The pipeline industry has had a rich and varied history. People were using pipes probably way before you could ever imagine. Let's take a look back at how it all started.

4000 BC – Sanitation Creation

Earliest known pipe is created in Babylonia (Iraq).

Clay is moulded into pipe using a potter's wheel. Tees and angle joints are also created and used to construct drainage pipes. Some of these were even connected to people's homes! At the ends of the drains were wooden 'bar screen'. Liquids entered brick-lined cesspools or were conveyed to the local river for discharge.

3200 BC In the Orkney islands lavatory-like plumbing systems are fitted into the walls of homes and liquid wastes are drained either underneath or outside the home.

3000 BC Terracotta piping is used for waste disposal and drainage in wealthy households in the Indus Civilisation (Pakistan).

Some homes even had bathrooms (which were always located on the 'street-sides') which were connected to outside sewers. People were starting to understand the importance of cleanliness.

2000 BC Drainage systems constructed from terracotta piping are built in Crete, many of which are still in use today.

2000 BC Cement pipe (made from crushed rock and cement) is used by the Romans to carry water

2000 BC In Egypt/Palestine some wealthy aristocrats have copper pipes which carry hot and cold water around their homes

1500 BC In Crete, earthenware pipes are used to transport water

1600 BC Pipes made from lead and bronze are made by the Greeks to distribute water. The metal pipes are connected by hammering the red-hot ends together

600 BC In Greece, both Samos and Athens are supplied by long-distance aqueducts. The aqueduct supplying Samos measures 2.5 km

Credit: Ancient Aqueduct in Samos from Views in the Ottoman Dominions, in Europe, in Asia, and some of the Mediterranean islands (1810) illustrated by Luigi Mayer (1755-1803) Rawpixel Ltd

525 BC When Cambyses invaded Egypt, Persian forces build a long distance pipeline made from ox-hides sewn together to transport water across the desert

510 BC The Roman Cloaca Maxima sewer, 'main drain' is completed. Made of hewn stone (without cement), it has been in service for more than 2,400 years

500 BC In Rome, water is distributed using lead piping, made by bending lead around a wooden mandrel and joined by a solder

400 BC In China, bamboo pipe wrapped in wax is used to light the capital Peking

312 BC The 16 km long Aqua Appia aqueduct supplies water to Rome

Credit: Appia and Aqua Claudia aqueduct near Rome, Photographic Heritage

272 BC The Anio Vetus aqueduct supplies water to Rome

144 BC The Aqua Marcia aqueduct measures 91 km and supplies water to Rome. Roman aqueducts are developed into a system that includes the Aqua Tepula (126-125 BC), Julia (33 BC), Virgo (22-19 BC), Alsietina (2 BC), Aqua Claudia and Anio Novus (52 AD), Aqua Traiana (109 AD) and the Aqua Alexandrina (226 AD)

100 BC Sewer infrastructure within Rome is near enough completed. Direct connections to homes begin to be established

60 AD The Romans harness the hot springs in Bath, and establish the town of Aquae Sulis

85 AD The first elements of the Roman Vindolanda are constructed. Fresh water piping systems are built

476 AD The fall of the Roman Empire leads to a regression in sanitation practices, and much of the Roman's drainage technology is ignored and falls into disrepair

802 AD Angkor Wat and its extensive network of irrigation channels are constructed

1200s

1245 Construction begins on the Great Conduit, a lead pipe which transports drinking water from Tyburn to Cheapside in London

1300s

1370 Paris's first underground sewer is built

1400s

1450 The Inca come to Machu Picchu and begin constructing their infamous water distribution system. It consists of a channel made from cut stone which leads into a series of 16 fountains

Credit: My favourite pet sitter

1460 In Hull lead pipes are laid throughout the town, householders can pay to have pumps installed to bring water to their homes

1500s

1582 Peter Morice develops one of the first pumped water supply systems, powered by undershot waterwheels. It is used to supply London with water until the machinery is mostly destroyed in the 1666 Great Fire of London

