

## (WC 27.4.20) History - Industrial Revolution

### Invention of the Steam Engine (info sheet)

The steam engine was one of the most important inventions of the Industrial Revolution and perhaps one of the most important inventions in human history. Steam engines were used in all sorts of applications including factories, mines, locomotives, and steamboats.

#### How does the steam engine work?

Steam engines use hot steam from boiling water to drive a piston (or pistons) back and forth. The movement of the piston was then used to power a machine or turn a wheel. To create the steam, most steam engines heated the water by burning coal.

#### Why was it important?

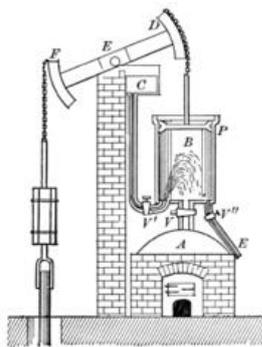
The steam engine helped to power the Industrial Revolution. Before steam power, most factories and mills were powered by water, wind, horse, or man. Water was a good source of power, but factories had to be located near a river. Both water and wind power could be unreliable as sometimes rivers could dry up during a drought or freeze during the winter and wind didn't always blow.

Steam power allowed for factories to be located anywhere. It also provided reliable power and could be used to power large machines.

#### Who invented the steam engine?

One of the first steam engines was invented by **Thomas Savery in 1698**. It wasn't very useful, but other inventors made improvements over time. The first useful steam engine was invented by **Thomas Newcomen in 1712**. The Newcomen engine was used to pump water out of mines.

Steam power really took off with improvements made by **James Watt in 1778**. The Watt steam engine improved the efficiency of steam engines considerably. His engines could be smaller and use less coal. By the early 1800s, Watt steam engines were used in factories throughout England.



*The Newcomen Steam Engine*  
by Newton Henry Black  
and Harvey Nathaniel Davis (1913)



A Boulton & Watt engine in Birmingham, England, built during Watt's lifetime in 1817. Image by Chris Allen.

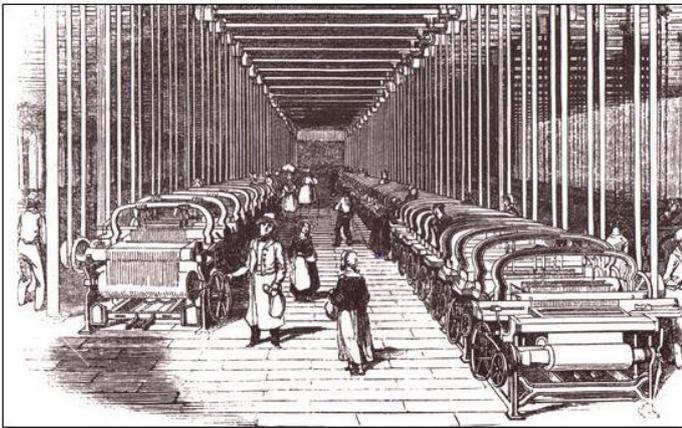
## Where was the steam engine used?

Throughout the 1800s, steam engines were improved. They became smaller and more efficient. Large steam engines were used in factories and mills to power machines of all types. Smaller steam engines were used in transportation including trains and steamboats.

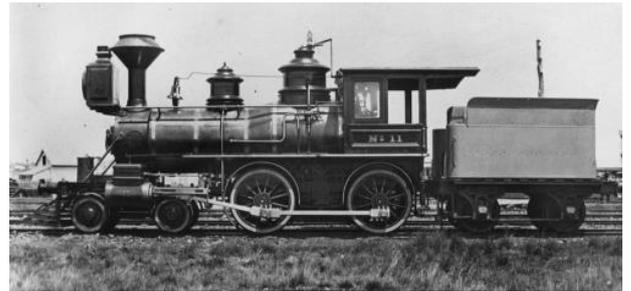
## Are steam engines still used today?

The steam engine as we think of it from the Industrial Revolution was largely replaced by electricity and the internal combustion engine (gas and diesel). Some old steam engines are still used in certain areas of the world and in antique locomotives.

However, steam power is still heavily used around the world in various applications. Many modern electrical plants use steam generated by burning coal to produce electricity. Also, nuclear power plants use steam generated by nuclear fusion to produce electricity.



(Source 13) Drawing of machinery being driven by one of Watt's steam-engines (1843)



Locomotive steam engine  
Source: State Library of Queensland

## Interesting Facts about the Steam Engine and the Industrial Revolution

- The unit of power (the Watt) was named after inventor James Watt.
- James Watt used the term "horsepower" to describe how much power his engine could produce. He used it to compare his engine to the actual output of how much power horses could produce.
- One horsepower is equal to 745.7 Watts.
- The first successful commercial steamboat was the *Clermont* developed by Robert Fulton in 1807.

## Activities

- Take a ten question **quiz** about this page on the link below:

[https://www.ducksters.com/history/us\\_1800s/steam\\_engine\\_industrial\\_revolution\\_questions.php](https://www.ducksters.com/history/us_1800s/steam_engine_industrial_revolution_questions.php)

- **Listen to a recorded reading** of this information (located at bottom of link page):

[https://www.ducksters.com/history/us\\_1800s/steam\\_engine\\_industrial\\_revolution.php](https://www.ducksters.com/history/us_1800s/steam_engine_industrial_revolution.php)