

Paper Mill Replaces Steel Pipes with HDPE, Uses In-Ditch Fusion Machine for Timely Installation

Quinnesec, Michigan

Problem

In many paper mills, old steel and ductile iron pipe systems used for transferring process water in the paper-making process are no longer functioning properly due to damage from chemicals in the water. The chemicals create harsh environments that wear on the infrastructure over time. Often times, these pipes are costly to replace.

An industrial paper mill in Michigan needed a new process pipeline. The company wanted an alternative, cost-effective and long-term solution to a steel or ductile iron pipe system typically used in these mills.

Also, since process water transfer is an essential part of paper-making, the plant could not operate during the majority of the pipe installation. Therefore, the paper mill needed the project completed in a timely manner.



The 'Fire in the Hole' unit used to fuse pipe inside a compact trench.

HDPE Pipe Chosen for New Piping System

The paper mill decided to use high-density polyethylene (HDPE) pipe to install a new piping system for the plant because HDPE pipe is chemical resistant and has zero-leak properties. HDPE pipes can withstand long-term chemical exposure, and when fused, the pipes form a monolithic, leak-free system. In addition, HDPE pipe was chosen because it was deemed more cost-effective, with a long-term serviceability, and easier to install than steel or ductile iron pipe.

The mill hired contractor CR Meyer, based in Escanaba, MI, to handle the pipe installation. The contractor worked with ISCO Industries' representative Brad Gray to obtain the necessary materials. ISCO supplied, 36-inch, 42-inch and 48-inch HDPE SDR 11 pipe for the piping system. Since this was the contractor's first large-scale HDPE project, ISCO also provided product knowledge and design assistance for complex fabricated pipe spool pieces.

ISCO's 'Fire in the Hole' Unit Saves Time and Costs on Installation

This was also an open-cut installation involving some very tight roads within the plant complex. Also, some of the tie-ins, or fusions, needed to take place in small



'Fire in the Hole' unit along with pipe on location.



An example of a complex spool piece fabricated on site.

spaced and unique locations. Large cranes were used to move the large diameter pipe and fabricated spool pieces into the trenches for fusion to take place.

Often, electrofusion couplings are used in order to fuse large diameter HDPE pipe in tight spaces. However, in this case, the contractor needed a cost-effective tool to complete the project quickly in order for the paper mill to start operating again.

In addition to supplying a McElroy #1648 fusion machine, ISCO had another solution, its in-ditch 'Fire in the Hole' unit. The unit is an alternative to large diameter electrofusion couplings that are used to fuse and repair pipe in tight places and ditches. However, couplings are not always the best choice because they can be expensive and come with some installation risks.

Until the 'Fire in the Hole' unit was developed, there was no American-made butt-fusion unit with this pipe size range available that was compact enough and capable of doing this type of work, especially in the ditch.

The custom-built 'Fire in the Hole' unit is unique because of how it is arranged to fuse pipe and fittings. The unit works in both three- and four-jaw configurations. The three- or four-jaw configuration is powered by a hydraulic power unit (HPU) and comes with a facer and heater(s) that are top loaded into the jaw set for operation. Capable of fusing pipe ranging from 32- to 54-inch IPS diameters, the unit also has McElroy Datalogger capabilities along with proven McElroy controls. This unit has many other features and benefits that make it in-ditch/trench friendly.

ISCO also provided additional fusion services to the contractor by sending two ISCO fusion technicians

to the project site for one month. The technicians helped custom fabricate the spool pieces on site that were necessary for the completion of the system. The technicians also assisted the contractor in the use of the 'Fire in the Hole' unit.

Conclusion

With the in-ditch fusion machine and the assistance of ISCO's technicians, the project ran smoothly and the contractor was able to complete the project efficiently and cost-effectively.



Another complex spool piece being moved during installation.