ENSURING THROUGHPUT IN POLAND

Complex Pipeline Refurbishment Program Delivers Major Gains

WARSAW, Poland – December 8, 2014 – Keeping hundreds of miles of Poland’s pipelines flowing at optimum capacity isn’t easy. It’s a demanding job, requiring great care and attention to planning and executing the rigorous maintenance programs necessary to ensure that every line is clean and free of defects, especially those that could eventually cripple production. A recent pipeline refurbishment program carried out by a major gas transmission operator in the mountains of eastern Poland, along the Ukraine border, illustrates the complex nature of maintaining pipelines.

In keeping with its commitment to maintaining the integrity of Poland’s gas transmission system, the operator commissioned a comprehensive cleaning and inspection of a 28-inch diameter, 11 km (6.8 mi) section of a 40 km (24.8mi) pipeline, which was commissioned in the early 1970s. The pipeline, which is part of Poland’s natural gas network, is particularly important because it can support an interconnector to and from the Ukraine.

Having partnered on many pipeline operations over the last 20 years, T.D. Williamson (TDW) was commissioned to execute the program, which was completed in August 2014. As a result of the complex pipeline cleaning, gauging and inline inspection (ILI) activities, the operator reaped a number of benefits, including increased product flow and enhanced pipeline integrity.

The advantages to the operator are far-reaching. Because the line is clean and free of debris that impeded flow, there is a much higher flow rate. This means that associated production costs are lower and transmission is more efficient. Looking ahead, the operator’s repair costs will also be reduced because the ILI data produced by the inspection flags defects, making it possible for the operator to address them as needed. Potential damage otherwise incurred by these defects is mitigated, reducing future associated maintenance costs and downtime.

Cleaning, gauging & inspecting

When TDW was contracted to clean the 28-inch diameter line that runs through the Polish mountain range, the line was operating at a pressure of 38 barg, at an average flow of 75,000 m³ per hour. It was deemed unpiggable because it was so choked by debris that a pipeline cleaning or inspection pig would be unable to pass. Further complicating the situation, a visibility study carried out by TDW before cleaning and inspection revealed a section of the line with eight acute miter bends, making it impossible for the pigs to navigate and clean, let alone inspect.
Working in cooperation with the operator, TDW developed a solution. To address the problem, custom-designed temporary pig launchers and receivers were built and welded at strategic points along the line. To prevent a pig from being lodged in the miter bends, these sections were removed and replaced with pipe that would accommodate the cleaning and inspection pigs. All pigs scheduled for use during the program were fitted with transmitter units that the crew would use to track their progress. Finally, to verify the piggability of the line and ensure that its cleaning pigs and inspection tools would be capable of negotiating the pipeline, TDW performed a gauge pig run. Once this was successfully completed, preparations were made to proceed with the first of the cleaning runs.

Efficient cleaning clears the way
To clean the lines, a five-step cleaning program was carried out by TDW with 24 specially selected cleaning pigs. After completing 23 runs, the 11 km (6.8 mi) line, which had been so congested it was unpiggable, was clean and free of debris. Before cleaning, production had been sluggish. As a result of the cleaning, TDW cleared approximately 3.5 tons of silt, timber, metal fragments, welding rods and pipelaying equipment, allowing gas to flow much more freely.

Satisfied that the line had been thoroughly cleaned, TDW proceeded with the next phase: an inline inspection of the 11 km (24.8mi) section of the line. Working closely with the operator’s team, TDW executed inspection runs on the line during a three-week period in August 2014. TDW used a number of its high-resolution inspection tools to inspect the pipeline, including deformation (DEF) technology for geometric anomaly inspection, Gas Magnetic Flux Leakage (GMFL) inspection technology for corrosion inspection, and the XYZ Inertial Measurement Unit for GPS pipeline mapping.

Following data validation and analysis, TDW delivered a comprehensive final report to the operator. After assessing the condition of the pipeline, as reflected in the ILI data, the operator will work with TDW to formulate plans to schedule any necessary repairs or further procedures on the line. The operator and TDW are currently discussing how this method of cleaning and inspection might be scaled and carried out on the remaining 29 km (18 mi) section of this line.

The final outcome of the pipeline refurbishment program is extremely important to the operator and its efforts to assure the continued integrity of the line. “Much of the success of this program lies in the painstaking attention to inspecting the line before cleaning,” says Mateusz Bil, Project Engineer for TDW. “This is critical because it allows us to rectify trouble spots, such as the eight miter angles that would most certainly have blocked the cleaning pigs, disrupting the cleaning operation. Instead, we were able to clean the line so that it was in pristine condition, ready for the inline inspection. By doing so, the inspection runs would generate the highest quality of data, revealing potential threats to pipeline integrity,” he added.

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About T.D. Williamson
Global pipeline service provider T.D. Williamson delivers a comprehensive portfolio of safe integrity pipeline system solutions for onshore and offshore applications, including
hot tapping and plugging, pipeline cleaning, integrity inspection, pigging and non-tethered plugging technology for pressurized piping systems.

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