

INNOVATIVE TECHNOLOGIES IN RESIDUAL OIL EXTRACTION

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ABSTRACT

Petroleum (Turkish oil, Persian oil) is a liquid combustible mineral, a complex mixture of organic compounds, mainly hydrocarbons. This article is about innovative technologies for the extraction and extraction of waste oil.

KEYWORDS: Oil, limestone, hydrocarbon, cane, compressor, oil pump, gas drive, well, oil wells.

INTRODUCTION

It is located mainly in the porous or loose rocks (sand, sandstone, limestone) of the underground domes at a depth of 1.2-2.0 km. The oil is extracted mainly from drilled wells. Petroleum is a very important fuel source of energy and is used as the main raw material for the production of gasoline, kerosene, diesel fuel, fuel oil, lubricants and bitumen. The oil is black or brown, sometimes light brown in color, with a distinctive odor. Density 750–970 kg / m³. Petroleum with a density of less than 850 kg / m³ at 20 ° is light, 851-885 kg / m³ is of medium weight and above 885 kg / m³ is heavy. Boiling point above 28 °. Melting point -60 ° to -26 °, viscosity at 50 ° 1.2-55 mm² / s, specific heat capacity 1.7-2.1 kJ / (kg .K), combustion temperature 43.7-46, 2 MJ / kg is equal. Flash temperature 35-120 °. Soluble in organic solvents, insoluble in water, but forms a stable emulsion with water. Some scientists believe that oil was formed as a result of chemical changes in nature. There are 2 opposing views on this - inorganic and organic hypotheses. The French chemist M. Berthelot (1866), the founder of the inorganic hypothesis, argued that oil was formed by the action of carbonic acid on alkaline metals in the earth's crust, and by DI Mendeleev (1877) by the effect of water falling through the fracture zones on carbon metals (carbides). .

In the early 20th century, the organic hypothesis of oil formation was developed, and oil was found to be inextricably linked with sapropel (organic mud) in sedimentary rocks. According to this hypothesis, the oil was formed from the remains of animals and plants, ranging from a variety of large animals to plankton, which settle with sedimentary rocks under lakes and seas. Some of the organic matter accumulated at the bottom of the sea and the lake is food for marine animals, some is oxidized by dissolved oxygen in the water, and very little (2-3%) of the organic matter mixes with the mud on the seabed, giving it a dark color. Within the turbidity, the organic matter is altered in an oxygen-free environment by anaerobic bacteria. The sapropel in the sedimentary rocks is several million years old. Over the years, the formation of oil has been studied in practice in laboratory tests. This can break down complex molecules of organic matter at a depth of 1,200-1,500 m in the Earth's crust, releasing gaseous, liquid and solid hydrocarbons. At even deeper depths (3000–4000 m), the process accelerates, forming the main phase of oil formation, and the maximum amount of hydrocarbons is released. Oil deposits are found in strata of all periods of the Earth's crust, but the largest reserves are in the Devonian, Jurassic, Cretaceous, and Quaternary deposits. Oil fields can cover an area of 1,000 km² and a thickness of up to 100 m, and a single field can contain several layers of oil. Oil has been used for a long time. Ancient Middle Eastern countries have reported the use of oil and bitumen.

For example, in historical sources, on the banks of the Euphrates River, which flows through Syria and Iraq, 4-6 thousand years ago, in the Sumerian state (now Iraq), located between the two rivers, in Babylon, in

