Tarkett Cooling Tower Refurbishment – December 2017

Tarkett is a global flooring and sports surface solution business with 12,500 employees across 34 international locations. They had net sales of £2.7bn euros in 2016 in over 100 countries which equates to 1.3million meters of flooring sold every day.

Vistech were asked by the UK Tarkett site in Maidstone, Kent to survey their ageing cooling towers with a view to extensive refurbishment to give them 10 years more life.

Extract from Survey

General Condition

"The existing Carter cooling towers are in very poor condition. Most significantly the mild steel cooling tower and fan casings on both towers are heavily corroded and in places there are open holes through the casing where it has rusted.

This is a significant health and safety risk as corrosion can encourage the growth of harmful bacteria and needs to be addressed urgently:

HSG 274 Pt 1 – "Corrosion of mild steel, in particular, should be inhibited as it may lead to conditions that encourage the growth of legionella."

Of note was

Distribution System – On one tower the mild steel trough and gutter distribution system had corroded providing a breeding ground for harmful bacteria

Casing – Although previously coated there was visible corrosion both internally and externally with corrosion to the internal supports. Holes were visible through the casing. Not only a bacterial risk but costly through lost water in the system

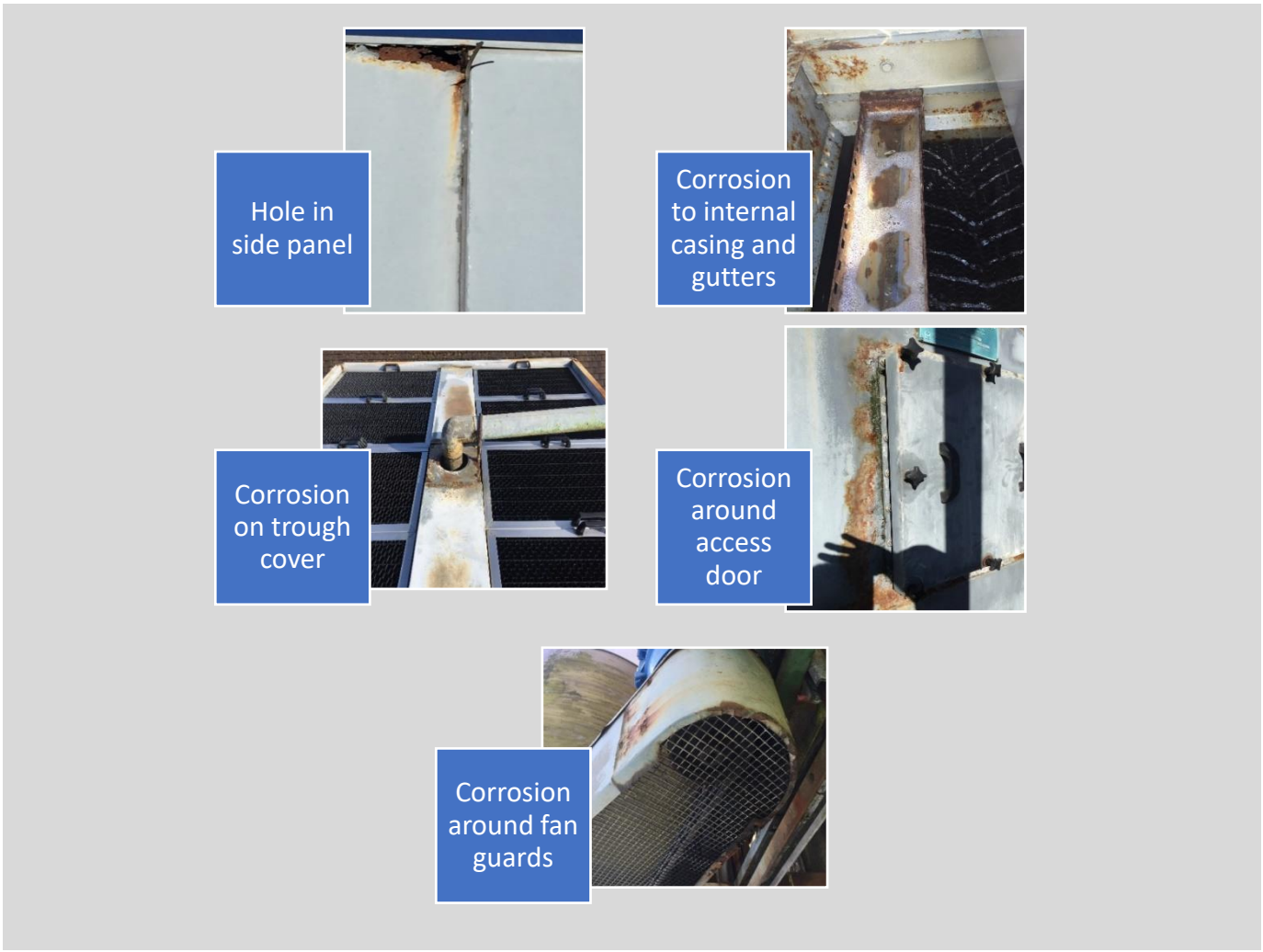
Fans – The centrifugal fan casings were heavily corroded as were the supporting steel structures – Unsightly and if left would have rendered the fans ineffective

