Repairing Corroded Injection Water Pipes in the Cooling Tower of CSR Macknade Sugar Mill

Project 868

Overview:

• CSR Sugar Mill, Macknade
• Single "train" mill capable of crushing over 1.5 million tons of sugar cane
• Routine engineering inspection of the cooling tower revealed injection water pipes had been eaten away in places by corrosion

Objective:

Repair corroded/leaking pipe sections by abrasive blasting and applying high-build composite coating
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- Injection water pipes are 5m (16.5ft) underground.
- Concrete sections run nearly 100m (328ft) where they join steel sections and a splitter intersection.
- Sponge-Jet was selected as the abrasive solution due to: (1) its low dust attribute in confined spaces and (2) it can achieve a more consistent surface profile for the application of high-build molecular composites.

*Sponge-Jet setup out side on ground level*
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Substrate: Steel and concrete

Specified Cleanliness Level:
Near White Metal Blast Cleaning
NACE 2 / SSPC SP-10 / Sa2.5

Profile: 75-100 microns (3-4 mils); including exposed concrete

Used: Silver 30 Sponge Media™ abrasive, (1) 100-HP Feed Unit™ and (1) Sponge-Jet Recycler™

• During preliminary blasting, prior repairs that were found used mixed products (30mm thick)
• Water was seeping in during blasting, where large sections of steel were missing
• All leaks and pin holes had to be repaired/plugged
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BEFORE
Splitter section of pipe

AFTER
Rebuilding and coating
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REPAIRED WALL

STEEL BONDED PLATES
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EXPOSED REINFORCED STEEL SPONGE BLASTED FOR RECOATING

SPONGE BALASTED JOINER FOR REBUILDING BETWEEN CONCRETE AND STEEL
Outcome:

• The client was exceptionally happy with the project result.

• Repaired pipes were scheduled for inspection in March 2010; with new confidence of repairs CSR Macknade Sugar Mill rescheduled inspection to 2011 or beyond.

• There are 13 Sugar Mills in the CSR stable; all have similar problems with the water return and injection pipes.

• There will be future work in other mills based on the application at the Macknade Sugar Mill.