

CASE STUDY

Carbontech Case study 013
6" Cooling water line with external condensation



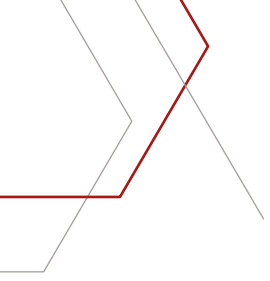


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PROJECT DETAILS

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|--|------------------------------------|-------------------------------|---|
|  | Case Study Number CTCS:013 | Design Pressure 6.2 Bar |  |
|  | Repair Summary 6" Cooling water | Operating Pressure 4.9 Bar |  |
|  | Client Denny Mushrooms | Design Temperature 50°C |  |
|  | Service Type Cooling water | Operating Temperature 3°C |  |
|  | Line Size 6" | Base Material SA-106 Gr-B |  |
|  | Line Class 150# | | |



ANOMALY DESCRIPTION

Multiple leaking areas were detected on an aging 6" cooling water line. The leaks developed from pitting due to corrosion under insulation. The main culprit being the pipe continuously forming condensate underneath the insulation creating the perfect conditions for corrosion.

Figure 1: Failed clamp Repair 1



Figure 2: Failed clamp repair 2



INTEGRITY CONCERNS

Further deterioration of the piping could result in upset in the production process. This line is the main header to the grow rooms and unplanned shutdown on this line will result in negative business impact due to loss in production



THE CARBONTECH SOLUTION

Carbontech started the repair by cleaning the surface area down to bare metal removing all rust scale, surface rust, paint and contaminants. This is done by using a pneumatic bristle blaster which gives the resin a good bonding profile to the substrate.

The leaking pinhole had to be arrested, however as we removed the insulation Carbontech technicians found multiple leaking pinholes within the external pitting. These were all arrested by using a specialized soft rubber and strap. The line due to differential temperature was constantly wet from condensation. Revowrap Resin systems are Hydrophobic in nature and will dispel any condensate forming on the surface posing no threat to the repair system however an unnoticed leak will build up pressure underneath the wrap area during cure, this meant the technicians had to make sure there was no additional leaks from the pipe.

Surface Preparation achieved: SA2.5

Product used: Revowrap 1110

Engineering calculations: ASME PCC2

Layers used: 4 layers

Post cured: Not Required - however cure time was 48 hours due to the cold pipe temperatures

Figure 3: Leaks clamped with straps and profiled with Revofill



Figure 4: Completed wrap



Figure 5: Revostretch applied to consolidate wrap



Figure 6: The Revostretch was removed after cure was reached



CONCLUSION

Multiple leaks were found on the cooling water line, a mechanical leak stop clamp was applied by the client which did not stop the leak which was deteriorating by the day. The client had major concerns that he might have to isolate and stop production to do a mechanical repair on the pipeline. Carbontech was able to isolate the pinhole and repair the leaking pipe within 5 hours without isolating the line. 24 hours later the pipe was inspected and a hardness test was performed to ensure there was full cure on the composite material. This repaired pipe enabled the client to operate at full capacity until the planned shutdown to replace.



CARBONTECH

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Sound and responsible engineering is the basis on which we build our company, products and services. It is the core to our success and it is the foundation on which we have engineered and manufactured our innovative and bespoke products

We strive by a zero-failure philosophy and warrant our engineered composite solutions are tested, proven and validated. We vow to provide dependable, responsible and accurate information regarding the capabilities of our systems

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