Corroded mild steel distribution system - trough and gutters

Extensive Corrosion both internally and externally to casing

Heavily corroded fan casings including the steel supports

Corroded Areas:



Vistech Recommendations

Internal GRP Lining

To prolong the life of both cooling towers Vistech recommended applying an internal **GRP tank lining with a 10-year warranty**. This would provide a tank within the existing cooling tower that has its own inherent structure covering all existing corrosion and leaks.

Following an in-depth viability survey both cooling towers would require mechanical or grit blast preparation to provide a key for the GRP lining which would be applied in layers as per the diagram below. All internal surfaces were to be lined including the accessible areas of the fan scrolls around the impellers.

In addition, we proposed installing metal plates to cover the worst areas of corrosion to improve the integrity of the tower prior to the GRP lining being applied.

Read Further information on the benefits of GRP Lining

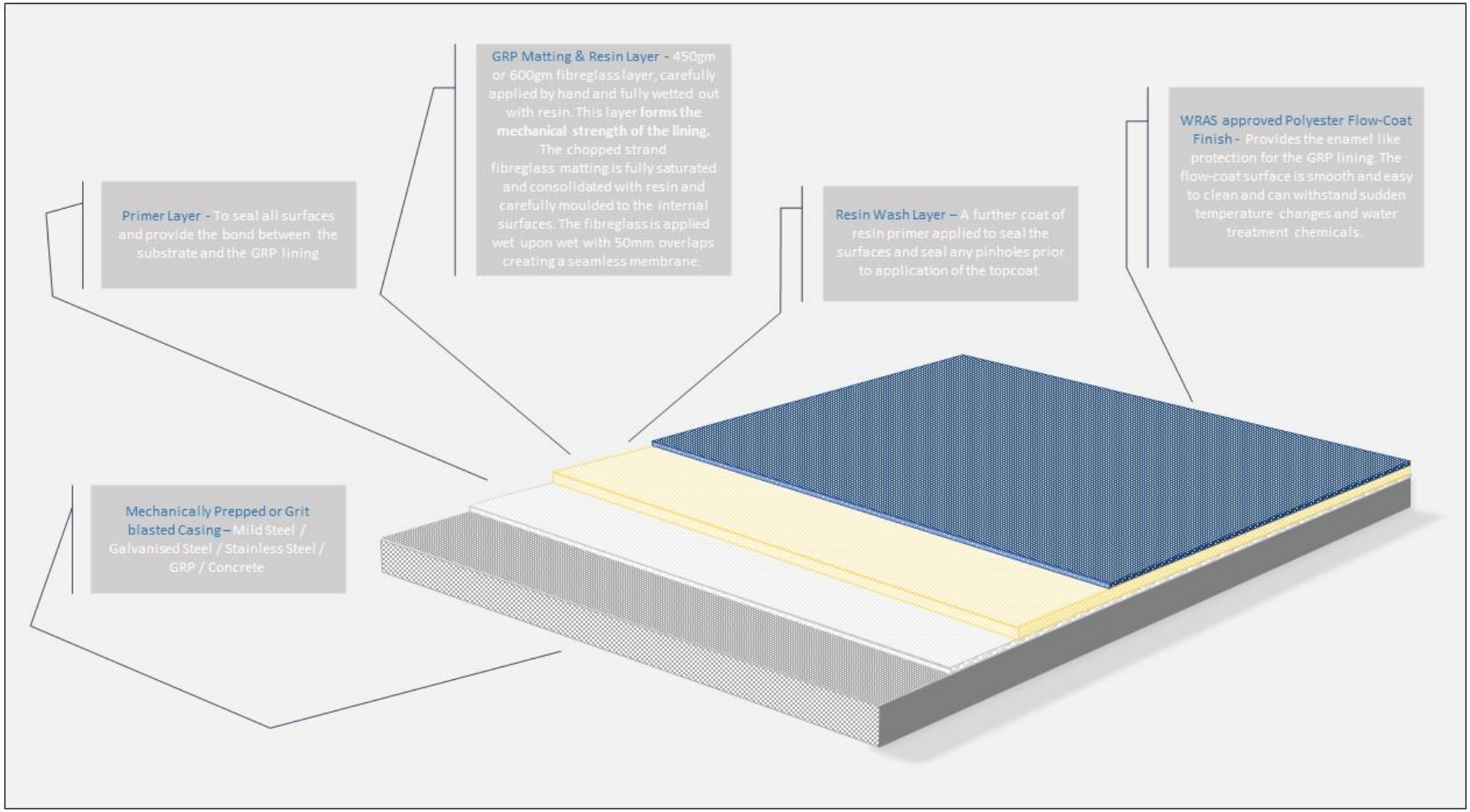
External Coating

To protect against further corrosion to the external casing of both towers we proposed applying a polyurethane coating to the less corroded tower and included for coating the fan scrolls on both towers. Given the extent of corrosion on the other tower, we proposed externally GRP lining this tower to provide added protection.

Replacement Distribution System Tower 2

There was significant corrosion to both the trough and gutter distribution system in cooling tower No. 2 and Vistech proposed full replacement with new a new stainless-steel trough and gutter distribution system inclusive of new distribution tubes and trough covers. This would extend the working life of the tower and remove the risk of a breeding ground for harmful bacteria.

5 Stage GRP Lining Solution



The Project

The project ran over a 3-week Christmas shutdown window and would need to be operational following this period. The timescales were tight and replacement steelwork required design and manufacture prior to installation.

Outline Method Statement

Monday 11th December 2017:
- Attend site inductions & obtain any necessary permits to work.
- Erect perimeter scaffolding (Please see Appendix 3)

Wednesday 13th December 2017:
- Attend site inductions & obtain any necessary permits to work.
