

## Case History: Pulp & Paper Plant Cooling Line Renewal



*Leaking 54”  
Raw Water  
Cooling Line  
Relined and  
Returned to  
Service in  
Just 3 Days!*



Pipe Splitting

Cured-In-Place-Pipe

EcoCast™

CCTV Inspection



A 54” cooling line, lying beneath this IPR Industrial EcoCast crew, was leaking into a 13,500 kV room shown on the right side of this photo.

### The Problem: Leaking Raw Water Cooling Line

A 320 ft., 54 in. diameter raw water cooling line servicing a pulp & paper mill recovery boiler was leaking into a 13,500 kV power supply room. The deteriorated line needed to be repaired quickly to avert a potentially dangerous situation, and to avoid a plant-wide shutdown.

### The Solution: EcoCast™ Geopolymer Lining System

IPR Industrial was awarded the project based on three very important criteria: **method of repair, speed of installation, and cost.**

#### Method of Repair:

- EcoCast™ which is an advanced geopolymer lining system, was utilized for this engagement. It is a non-cementitious material (GeoSpray) and is formulated to provide both corrosion protection and structural reinforcement.

#### Speed of Installation:

- EcoCast was developed to be quickly applied with an exceptionally fast cure time. Depending on the shape of the structure, the versatility of this product allows it to be applied in a variety of ways. It can be centrifugally cast, sprayed on or trowel applied. Other than an access point, not digging or replacing of existing structures is required.

#### Cost:

- IPR Industrial presented the low bid and ensured the quickest return to service. EcoCast is typically 25-40% less expensive than replacement. It also significantly shortens the repair time, which saves valuable labor, material, and excavation costs.

### The Result:

A 7 day critical path cold outage was scheduled to complete the raw water line renewal. The IPR Industrial crew worked around the clock and was able to clean, prep, apply the EcoCast to the line, and restore services in just 3 days.



The EcoCast system was lowered into the deteriorated 320 ft. line from a man-way and relined it with a structural and corrosion resistant geopolymer. The line renewal took only 3 days to complete.

## The Whole Story:

Let's face it, shutting down a plant for any amount of time impacts revenue. However, when worker safety is also at risk, making the repairs quickly takes on a whole different meaning. That was the situation for the owners of this pulp & paper mill, when they discovered a 320-ft. raw water cooling line leaking into a 13,500 kV power supply room. The repair had to be done quickly, but without sacrificing safety requirements. Adding to the complexity of the repair was the the location of the line, which was located at the center of the mill and ran partially beneath some buildings. Therefore, the only option was to reline the existing pipe.

### **Raw water line renewal was identified as the "critical path" project**

Once it was determined that the raw waterline repair would be the critical path of the project, plant officials established a 7-day cold outage to complete, not only this task, but several other necessary repairs that needed to be made. Two IPR Industrial crews worked around the clock and was able to clean, prep and restore the 320-ft. line in just 3 days, which was well ahead of schedule.

### **From start to finish, the IPR Industrial crews quickly and efficiently restored the old raw water line**

To gain entry into the line, the ground was excavated to top of the pipe. A man-way hole was then cut into the pipe's upstream end to lower the EcoCast sled and crew into the line. Once inside the pipe, IPR Industrial crews cleaned the line with a high pressure washer and applied GeoFuse, which is a bonding agent for the EcoCast lining material.

Once the EcoCast sled and mounted spray head were in position, the GeoSpray application process began. Traveling at roughly 1 ft. per minute, with the head spinning at 5,000 rpm, the material was applied at the max thickness of 1/2 in. per pass. It should be noted that GeoSpray's curing process begins as soon as it makes contact with the pipe. For this project, the IPR Industrial crews applied three coats. After the final pass, the old water line was not only leak free, but structurally restored, as well. The entire procedure took less than three days. The EcoCast lining was then inspected for defects and a proper cure. Given the green light, the IPR Industrial crews repaired the man-way hole with a bolt-on blind flange, the line was pressure tested then approved to be brought back on line.

### **Pulp & Paper Plant Engineer Testimonial:**

*"I was very pleased with IPR Industrial's work during this project. They came to the site well-prepared and made a great showing with their personnel. The project managers were a pleasure to deal with and worked well with the other contractors in the area to ensure a safe and productive outage. This project was originally slated to be the critical path of our cold outage, however IPR's hard work and cooperation with the other contractors allowed this project to come in early. I wish I could say the same for the rest of my projects during this outage."*



A 30" man-way was cut into the cooling line to gain access.



The EcoCast spray applicator spins at 5000 RPM when applying GeoSpray to the line's surface.



IPR Industrial personnel worked round the clock, in shifts, to complete the cleaning, prepping, and restoration of the leaking 320 ft. cooling line.



### **Project Summary:**

#### **Problem:**

320 ft. raw water cooling line was leaking into a power supply room at a pulp & paper mill. Only 7 days were allotted to complete the job.

#### **Solution:**

IPR Industrial's proprietary EcoCast lining system. Job completed in 3 days.

#### **Benefits:**

- Trenchless, non-disruptive
- Corrosion resistant
- Fully structural repair
- Fast and permanent
- Reduce down-time, return to service faster
- Cost-effective, eliminates replacement cost

#### **Contact:**

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