ancient Egypt, Greeks and Romans made pottery, decorated statues, palaces and oil was used in road construction, embalming, and mummification. The oil has been used in the treatment of burns, edema, rheumatism and skin diseases. The Greek physician Hippocrates, a famous Italian traveler, described the composition of medicines prepared with oil. Marco Polo (1254-1324) wrote that there was "earth oil" in the Caucasus, which could be used as fuel and in the treatment of camels. In the ancient East, oil was also used for military purposes. It is also known that in 331 BC, oil was used to light the streets of Genoa (Italy). Oil production has been known since ancient times. In Kissy BC, oil was extracted from wells. In Media, Babylon, and Syria, oil was collected from open water basins. At that time, ready-made oil was collected from wells on the surface of the earth or water without drilling. In the 15th century, oil was extracted in Italy by heating and compressing petroleum sandstones and limestones. In 1868, oil was collected from the surface of the lake in the Kokand khanate; To do this, the canals were blocked by water and oil. In the 17th century, oil was extracted from wells in Baku. Such wells are up to 27 m deep and their walls are reinforced with stones or wood. Oil production in Uzbekistan began in 1876. In the village of Qamishbashi in Fergana, entrepreneur D.P. Petrov extracted up to 10 pounds (160 kg) of oil per day from each of two wells drilled up to 25 meters in the early 1980s. From the 1960s onwards, oil was drilled through wells.

In 1865, oil was first extracted mechanically (by pump) in the United States. This method was introduced in 1874-95 in the fields of Georgia, Baku and Grozny. The method of extracting oil from boreholes has improved considerably, mainly in the 1930s. In order to extract oil, the oil in the formation pores is collected in the wellbore by increasing the water or gas pressure around the oil. Water pressure usually squeezes out 50-80% percent of the initial oil reserves and gas only 20-50% percent. Typically, the pressure drops due to the fact that the imported water does not completely replace the extracted oil. As a result, the natural outflow of oil into the fountain ends. The oil is then extracted using a compressor. When oil is extracted by a compressor, oil gas or air is pumped into the well; they mix with the oil and reduce its density, resulting in the oil and gas mixture rising to the surface of the well and the oil continuing to erupt. oil is also extracted from wells using an oil pump. Declining well flow rates as a result of lower formation pressures will worsen the economic performance of oil production. As a result of the theory of oil field development, especially the development of underground hydrogasodynamics, new methods of oil production have been developed. In these, it is possible to maintain the reservoir pressure almost uniformly throughout the life of the reservoir by pumping water or gas. The current state of oil production is somewhat similar to the state of natural gas production 7-10 years ago. Later, nothing predicted major changes in this area. In the near future, oil may become scarce on our planet, provided that alternative energy technologies such as solar energy or hydrogen energy do not emerge. But this should not be expected in the near future.

Oil consumption is increasing as the world's population is growing. This is an objective natural factor, so we believe that the cost of developing and introducing new technologies is very reasonable. In all oil-producing countries, the efficiency of oil extraction from oil-bearing strata using methods developed by modern industry is considered unsatisfactory, while the consumption of petroleum products all over the world is increasing year by year. The average oil production rate in different countries and regions ranges from 25 to 40%. To solve this problem, it is necessary to immediately start developing methods for complete extraction of residual oil from the subsurface. At the same time, the state should provide funding and force large oil companies, together with scientific institutions, to participate in the creation of effective technologies for the extraction of residual oil in the next 3-5 years. The lack of such technologies is related not only to the lack of funding, but also to other important reasons: 1. The implementation of scientific research is carried out in four areas: academic, university, network and factory. For a science-based method or invention to be realized, the interests of many parties must coincide, which is very rare. As a result, unique technologies and inventions that are able to ensure success in a particular field often collect dust on the shelves.

2. Lack of understanding of new approaches due to the limitations of some views of oil science schools. Scientific experience shows that new approaches are often proposed by people who work at the intersection of sciences and do not have the support of these schools. OTE Innovative Technology (Explosive Oil Extraction): The operating principle of OTE technology is based on the creation of additional high pressure in the oil layers due to the simultaneous explosion of charges in wells at the oil layer level and the subsequent release of discharged oil into the reservoirs of the field. Used oil production wells located along the outer perimeter of the field are charged and blown at the same time, and the resulting empty oil is pumped through the production wells located inside the outer perimeter. Subsequently, charges are deposited and blasted simultaneously in the first inner wells relative to the specified outer perimeter, and oil is poured from the inner wells relative to the previous perimeter. In the future, these operations will be repeated in the center of the field.

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