

■ Gerhard Warning Verschleißtechnik und Industrieprodukte GmbH, 33619 Bielefeld, Germany

# Adopting first class wear protection technology reduces costs

Low maintenance, trouble free production plants are the declared goal of every manufacturing operation. Customer demand for commodities of increasingly high quality lays exacting requirements on mixing technology as the basis of these first class products.

It is of little importance whether this concerns aged or shot-blasted paving blocks, paving slabs with premium quality facing materials or pre-stressed, high volume pre-cast components, traditional pipes, palisades, wall elements, coloured roofing tiles, etc.



Well-known production facilities are dependent on trouble free operations and employ high quality wear protection technology in the mixer

At the same time, pressure on costs and the reduction of maintenance staff have caused the expectations placed on long-lived wear protection technology to increase massively throughout the world. This especially applies to the Middle East,

USA and Canada, where manufacturing in many concrete production facilities runs 24 hours a day, 6 - 7 days a week.

For this reason, not only in the USA, Canada, the Middle East, England, Ire-

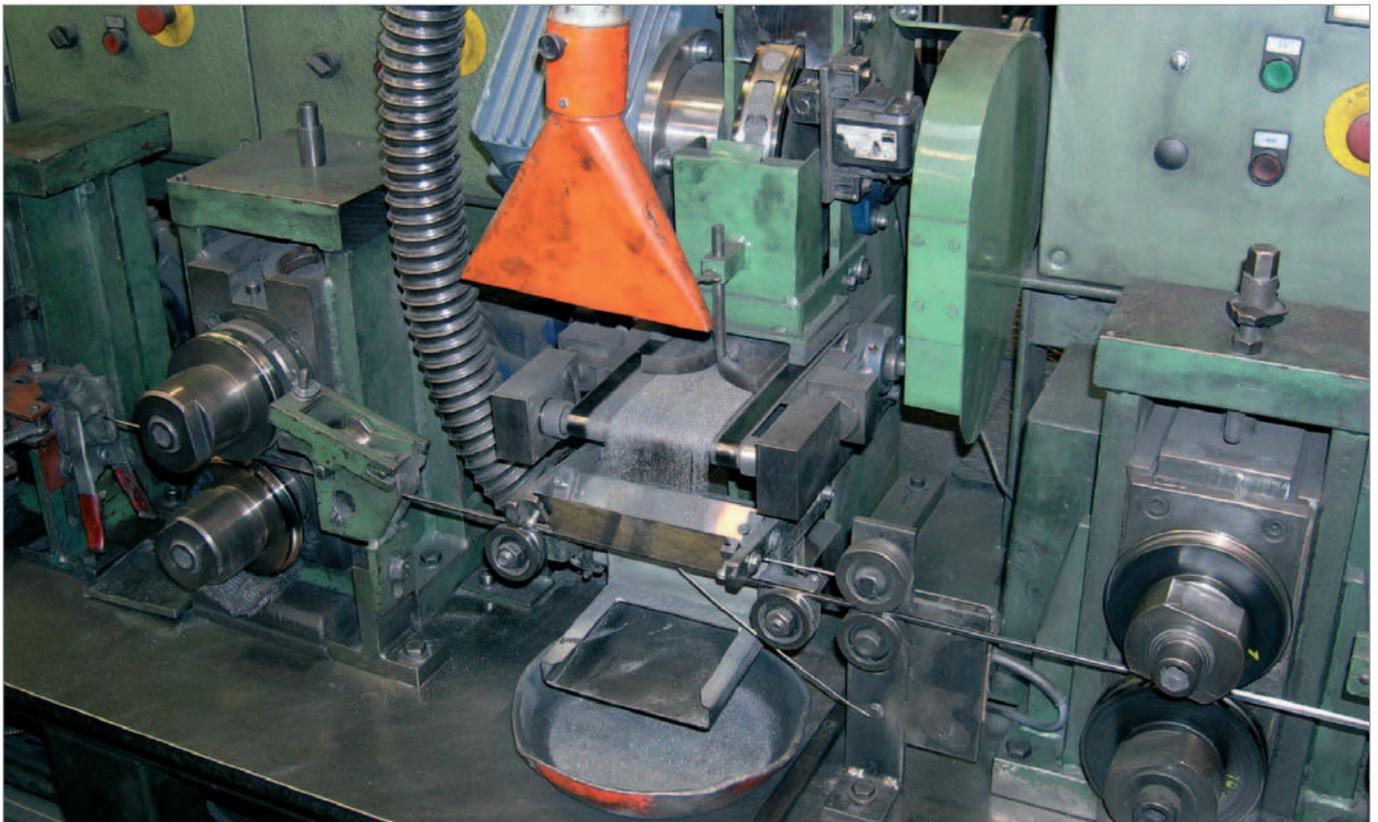
land, Iceland, Israel, Benelux, Spain, and Scandinavia, but also in Germany, further developments in Alphachrom 7000plus are being observed with great interest. This durable, impact-resistant composite armoured material is used in mixer linings,



Shot-blasted paving stones with high quality facing



Tumbled paving stones with high quality facing



The welding rod production method determines the future quality characteristics of the exceptionally impact and wear resistant Alphachrom 7000plus composite armoured material

hopper linings, bucket excavators, table tops for block forming machines etc.