1584 In Plymouth a water system is installed that diverts water into the town and into a tank for free public use

1600s

1613 The New River, an artificial waterway, is opened. It supplies drinking water to London

1662 Boyle's law is published, describing how the pressure of a gas tends to increase as the volume of the container decreases. This is a key principle that informed the development of gas pipeline technology

1700s

1723 The Chelsea Waterworks Company is established

1770 The Borough Waterworks Company is founded

1792 William Murdoch's house becomes the first domestic residence to be lit by gas. Murdoch produces coal gas from a retort in his back garden, pipes it through an iron pipe to an old gun barrel and ignites it to produce a flame

1800s

1802 Lambeth Waterworks Company, which was established in 1885, expands to Kennington and replaces its wooden pipes with iron ones

1807 Gas lamps are installed in Pall Mall, the first street to be lit by gas

1812 Paris sewer systems are finally updated; 182 miles of sewer are built

1812 The first gas works in the UK are built for the Gas Light and Coke Company, who have been commissioned to light the City of Westminster

1819 By this point, 288 miles of pipes have been laid in London to supply 51,000 gas burners

1819 The Killington Reservoir is opened

Credit: Alx_chief

1820 In the UK, cast iron musket barrels from the Napoleonic wars are used to transport manufactured gas

1820 Lower Tamar Lake reservoir is constructed

1821 William Hart digs the USA's first natural gas well in Fredonia, New York

1833 During Andrew Jackson's presidency, water is piped through the White House using drilled out logs

1842 The construction of a new, innovative sewer system begins in Hamburg after a large fire destroyed the old part of the city. Tide water is used to flush through the main lines of the sewer; this system is found to be so effective it forms the model for many more sewers in other major cities.

1843 Iron pipe replaces wood pipe for the transportation of natural gas in New York State

1847 Construction is completed on the Mendip aqueduct in Bristol, which carries water from the source of the River Chew to water treatment works at Barrow Gurney

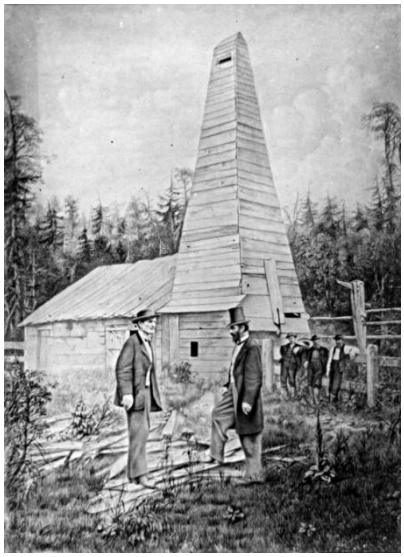
1848 UK Public Health Act is passed, creating the model for plumbing practises of today

1850 The introduction of the Bessemer steel making process leads to the production of higher quality steel for use in pipe manufacturing

1853 The first Canadian natural gas transmission pipeline is built in Quebec. Made of cast iron and measuring 15.5 miles, it is the longest pipeline in the world at the time

1855 The Metropolis Water Act is passed in London, making it illegal for water supply companies to source water for domestic use from the tidal reaches of the Thames. Furthermore, all water supplied has to be 'effectually filtered'

1859 Colonel Drake drills the first commercial oil well in Titusville, Pennsylvania



1860 The Russian oil boom begins in Baku

1861 The first of the Dartmoor reservoirs, Tottiford, is built. A further 7 are built. The last, Meldon, is completed in 1972

1862 One of the first oil pipelines is built in Canada, between the Petrolia oilfield, Ontario to Sarnia, Ontario

1863 The Institution of Gas Engineers and Managers, IGEM (formerly known as the British Association of Gas Managers) is established, with renowned civil engineer Thomas Hawksley as its first president

1863 In the USA, a wooden pipeline measuring around 9 miles is built, replacing the use of converted whiskey barrels transported by horse and cart. These developments face considerable resistance (including digging up and destroying pipes) from the 'Teamsters', the original transporters, whose jobs are lost as a result

1864 In Pennsylvania the construction of an oil pipeline is opposed and delayed because of teamster-led claims that it would 'affect local prosperity'. The pipeline is eventually built the following year

