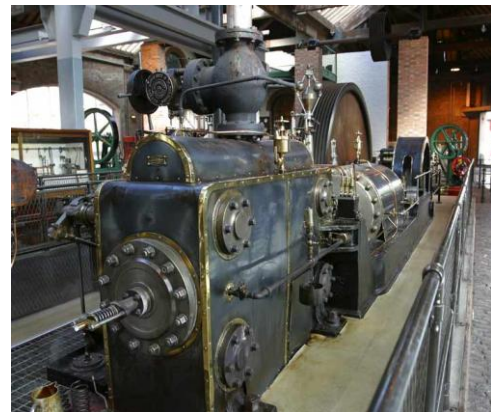
- Science (Forces/Energy),
- Design and technology,
- History (the Victorians/Industrial Revolution).

## Stationary Engines

The large stationary steam engines in the Power Hall are examples of the power sources used in the mills of the Lancashire cotton industry. The smaller hot air, gas, diesel and internal combustion engines on display illustrate the development of smaller power units.

The following key exhibits are described in broadly chronological sequence, beginning with muscle power and wind power before the Industrial Revolution, through to 18<sup>th</sup> and 19<sup>th</sup> century steam-power engines and later electric power sources. Key exhibits are:

- Horse Gin, early nineteenth century  
Used to lift coal from a mine near Leeds.
- Water wheel, c.1820  
An undershot waterwheel used to drive a paper mill at Otley, West Yorks.
- Atmospheric engine  
A one-third scale model of a Newcomen engine. These were the first viable types of steam engines and were used in the 18<sup>th</sup> century to pump water from mines.
- Beam engine, 1830  
An example of the type of rotary beam engine developed by James Watt in the second half of the eighteenth century. Watt improved the steam engine so that it could be used to drive other machines. This machine was used to power a workshop at a coal mine near Haydock.
- Early mill engine, 1864  
This represents a development from the beam engine. The single cylinder is horizontal and directly attached to a crank that drives gears, dispensing with the need for a large, heavy beam. Unlike the Newcomen and Watt engines, the steam enters the cylinder under pressure and so can be used more efficiently. This engine was used in Durn Mill, Littleborough.
- Firgrove Mill Engine, 1907 (right)  
Built for use in a Rochdale cotton mill that made flannelette sheets. Two horizontal cylinders work in tandem, the secondary cylinder using exhaust steam from the first. Further efficiencies were gained by the use of a large flywheel which used ropes, rather than gears, to turn pulleys attached to line shafts to power the mill machinery.
- Cross Compound Engine, 1926  
This represents the final stage in the development of stationary steam engines. The engine was installed in Elm Street Mill in Burnley and worked there until 1967.
- Ferranti Inverted Engine, 1900  
The pistons turned a dynamo that generated electricity for Lambeth Power Station in London.
- Steam Turbine, 1907  
Charles Parsons invented the steam turbine in 1880. This exhibit has been cut away to show the turbine blades. The lower weight and smaller number of moving parts in a turbine make them a more efficient method of generating electricity than piston driven engines. The increased availability and flexibility of electrical power meant steam-driven piston engines became obsolete.



## Engines – steam, gas, oil, petrol and diesel

Working examples of small-scale steam, gas, oil, hot-air and diesel stationary engines, made by local companies such as W. H. Bailey of Salford and the National Gas Engine Co. Ltd of Ashton-under-Lyne. Engines such as there were able to provide more flexible sources of power. Expertise in building smaller engines enabled the development of viable power sources for cars and motor cycles by the late nineteenth century.



## Hydraulic Power

Manchester Corporation opened a network to distribute hydraulic power to the city in 1894. Used mainly in the cotton baling process the network had grown to 35 miles of pipes working some 2400 machines by the 1930s. Three pumping stations pressurised the water in the system. A hydraulic pumping engine made by Galloway's of Manchester from the Water Street Pump House (now the People's History Museum) and a 30-tonne hydraulic accumulator form the core of a new display about hydraulic power.

## Locomotives

This section of the gallery contains railway vehicles associated with the Manchester region and highlights the development of steam power for transport. Key exhibits are:

- Pender, 1873 (right)  
A 'tank' engine built by the Gorton-based company of Beyer Peacock & Co for the Isle of Man railways. One side of the locomotive has been sectioned to reveal the workings inside. The pistons, connecting rods and wheels are powered by an electric motor to show how the mechanism transfers movement to the wheels. A Power Hall presentation on Pender for Reception to Year 4 groups is available. Contact the Learning Centre or visit our website for details.
- Novelty, 1829  
A reproduction, with some original parts, of one of the entrants in the Rainhill Trials.
- Planet  
A working reproduction of one of the locomotive built by Stephenson's for the Liverpool and Manchester Railway following the success of Rocket in the Rainhill Trials.
- 2<sup>nd</sup> Class Carriages  
Reproductions of the type of carriages used on the Liverpool to Manchester line in the 1830s and 1840s. Along with Planet they are used to offer rides on some weekends and bank holidays and may be on the tracks outside the Power Hall.
- 1<sup>st</sup> Class Carriage, c.1840, has restored original body from a Manchester-Birmingham Railway carriage fitted to a modern chassis.
- Pakistan Locomotive, 1911 (right)  
Built by Vulcan Foundries in Newton-le-Willows and ran on Pakistan railways until the late 1970s.
- Beyer Garrett, 1930  
An articulated locomotive built by the Beyer Peacock Company and exported to South Africa.



- Metrovic EM1 cab, 1950  
The cab is part of EM1 No 76039 'Hector', one of 57 such locomotives built at the former LNER works at Gorton, Manchester with the electrical gear being supplied by Metropolitan-Vickers of Trafford Park. The EM1 was used mainly for freight haulage on Manchester-Sheffield route through the Woodhead Tunnel, the first main line in Britain to be electrified.
- Ariadine, 1952  
A Metrovic EM2 electric locomotive. Used until the late 1960s on the Manchester-Sheffield route and then sold to the Netherlands Railway in 1969, who operated the locomotive until 1986.
- Medical Officer's Examination Carriage 10825, 1917  
Built at Newton Heath as part of an ambulance train for the US Army. In 1923 it was converted to its current configuration to be used for the medical examination of staff working for the London Midland and Scottish Railway and is currently undergoing restoration.
- The Great Central Railway Wagon, and the Goods Vans outside, are examples of freight rolling stock which would have been in use at Liverpool Road Station.