

FIELD PIPELINES MADE OF PLASTIC PIPES IN THE OIL AND GAS INDUSTRY

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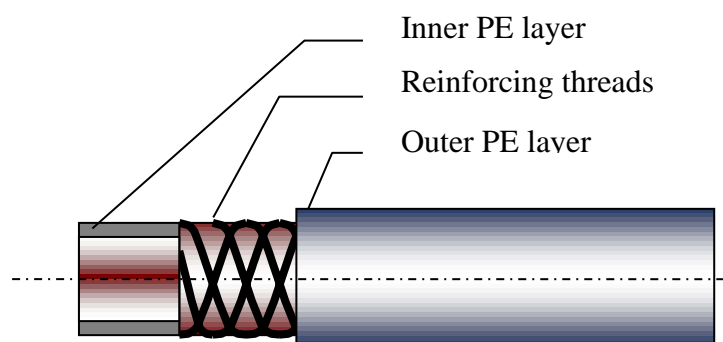
Abstract: This thesis conducts a study and possible practical application of plastic, and to be more precise, polyethylene pipes reinforced with synthetic threads for oil pipelines and PE-100 polyethylene pipes for gas pipelines in the oil and gas industry, which will replace steel pipes in the Republic of Uzbekistan. It is no secret that the main problem of pipelines in all oil and gas producing countries around the world is the fight against metal corrosion. It is because of this that government and commercial companies involved in the transportation of energy resources often spend money on it. In addition, technical and seasonal repairs for steel pipes are quite expensive, and in order to solve this issue for the oil and gas industry of our republic, in this paper I propose one of the possible options for solving this problem.

Keywords: Polyethylene filament-reinforced pipes, corrosion, high insulating properties, transportation, oil and gas field

New generation pipes are reinforced with corrosion-resistant high-strength synthetic threads. This should include, first of all, pipes manufactured by Tekhnologiya kompozitov LLC, series B, made of PE80 polyethylene, reinforced with polyester threads using the AnacondaTM pipe technology. The pipes are certified for compliance with TU 2248-001-55038886-01.

The thesis brought to your attention shows the main features of the operation of pipelines from AnacondaTM pipes. This type of pipe is intended for the construction of underground pipelines for various purposes:

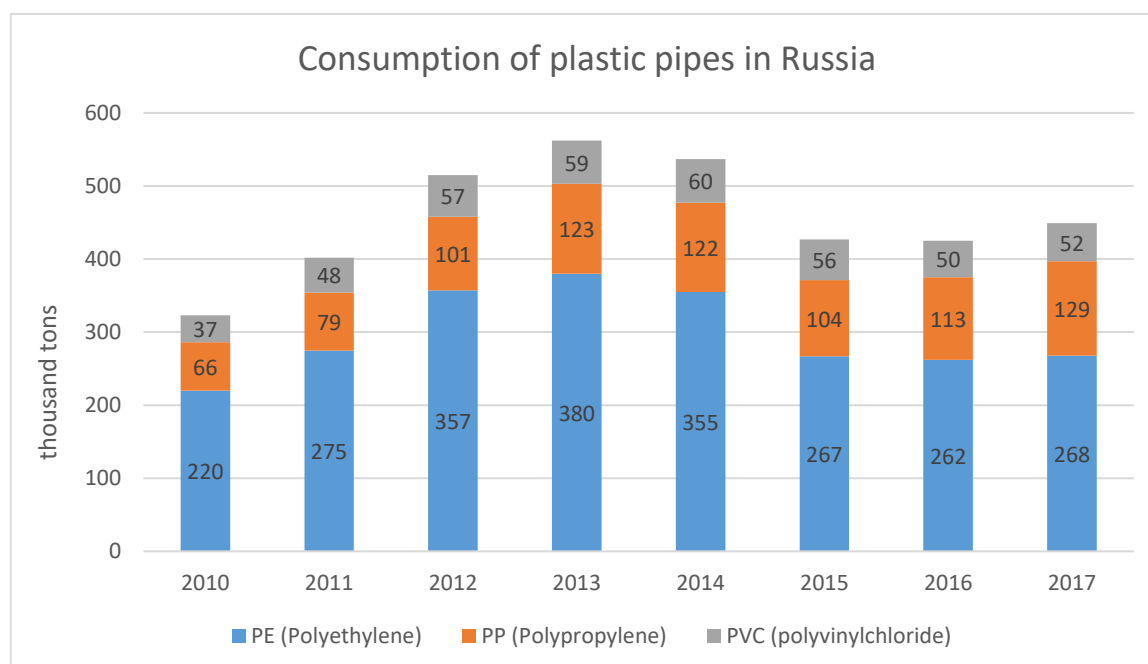
- oil fields transporting oil,
- multiphase mixtures and emulsions (oil, gas, water, including those with a high content of H₂S and CO₂),
- associated petroleum gas under pressure up to 4 MPa;
- natural gas pipelines operating under pressure up to 1.2 MPa.



Drawing 1 Polyethylene reinforced with synthetic threads AnacondaTM pipe (in 2D section) with symbols. The pipes are designed for the construction of underground pipelines with a working pressure of up to 4.0 MPa at a temperature in the pipe wall from -15°C to +60°C, which can also be seen in the section in Figure 1. Next, I propose to compare metal and polyethylene pipes, through table 1.

Table 1 Comparison of pipe characteristics

	Metal pipes	Polyethylene pipes
Weight	The weight of 1 linear meter of pipe used in a category 3 gas pipeline ranges from 1.4 to 4.1 kg, depending on the diameter	The weight is 3-4 times less than that of a metal product.
Transportation	Due to the large dimensions and weight, special transport is required for the transportation of pipes.	Due to its low weight, it allows you to carry a significant footage.
Installation	Changing the direction of the pipe is possible strictly by 90 °. The large weight of the structure requires the installation of additional supports.	Due to the great flexibility of PE pipes, even the most complex projects can be carried out, but the supports must always be inserted
Temperature effect	Thermal insulation performance is minimal	It has fairly good heat-shielding properties, up to - 25°C
UV resistance	sustainable	Poorly resistant
Susceptibility to corrosion	High	Polyethylene is practically not subject to corrosion
Lifetime	50-70 years	50-100 year
Price	Pretty high price	Several times cheaper than metal



Graph 1 Consumption of plastic pipes in Russia

According to the graph, it can be seen that the use of plastic pipes instead of metal ones is gaining more and more popularity, since consumers benefit more with plastic pipes than with metal pipes, so we believe that they are the product of the future and the oil and gas industry.

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