1865 The first pipeline with a pump begins construction at the Benninghoff Run oilfield in Pennsylvania. Completion is delayed because of harassment and destructive attacks from teamsters

1866 The last significant cholera epidemic hits London; after this point understanding of the importance of sanitation leads to significant development of sewer systems

1868 Abbey Mills Pumping Station, a sewage pumping station, is built in London

Credit: Gordon Joly

1870 Joseph Bazalgette's sewer network for central London is constructed

1871 Bessemer steel begins to replace wrought iron as a popular material for pipes

1878 Developments in equipment and digging techniques as a result of the industrial revolution lead to a further modernisation of the sewers of Paris. The system is extended to 360 miles long. The sewers become a lucrative source of tourism; tours are given to the public at a price

Credit: © Traumrune / Wikimedia Commons, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=25121353

1879 The Tidewater pipeline begins operating between Rixford and Williamsport, Pennsylvania. Measuring 110 miles, it is the first long-distance oil pipeline in the world

1880 During this decade, pipelines begin to be buried instead of laid on the ground, after it is noticed that changes in temperature affect the integrity of pipes. Burying the pipes reduces this effect

1885 In Germany, the Mannesmann brothers invent a machine that can produce pipes with no seam. Stronger pipes can be made

1888 Construction of the Lake Vyrnwy reservoir is completed. The reservoir, situated in Powys, Wales, supplies Liverpool with water. The stone-built dam that it features is the first of its kind in the world

Credit: NWalesJul09_022C

1890 Construction of the Thirlmere Aqueduct is completed. Measuring 95.9 miles long, it is built to carry around 55,000,000 imperial gallons of water per day to Manchester

1891 One of the first long pipelines is built, connecting gas fields in Indiana to Chicago. It measures 120 miles

1900s

1900 Worldwide crude oil production is over 100 million barrels. About half of this total originates from Russia, the majority of the remainder from the USA

1901 The Staines Reservoirs are built

1903 In Russia, the state funds a 550-mile long kerosene pipeline between Baku and Batum

1907 In the USA, Gulf Pipeline constructs a 480-mile line from Oklahoma to Texas

1912 Canadian Western Natural Gas built a 168-mile natural gas pipeline from Bow Island to Calgary

1920 By this point, due to the development of automobiles and aircrafts, for the first time oil is considered to be a more significant fuel than coal

1921 The first of 22 power plants in the world's largest geothermal field, The Geysers in California, is commissioned

Credit: ThinkGeoEnergy

1925 Magnolia gas constructs the first long distance all welded pipeline from LA to Texas, measuring 217 miles

1927 The Alberta Oil Operators' Association is formed in Canada (now known as the Canadian Association of Petroleum Producers- CAPP)

1929 Construction of Haweswater reservoir is completed in Cumbria

1941 MAUD committee (a group of eminent scientists in Britain) report confirms that the controlled fission of uranium could be used to provide energy in the form of heat

1942-3 In the USA emergency war pipelines 'Big inch' and 'Little Big Inch' are built after oil tankers normally used for transportation are attacked by German submarines. Big Inch and Little Big Inch pipelines measure 1,254 and 1,475 miles respectively

1944 Operation Pluto, 'pipeline under the ocean' begins. Undersea oil pipelines are constructed under the English Channel, allowing Britain to transport vital fuel to Allied forces in France.

The pipeline eventually measures 500 miles in length, and transports one million gallons of fuel per day. This is the first subsea pipeline, the technology begins to be used elsewhere in the world to access offshore oil and gas reserves

Image 2 Credit: Yandle

1946 Interprovincial Pipeline build a pipeline from Edmonton to Wisconsin. The system is extended to Sarnia in 1953, and Montreal in 1976. It remains the world's longest pipeline into the 1980s

