



LUKOIL-PERM CONSTRUCTS PE PIPELINES FOR OIL-ASSOCIATED GAS

by Maxim Kovyazin

Since January 1st 2012, ownership of the LUKOIL – Permneftepererabotka Ltd gas transfer system has been transferred to LUKOIL – Perm Ltd.

As part of their annual planning, LUKOIL – Perm Ltd have developed a program of gas transfer system enhancements designed to improve reliability and reduce the frequency of system failure, when recycling oil-associated gas (OAG). This program included the construction of the 26 km Un’va – Ol’hovka gas pipeline and gas transmission network, installed almost entirely of polyethylene (PE) pipes.

Despite their obvious advantages, PE pipes are not widely used in the construction of OAG transmission lines. Just a few years ago the construction of a 630 mm PE gas pipeline with a working pressure of 1.2 MPa was impossible due to both regulatory system restrictions and the lack of necessary fittings.

Today the Un’va – Ol’hovka gas pipeline is a reality, leading European polymer pipe manufacturers have supplied

materials for the pipeline construction which consisted of PE 100 pipes (SDR 9) with a diameter of 630 mm supplied by three POLYPLASTIC Group plants in Cheboksary, Klimovsk and Omsk. Fittings were supplied by three German manufacturers: Simona (elbows), Friatec (couplers), and Reinert-Ritz (transition pieces PE–steel). Pipe welding was carried out using Georg Fischer machines (Switzerland).

The construction conditions were particularly challenging as the pipeline route crossed both rocky and swampy terrain, forcing construction crews to organise open-cut drainage and plank roads before laying the pipe.

The gas pipeline took approximately two months to complete. All the works were successfully performed by CJSC Gals-N (CEO – A.P.Petukhov) and UralPodvodStroy (CEO – A.A.Sukhanov).

Oil-industry experts have since worked on another project to supply OAG from the Northern cluster of fields to the Yaivin state district power plant, one of the thermal stations

of the Perm' energy supply system that provides power to the companies and towns of Upper Kama region. The successful completion of the pipeline has resulted in 95% OAG utilisation, enabling oil suppliers to reduce the risk of accidents and increase gas transmission volumes.

PE 100 pipes of SDR 11 and 500 mm OD manufactured by the Cheboksary pipe plant were used for this 15.8 km pipeline construction which was completed in December, 2012.

Although the use of PE pipes for OAG transmission is not yet commonplace in gas distribution systems, PE pipes have obvious and undoubted advantages over steel pipes. The main advantage of PE, especially for OAG transportation, is its unique resistance to all types of corrosion. PE pipes do not require cathode protection or the addition of inhibitors in the OAG, thereby reducing operating costs. PE is also chemically inert to OAG, which means that sediment formation or its removal is not a problem. Finally, the smoothness of the PE surface lowers hydraulic loss values, reducing the required nominal pipeline diameter and its purchase cost.

In addition to their performance advantages, PE pipes are lightweight, flexible, easier to work with and install – practical advantages that cut the cost of the associated construction procedures. For all of these reasons, PE pipes application in OAG transfer line projects clearly optimises investment effectiveness for oil-extracting infrastructure networks.

