

## Modern technologies for crossing "difficult areas"

by Marcin Firkowski, PPI CHROBOK S.A.

PPI CHROBOK S.A. is involved with the construction of gas transmission pipelines in Poland. Tasks concerning the trenchless installation of pipelines is done with several technologies, including the HDD (*Horizontal Directional Drilling*), microtunnelling, Direct Pipe. The company is also involved with the TAP gas transmission pipeline construction with responsibility for two crossings in Direct Pipe technology.



Photo: PPI CHROBOK S.A.

### Direct Pipe in Poland

The company completed first crossings in Direct Pipe technology in summer 2016 in Poland as a part of the investment "The Construction of high pressure gas pipeline DN1000 MOP 8,4 MPa between ZZU Czeszów to the Kielczów node, as a part of the project to build the pipeline Polish boarder (Lasów)–Taczalin–Radakowice–Gałów–Wierzchowice with the necessary infrastructure" in Dolny Śląsk. Two installations were made, with a combined length of almost 1,160 meters. Interestingly, it was not only the debut of the company in using the Direct Pipe (DP) technology, but also the first such crossing in the country, even though the technology has been known for over 10 years – the technology, supplied by the Herrenknecht company, was first used in 2006 in Hannover, Germany.

*In 2016 and 2017 our company completed work on a new, 33-kilometer-long strip of high pressure gas pipeline DN1000 between Czeszów and Kielczów, located in the Dolnośląskie voivodeship, in the*

*Zawonia and Długoleka municipality – said Karol Kuczwalski, director of the board of PPI CHTOBOK S.A. As a part of the project, we made 30 trenchless crossings using four different technologies.*

More information can be found in the article: **[First crossings in Direct Pipe technology in Poland](#)**

### **A good year and promising perspectives... Direct Pipe in Greece**

In the coming years PPI CHROBOK S.A. intends to continue participating in the completion of projects in the gas sector in Poland, widening its activities beyond the country's borders.

*This year we intend to complete wide diameter crossings on significant lengths – these will be the largest HDD and Direct Pipe crossings ever completed in Poland. We hope we will be able to participate in building those installations – says the Director of PPI CHROBOK S.A.*

In 2017 first contracts were settled for building of gas pipelines as part of the North-South transmission system and for connections with neighbouring countries. A gas transmission system will be built. As a part of this project many trenchless crossings will be made in various technologies, including the most advanced ones, like HDD or Direct Pipe.

*Over the next five years the trenchless technology market will develop significantly. Gaz-System S.A. company plans to build over 2,000 km of transmission gas pipelines, which will be ready by 2025. Many trenchless crossings will be constructed along their paths. Due to the crossing of more and more "difficult areas" over significant lengths, more crossings are designed in the modern Direct Pipe technology. We plan to specialize in such constructions.*



Photo: PPI CHROBOK S.A.

## **PPI CHROBOK S.A. will complete two Direct Pipe crossings on the TAP pipeline**

*We concluded the year 2017 by signing an agreement to build two Direct Pipe crossings along the path of the largest currently built gas pipeline in Europe – the Trans Adriatic Pipeline – says Karol Kuczwalski. The Trans Adriatic Pipeline (TAP) starts near Kipoi on the Greek-Turkish border (where it will connect to the Trans Anatolian pipeline – TANAP). Next it will go through northern Greece (550 km), Albania (215 km) and the Adriatic Sea (105 km). The final 8 km will be laid in Italy. The pipeline will measure 878 km and will be completed by 2020. PPI CHROBOK S.A. will construct two Direct Pipe installations on the Greek part of the pipeline.*

*In Greece the diameter of the installed pipeline is larger than the one used in Poland – as part of the trenchless construction of the two strips in Direct Pipe technology on the lengths of 598 m and 654 m DN1200 steel pipes will be installed.*

*Preparatory work for this project took almost a year. In spring 2017 we were asked by the Greek-Italian consortium Bonatti J&P AVAX Srl to prepare a feasibility study on two trenchless crossings. Originally the drillings under the Aliakmonsa river were designed in HDD technology, but after additional geological surveys their feasibility was questioned. The presence of gravels of different granulation, hard and soft rocks, and clays in the soil prevented the completion of traditional drillings. Another difficulty was the lack of space to weld together the installed pipeline on one section – said Karol Kuczwalski and added: Our feasibility study and drilling implementation plan was accepted by the investor. To make one crossing, the pipeline was divided into three segments, the Purchaser added additional GRP isolation of the steel pipeline for protection. Since November 2017 we have mobilized our equipment on Greek territory.*

*The construction took place on one segment (598 m) and took 18 days. We managed to avoid the biggest problem we expected – the need to remove the drilling machine to replace used up tools. The drilling was completed without tripping thanks to the properly selected drilling disk and tools dedicated for this project with the help of the producer of the machine, the Herrenknecht company. By the end of February, we have finished drilling on the first crossing. We are currently mobilizing to start the second crossing in Greece. We expect to finish the project at the turn of April and May.*

## **Plans for the Future**

Apart from projects in the gas sector, in 2017 PPI CHROBOK S.A. was also involved in projects connected to the building of the S-5 expressway between Nowe Marzy-Bydgoszcz-the border of Kujawsko-Pomorskie and Wielkopolskie voivodships, as well as the construction of the S2 expressway Southern Warsaw Bypass between "Puławska" and "Lubelska" nodes, it participated in the renovation of Sartowice-Nowe flood embankment, segment between km 0+000 to km 10+600. Completion of steel sheet walls in the section from km 7+075 to km 10+600 Dragacz municipality, Świecie county, Kujawsko-Pomorskie voivodeship. The year was concluded by signing the contract to construct DP crossings in Greece.

*As Karol Kuczwalski claims: The company will continue to develop and consolidate in the technologies from its portfolio: We are the leader in securing deep excavations with steel sheet walls of most available*

model series, we work in technologies of drill piles and jet-grouting columns, micro piles, anchors and ground nails. We are the only company in Poland that has all the available modern technologies used for trenchless construction of pipelines, from standard jacking to modern HDD and Direct Pipe technologies. Our goal is to increase our capability to install large diameter pipelines in the Direct Pipe, HDD and microtunneling technologies, and to increase the performance of hole hydraulics and solid phase separation.



Photo: PPI CHROBOK S.A.

*In May 2018 we will commence a huge project involving the construction of crossings – primarily under the Wisłok river as part of the investment "The Construction of high pressure gas pipeline DN1000 MOP 8,4MPa Strachocina–Pogórska Wola as part of the construction of gas pipeline Hermanowice–Strachocina–Pogórska Wola–Tworzeń–Tworóg–Odolanów with the necessary infrastructure".*

*Nine drillings will be made with the Direct Pipe technology of total length of 3,979 meters and parallel to them nine drillings in HDD technology. Furthermore, eight crossings in microtunnelling technology will be made with a total length of 473 meters – Karol Kuczwalski concludes.*