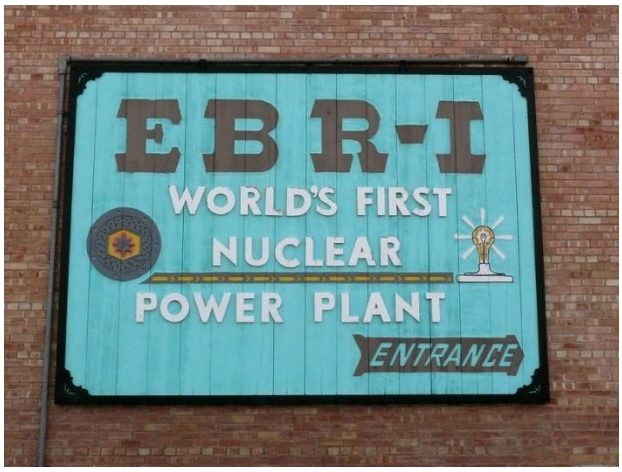
1947 The King George VI reservoir is opened. Construction was completed in 1939, however it lay empty for 8 years due to the outbreak of WWII

1948 The Gas Act is passed in the UK; gas is nationalised

1950 Early in the decade polyethylene is first used to make pipes

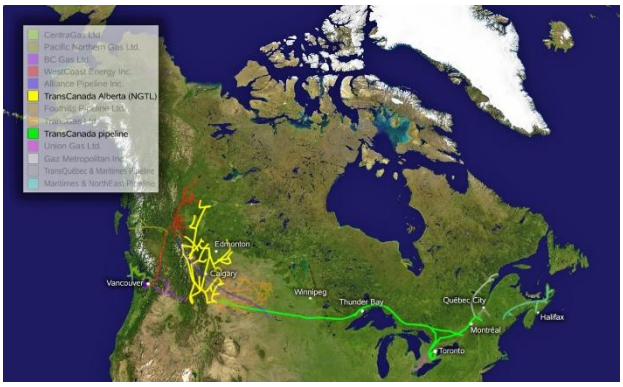
1951 The Transcontinental Gas Pipeline Company built a natural gas pipeline from Texas to Manhattan

1951 The first nuclear reactor to create electricity begins operating in Idaho, USA



Credit: David_jones

1956 The first French nuclear reactor begins operating



1958 The TransCanada pipeline is completed. Extending across the breadth of Canada, it remains the longest pipeline in Canada

1962 Construction of the UK National Transmission System begins

1962 The Queen Elizabeth II Reservoir is opened. The reservoir was originally commissioned in 1935, but construction was halted due to the outbreak of WWII

1962 The first Canadian nuclear reactor begins operating

1964 The first two Soviet nuclear power stations are commissioned

1964 In the USA, the Colonial Pipeline begins operations. Measuring 5,500 miles long, it runs from the Gulf Coast to the New York Harbour area. It remains the largest refined products pipeline system in the USA, and can carry up to 3 million barrels of gasoline, diesel and jet fuel

1964 The Druzhba pipeline, the world's longest oil pipeline, is fully completed. It runs between Almetyevsk in Russia and Germany, and measures around 2,500 miles

1965 Construction of the Grafham Water reservoir is completed in Cambridgeshire

1967 Construction of the Wraysbury Reservoir begins. On completion, it has a capacity of 34,000 million litres

1969 UKOP (United Kingdom Oil Pipeline) is opened, it continues to transport 7.5 tonnes of oil products each year

1972 The Explorer Pipeline begins operating in the USA. The pipeline spans 1,400 miles with a 720,000 barrels per day capacity

1972 In Kazakhstan the world's first commercial prototype fast neutron reactor is built

1973 British Gas is established

1974 Construction of the Krafla Power Station, a geothermal power station, begins

1976 Rutland Water reservoir is opened. Its surface area is the largest of any reservoir in the UK, measuring 4.19 square miles

Credit: Martin Pettitt

1976 Hinkley Point B nuclear power station becomes the first commercial Advanced Gas Cooled reactor to generate power to the National Grid

Credit: Reading Tom

1977 Construction of TAPS (the Trans-Alaska Pipeline System) is completed. The system supplies 2 million barrels per day, 15% of the USA's crude oil supply, at its peak and remains one of the world's largest pipeline systems

Credit: Scott 1346

1977 The Upper Tamar Lake reservoir is opened. With a capacity of 1,400 million litres, it supplies water to Bude and surrounding areas

1981 Kielder Water reservoir is opened, holding 200 billion litres it is the largest artificial reservoir in the UK by capacity

