

PIPELINE TRANSPORT

Pipeline transport is a transportation of goods through a pipe. Most commonly, liquid and gases are sent, but pneumatic tubes that transport solid capsules using compressed air have also been used.

Uses

As for gases and liquids, any chemically stable substance can be sent through a pipeline. Therefore sewage, slurry, water[[1]], or even beer[[2]] pipelines exist; but arguably the most important are those transporting oil[[3]] and natural gas[[4]].

Inspection

Often these pipelines are inspected and cleaned using pipeline inspection gauges ("pigs").

Transport of oil and natural gas



The device, belonging to the natural gas pipeline in Switzerland.

Pipeline transport, pioneered by Vladimir hukhov[[5]] and the Branobel [[6]] company in the late 19th century, is the only economic way to transport large quantities of oil[[7]] or natural gas[[8]] over land. Compared to railroad, it has lower cost per unit and also higher capacity. Although pipelines can be built even under the sea, that process is both economically and technically very demanding, so the majority of oil at sea is transported by tanker ships.

Construction

Oil pipelines are made from steel or plastic tubes with inner diameter from 30 to 120 cm (about 12 to 47 inches). Where possible, they are built above the surface. However, in more developed, urban or environmentally sensitive areas they are buried underground at a typical depth of about 1 metre (about 3 feet).

How used

The oil is kept in motion by a system of pump stations built along the pipeline and usually flows at speed of about 1 to 6 m/s. Multi-product pipelines are used to transport two or more different products in sequence in the same pipeline. Usually in multi-product pipelines there is no physical separation between the different products. Some mixing of adjacent products occurs to produce interface. This interface is removed from the pipeline at receiving facilities and segregated to prevent contamination.

Distribution

For natural gas, smaller feeder lines are used to distribute the fuel to homes and businesses.

Protection of pipe lines

Government regulations in Canada and the United States require that buried fuel pipelines must be protected from corrosion. Often the most economical method of corrosion control is by use of pipeline coating in conjunction with cathodic protection.

Accidents

Pipelines conveying flammable or explosive material such as natural gas or oil pose special safety concerns which have to be tackled with latest technologies.

For information on accidents, please see

a complete list Pipeline accidents[[9]]

Some oil/gas pipelines to be looked into are

- Baku-Tbilisi-Ceyhan pipeline[[10]]
- Druzhba pipeline[[11]]
- Indo-Iran Pipeline[[12]] - To be started.
- Lakehead Pipeline[[13]]
- Minnesota Pipeline[[14]]
- Nabucco Pipeline[[15]]
- Odessa-Brody pipeline[[16]]

- Trans-Afghanistan Pipeline[[17]]
- Trans-Alaska Pipeline System[[18]]
- Trans-Israel pipeline[[19]]

Short pipe lines

The first gas find in India[[20]] was by ONGC [[21]](Oil and Natural Gas Commission-a Govt. of India organisation) in Cambay[[22]] Gujarat state[[23]] in about 1961. The natural gas from gas wells is supplied initially to a Thermal station about 25 km away for its steam generators. The gas is being supplied by pipe line about 20 in(500 mm)dia. overland partly. This is insulated and protected for cathodic protection with equipment installed at intervals. Please see Indo-Iran pipe line [[24]] for more details as of today.

Pipelines for other liquids and gases

Water pipelines

Pipelines are useful for transporting water for drinking or irrigation over long distances when it needs to move over hills, or where canals or channels are poor choices due to considerations of evaporation, pollution, or environmental impact.

Beverage pipelines

Beer pipelines

Bars in the Veltins-Arena[[25]], a major football (soccer)[[26]] ground in Gelsenkirchen[[27]], Germany[[28]], are interconnected by a 5 km long beer pipeline. It is the favourite method for distributing beer in such large stadiums, because the bars have to overcome big differences between demands during various stages of a match; this allows them to be supplied by a central tank.

Source : http://engineering.wikia.com/wiki/Pipeline_transport