- Pre-Chlorinate both towers & Drain down.
- Mechanically & electrically isolated and safe to work on by client.
- Strip out internals from both towers and store next to the tower.
- Fix stainless steel plates on suspect areas.

Thursday 14th to Thursday 28th December 2017:
- Attend site inductions & obtain any necessary permits to work.
- Carry out internal GRP lining works to both cooling towers (See Appendix 1).
- Carry out external GRP lining works to cooling tower No 1 (See Appendix 1).
- Carry out external Coating works to cooling tower No 2 (See Appendix 1).
- Carry out external Coating works to steel work, fan motors & guards (See Appendix 1).
- Install new stainless-steel trough & gutter distribution system to cooling tower No 1.
- Re-fit tower internals back into both cooling towers.

Friday 29th December 2017:
- Post chlorinate both towers and return to service.
- Strike & remove perimeter scaffolding from site
- Leave site in a clean and tidy state.

Other Challenges

Weather Conditions

Careful consideration of the weather conditions in winter is important when applying GRP lining. To overcome the particularly cold period, the towers were covered and heated internally using space heaters to ensure that the GRP application was successful.

Unidentified Corrosion

As is often the case, full internal inspection prior to the work taking place is nearly always impossible without the full removal of all internals. This leaves an element of unknown when specifying the solution. We discovered during the initial strip out that the top sill of one of the cooling towers was so corroded that it required replacement. We were able to design and manufacture a stainless-steel replacement and install back into the tower within the project window. This ensured that the client had two fully operational cooling towers prior to the works reopening.

Final Photos

Refurbished surround of door

External Coating

Coated Fans

What the client had to say…

"A great job executed professionally under strict time constraints, in challenging weather conditions"

T. Guy – Tarkett Engineering Manager

What Vistech had to say…

"Once the towers were stripped out, only then was the extent of the internal corrosion evident – The team had to adapt, design and install new supports including a new top sill whilst keeping within the tight shutdown period over the Christmas break"

B Field – Vistech Operations Manager