1983 Construction begins on the Californian SEGS (Solar Energy Generating Systems), currently the world's second largest solar thermal energy generating facility

1984 The construction of the Urengoy-Pomary-Uzhgorod pipeline is completed. It runs from Western Siberia to Western Europe and is 2,800 miles long

1987 Construction of the Nesjavellir Geothermal Power Station in Iceland begins.

1992 Carsington Water reservoir is opened. Located in Derbyshire, the reservoir has a capacity of 35,412 megalitres

1993 The Canadian Energy Pipeline Association is formed

1994 Construction of the Three Gorges Dam in China begins. This hydroelectric dam is the world's largest power station

1998 Construction of the Interconnector, a natural gas pipeline which crosses the North Sea to connect the UK and Continental Europe, is completed.

2000s

2000 Hinkley Point A nuclear power station is decommissioned

2004 The Langeled pipeline, a subsea pipeline transporting natural gas from Norway to the UK, begins construction. On completion, it measures 725 miles

2004 Construction begins on the PS10 solar power plant in Spain, the first commercial solar tower in the world

2004 The Energy Act 2004 establishes the NDA (Nuclear Decommissioning Authority)

2004 The Pelamis Wave Energy Converter becomes the first offshore wave machine to generate energy into the grid

2005 Construction of the Baku-Tbilisi-Ceyhan pipeline is completed. It runs between the Caspian Sea and the Mediterranean Sea and measures 1,099 miles

2005 Extension work on the Abberton Reservoir is completed. The capacity of the reservoir, which was built in 1939, is increased to 41,000 megalitres. During WWII the reservoir was used by the RAF to practice an attack on German dams

2006 The South Caucasus Pipeline is commissioned. It runs parallel to the Baku-Tbilisi-Ceyhan pipeline, and measures 430 miles

2008 SeaGen becomes the first commercial power station to generate electricity from tidal energy

2009 Construction begins on the Crossrail Project. On completion the line will measure 73 miles; it is one of Europe's largest railway and infrastructure projects

2009 The intergovernmental agreement regarding the planned Trans-Saharan natural gas pipeline is signed. The pipeline will connect Nigeria and Algeria and will span 2,565 miles

2009 Construction of the Gansu Wind Farm in China begins. It is currently the world's largest wind farm

2010 Construction begins on the Ivanpah Solar Electric Generating System. It is currently the world's largest solar thermal plant in operation

2011 The AK-1000 tidal turbine is redeployed in Orkney, Scotland. Standing at 73 feet tall, it is the largest and most powerful tidal power turbine in the world

2011 The Nord Stream pipeline, an offshore natural gas pipeline, is laid. It runs between Vyborg, Russia, and Greifswald, Germany, and is the longest sub-sea pipeline in the world at 759 miles

2013 Construction begins on the Ouarzazate Solar Power station in Morocco. It is expected to produce enough energy to power 1 million homes by 2018

2013 The London Array offshore wind farm begins operating. It is the world's largest offshore wind farm, and at maximum capacity can generate enough power to supply 500,000 homes

2015 For the first 75 days of the year, Costa Rica runs solely on energy produced from renewable sources

2016 The UK government approves the plans for Hinkley Point C nuclear power station

2016 Preliminary construction of the Thames Tideway Tunnel begins. The projected 25 km tunnel is expected to solve the problem of sewage overflow into the River Thames for at least the next 100 years

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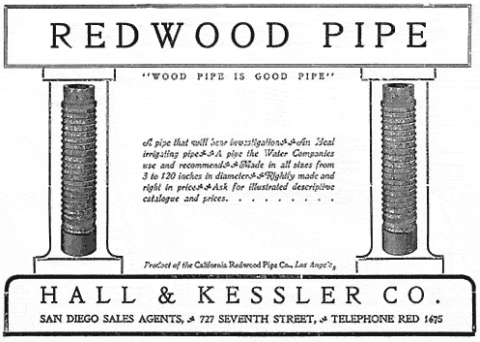
Potential pictures:



Advertisement for Redwood (Stave) Pipe
Manufacturer: California Redwood Pipe Company (Los Angeles, CA).
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