The composite armoured material is a steel sandwich manufactured in the following way. Large steel plates are clamped on an even plane onto special welding rigs in order to keep warping

during the welding process to a minimum (application of wear protection layer). Afterwards, the application of the required depth of wear protection coating begins. There are variations for each customer specification and assigned purpose, in the case of a mixer floor 8 mm base material and 5 mm wear protection

layer. Welding rod selection predetermines the quality of the application for practically every purpose designated, e.g. impact-resistant, corrosion resistant, acid-proof, heat-proof, etc.

A special feature of the extremely hard-wearing Contex Alphachrom 7000plus welded-on layer is the small hardness cracks in the surface of the armouring. These are generated by the different expansion coefficients between the load bearing material and the wear protection layer. They are to be seen as tokens of quality and are in no wise a defect. The "soft" load bearing material also makes it possible for the same material to be welded in from the reverse side with normal welding electrodes as panelling in zones which are liable to wear. This could be in elevators, sand hoppers, silo outlets, bucket conveyors, for example, as a type of deflector etc. These characteristics are determined by the additives in the welding rod.

A major role in extending durability is played by the thickly applied carbides and wide, raised welding beads which offer less contact surface for wear. Be-

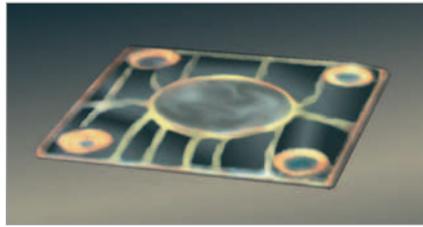


Highly wear resistant mixer floor using Alphachrom 7000 plus, with extra wide raised welding beads levelled off evenly

sides its extremely long lifespan, Alphachrom 7000plus is also often utilised because it is absolutely resistant to impact, as opposed to ceramics and cast iron, and in the final stage of its useful life cannot break up. Once the desired wear protection layer has been applied to the load bearing material, the large plates are completely levelled with special rollers. This procedure is not only important for mixer floors but also especially for table tops for block producing machines in order to avoid losses arising from grit. The large area plates are subsequently cut cleanly on a CAD guided plasma torching plant to their exact size for the most varied mixer types.

Besides the external contours, the location holes for the fastening sockets are also set up. After the fastening sockets have been welded in, the mixer floors and walls, table plates etc. are rolled again and brought to final checking.

The selection of the right application characteristics quickly separates the wheat from the chaff. Poor quality gives rise to uneven wear and erosion. The problem is magnified by the fact that, unfortunately, the client generally only first notices the damage when it has already occurred. Utilising first class quality products must pay off in this sort of case as they have a far longer, proven useful life.



*Alphachrom 7000plus composite armoured material is also utilised in protecting microwave humidity probes to safeguard their sensitive ceramic head*



*High performance mixer for producing facing concrete with liner and floor of Alphachrom 7000plus, with extra wide raised welding beads, mixing tools and agitators protected by tungsten carbide*

resistance technology guarantees an extremely long mixing tool life span. In conjunction with this, quick change mixing tools like the specially constructed Contex three armed agitator are highly appreciated.

First class mixing tools also reduce daily cleaning times quite considerably. Liner and floor liner deflectors protected by tungsten carbide prevent material from being built up in the mixer.

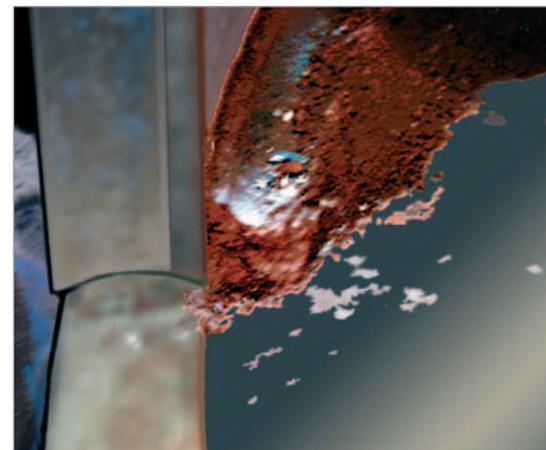


*Modified agitator with quick change rotor blades protected by tungsten carbide*



*Sample of different mixing tools all completely protected by tungsten carbide*

Solid caking, in particular, can only be removed with difficulty and with much time and energy, leading to significant increases in daily cleaning times. Again,



*Caking due to worn floor liner deflectors*



*Partial erosion of a mixer floor element due to the below-standard quality of the armoring*

In the mixer, there is not only the question of the longevity of liner and floor but also the durability of the mixing tools. Especially in high performance mixer with agitators, Contex tungsten carbide wear



Worn floor liner deflectors

prematurely worn tooling is hardly in a position to keep clean the floor sensors for humidity measurement. The result is that exact measurements for water and additive supplements can no longer be carried out.

Long life Alphachrom 7000plus and mixing tools protected by tungsten car-

bide have been available now for more than 25 years. Against this background of minimal maintenance effort and very economical application, they have found a wide customer base.



All Pavestone Group production facilities are supplied by Gerhard Warning. Jörg Marx, vice president of technical operations, Pavestone USA comments: "We are very satisfied!"

Alphachrom 7000plus as well as all other Contex products are manufactured exclusively in Germany. Quality controls are carried out continuously and are guarantors of this first class, durable wear protection technology.

Further information:



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 Highly wear resistant mixer floors with a hardness of 64-66 HRC



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**Gerhard Warning**

If you are hard to please, our »hardness« will please you



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