

AlphaPlate mixer wear tiles trump performance of chill cast steel

In brief

- Leading national concrete block manufacturer
- Engineering Manager wanted to extend service life of wear parts in two planetary mixers
- OEM chill cast steel floor tiles prone to failure after 2 years
- Installed AlphaPlate hardweld floor tiles

The problem

A leading national manufacturer of concrete products was experiencing maintenance issues with two mixers at their busy concrete block facility. The engineering and maintenance teams needed to keep unscheduled downtime to a minimum.

Whilst highly abrasion resistant, the chill cast floor tiles being used in the two 2m³ planetary mixers were suffering from impact damage. Tiles in and around the discharge doors would crack and fail, which would typically lead to the whole set of tiles being replaced after around two years of use.

The premature failure of chill cast tiles due to cracking was increasing the frequency with which the customer had to enter the mixer to carry out maintenance and replace tiles. This led to increased downtime, tile costs and maintenance costs.

We have calculated that the steel used to make each set of cast floor tiles equates to a carbon footprint of 2300kg of CO₂. Given that the set was only lasting two years the floor had a carbon cost of 1150kg of CO₂ per year.

After 2 years

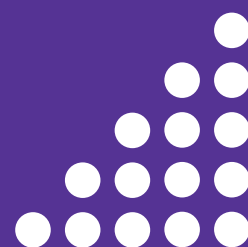
OEM chill cast - Damaged and replaced
AlphaPlate - No damage, minimal wear

1.6million blocks

produced in mixer since AlphaPlate install



Example of a cracked chill cast steel tile



ConSpare

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How ConSpare found a solution

After speaking to ConSpare, the Engineering Manager on site decided to trial a set of AlphaPlate tiles. AlphaPlate hardweld coated tiles are both extremely hard (64 Rockwell) and extremely tough, giving them excellent levels of both abrasion resistance and impact resistance.

Our technical team specified the set of tiles, taking care to account for the number of discharges, the discharge orientation and the probe hole type and location, amongst other things. The tiles were then manufactured using CNC machinery for a quick, easy and accurate fit on site.

In this application sets of chill cast tiles were being replaced every two years due to wear and tile breakage, however the AlphaPlate tiles were still performing well after two years with no breakages. ConSpare offered to conduct a detailed inspection of the tiles at this point.

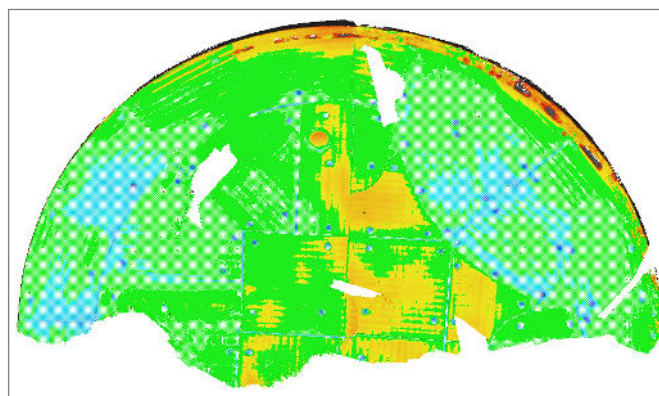
The surface of the tiles was inspected via both traditional methods and by 3D scanner, with only minimal wear and not a single damaged tile found. A maximum wear of 1mm-2mm was found in localised zones and significantly less than this was seen in the rest of the surface. Based on this wear rate, the set is expected to last for approximately 7 years.

Because the AlphaPlate tiles are lasting longer, wearing more slowly and not failing prematurely due to impact damage, the whole life cost and whole life CO₂ emissions arising from the AlphaPlate tiles should prove to be far lower than those of chill cast tiles in this application.

The client was so impressed with the results of AlphaPlate that they also installed a set into the sister mixer a year later.



AlphaPlate 2 year inspection - minimal wear & no damage



3D scan of AlphaPlate "8+7" tiles after 2 years

Improving the process

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