



PROJECT OVERVIEW

A coal burning power plant, owned and operated by Kazakhmys Energy, was experiencing major leaks in the two major input cooling pipes that route water to the thermal power station. This plant, which was constructed in the 1930s, supplies power to the whole of the surrounding region. After inspection, these pipes, installed in the 1960s, were found to have sound structure, but had significant pitting, leakage and damaged joints, resulting in major leaks throughout the input system. Due to the condition of the pipes, the plant deemed a repair of the system was necessary. The plant was running at reduced capacity during the early winter, which would allow for repair of half of the system, as only one inlet pipe was needed for partial operation of the plant. However, this meant that the repairs would need to be completed prior to the onset of a locally harsh winter so that the full plant could come on-line.

SOLUTION

The existing input pipe system was in poor condition. After further inspection, it was discovered that the damaged pipe consisted of: 307 m of 2400 mm pipes, 97 m of 1200-2100 mm pipe with S-curves, and 218 m of 1000-1200 mm pipe. The pipe also showed heavy deposits of salts and metals throughout the system. Due to the risk involved and how much the repairs would cost, the client decided that standard CIPP would not be the ideal solution. Due to the cost effectiveness and flexibility of the GeoSpray technology, it was determined that GeoSpray geopolymer would provide the best results within the limited timeframe.

The first step in the process was to determine how to access the pipe since there were few existing openings. The team selected eight points along the length of the pipe to excavate and then cut into in order to create an access point. The next step in the process was to clean the pipe with a high-pressure water cleaning system so that the pipe would be ready for repair.

Once the pipe was cleaned, the first layer of GeoSpray mortar was applied via a mechanical sled spraying system. GeoSpray mortar was applied until the desired thickness of 25 to 38 mm had been reached. The pipe was sprayed in 11 sections all less than about 120 m in length in 1-3 passes per section depending on the diameter and required thickness. Finally, as the sections were completed, the access hatches were rewelded and the opening was coated with a shotcrete-like application of the GeoSpray mortar.

PROJECT DETAILS

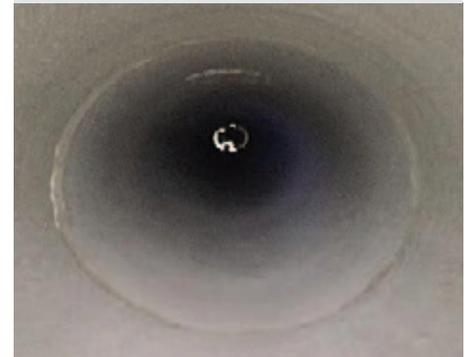
Location: Balkhash, Kazakhstan

Application: Inlet Pipe Rehabilitation

Client: Kazakhmys Energy

Installation: December 2015

Installer: Stroitelna Mehanizatsia AD



Final form of the pipe after rehabilitation.



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RESULTS

The process to restore the pipe to full functionality took roughly six weeks. The minimally invasive GeoSpray geopolymer technology, which allowed all work to be conducted through the non-standard access points, was extremely appreciated by the client.

Even though the installation was conducted in sub-freezing temperatures, the team was able to complete the repairs as scheduled. Based on the success of this project, the plant is planning additional projects to repair the second of the input pipes and key sections of the pumping station with GeoSpray geopolymer.



Due to the lack of access points throughout the pipe, the team had to create entrances.



Over time, the pipe had corroded and had acquired heavy deposits of salts and metals.



Condition of the pipe after the team had cleaned the interior.



The pipe is now prepped and ready for GeoSpray mortar installation.



Pipe after first layer of GeoSpray mortar had been applied.

