Tastes bad, but burns well

Even today Vladimir Shukhov is still regarded as a brilliant engineer and bold inventor

Vladimir Shukhov

John D. Rockefeller once said that oil was almost as good as money, when describing the substance that had made him into the world's richest man. Others call oil black gold. In fact, during the pioneering days, this gold was so valuable that no effort was spared in transporting it in barrels and canisters.

And this was done in all weathers: when it was raining, the streets in the production sites were full of mud and oil. The first oil barrels were also an expensive commodity. They were made from oak, the same material that today is used to store the highly priced red wines from France's Bordeaux region while they mature. This was until a Russian inventor, who is practically unknown today, hit on the idea for the first oil pipeline: Vladimir Grigorievich Shukhov (1853 - 1939).

Shukhov was not only a brilliant engineer, but a bold inventor too: he designed the first industrial facility for the thermal cracking of petroleum, devised the procedure still used today for conveying petroleum by pumping in air or water, and drafted a cylindrical oil tank, which proved to be a worldwide success in its day. In addition, Shukhov was also there when the first oil tanker with a capacity of 12,000 tonnes slid down the slipway - after all it was his drawing board that had produced the design for this monster.

Shukhov started his career in the 1870s in Baku, the present-day capital of Azerbaijan. This was a region from which reports had reached Marco Polo some six hundred years earlier, stating that there was an oil which though unsuitable for consumption was all the better for burning. Later, followers of the old Iranian prophet Zoroaster were to honour these "pillars of eternal fire".

In 1877 Shukhov was appointed chief engineer of a company specialized in innovative design. As the right man at the right time in the right place, he was contacted one day by the brothers Ludvig and Robert Nobel: the two of them had just decided to buy a refinery and go into business on a large scale and thus enter into competition with American oil. The brothers named their company founded in 1876 Branobel - a short form for "Brothers Nobel".

Up until its expropriation by the Bolsheviks in 1920, Branobel was to develop into one of the largest oil corporations in the world - and Baku into the world's largest oil production area, which primarily supplied Europe. Another Nobel brother was also financially involved in Branobel: he was called Alfred and also financed the foundation that bears his name with the oil profits.

At that time chaotic conditions prevailed on the oilfields. One particular cause of annoyance for the smart Nobel brothers was the fact that the carter who transported the oil in barrels had more power than the producers themselves. Shukhov was already regarded at that time as a specialist in calculating the load-bearing capacities of iron girders, supporting beams and membranes and in 1876 he was accordingly commissioned by the Nobels to work out the optimum diameter and pipe thickness for an oil pipeline.

Shukhov had the idea of transferring the principle of water pipelines to oil and sought reliable metal pipes that would be able to withstand the pressure of the oil. And he did so with success. In 1878 Branobel opened the first pipeline in the world - they transported oil over a distance of twelve kilometres from Balkany near Baku to Cherny Gorod. Only five years later this pipeline was extended by 82 kilometres. Then in 1904 the first oil pipeline between Baku and Batum was built - its length of 800 kilometres was a world record at the time.

Branobel also managed to solve another tricky transport question at an early stage: there was a strong desire to bring Russian oil onto the American market, but this was not very economical with conventional barrels. To transport oil as a bulk commodity, ingenious technicians transported an oil tank designed by Shukhov on a ship. The captain was shipwrecked and later explained: "The difficulty was that the oil seemed to move faster than the water and when the ship tilted forward during stormy weather, the oil shot downwards and pressed the ship into the waves."

The Shukhov-Nobel team solved the tiresome ballast problem by filling some of the tanks with water, and in 1878 the first oil tanker set sail in the Caspian Sea. It was christened Zoroaster, after the prophet also known as Zarathustra. A decade later these tankers were able to cross the Atlantic without difficulty.

When the Bolsheviks drove the Nobel brothers out of the country after the successful revolution, Shukhov's wealth of ideas was in no way diminished, and his focus shifted to visionary ideas: he planned a 350m-high tower, intended to exceed the Eiffel Tower by 50 metres. The inventor was thus trying to prove that socialism was superior to capitalism in all respects. His idea floundered due to the shortage of Russian steel. (CG)