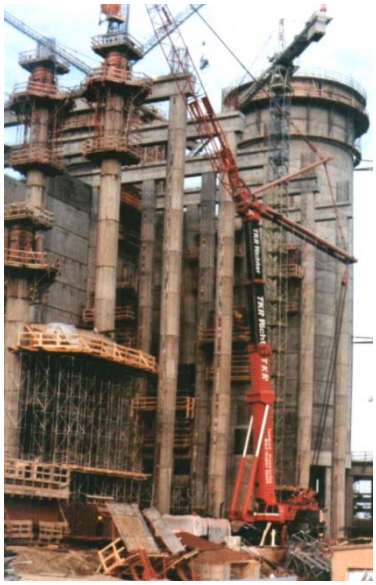
SCHWENK CEMENT FACTORY – BERNBURG – GERMANY

In 1992 the new plant of the cement factory **SCHWENK** in Bernburg was protected with **ZINGA**.
Application technique: airless spraying.
These pictures were taken during construction.
30 tons of ZINGA were used for this application.

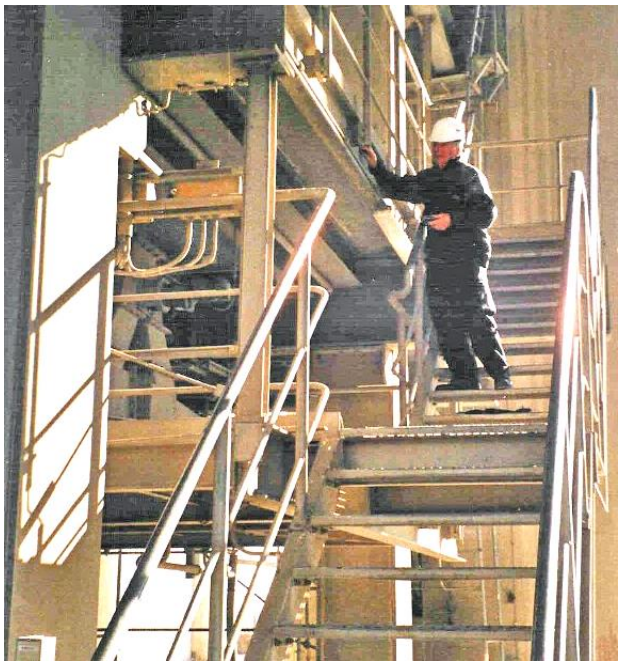


In February 2003, the condition of the **ZINGA** layer was inspected. On the pictures you can see that the **ZINGA** is still in perfect condition and shows no trace of rust **after more than 10 years.**
The customer was very satisfied with **ZINGA**.

At this moment there is no need for touch-ups. Later on, the **ZINGA** can very easily be recharged simply by applying a new layer on top of a cleaned surface !

System:
ZINGA 2 x 60 µm DFT

On the weathered side of the plant, where abrasive media and rain are washing the surface, the **ZINGA** layer thickness had decreased from 120 µm to 70 µm. This comes down to 5 µm a year, which is surprisingly good under these hard environmental conditions.



On the other side of the plant however, where a thick layer of dust had attached itself to the **ZINGA**, the layer thickness had only decreased from 120 µm to 115 µm. This is merely 0,5 µm per year in comparison to the other side of the factory where the loss was 5 µm per year !

On this picture the dust is being removed and the intact **ZINGA** layer becomes visible.

This is the report dated 03-18-2003 of **Mr. Schwarz** of the company **AGESO**, concerning his inspection of the factory in February 2003: **more than 10 years after application of ZINGA**.

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AGESO® -Korrosionsschutz

Dipl.-Ing. Helmut Schwarz
Agnes-van-Brakel-Str. 34
D-41748 Viersen
Telefon (0 21 62) 1 66 28
Telefax (0 21 62) 3 47 22
Bahnstation: Viersen
(Fracht u. Express)
Bankverbindung:
Dresdner Bank AG Viersen
(BLZ 310 800 15) Konto-Nr. 0939 441 200

Dipl.-Ing. Helmut Schwarz - Agnes-van-Brakel-Str. 34 - 41748 Viersen

ZINGA METALL S.P.R.L.
Industriepark VENECO
Rozenstraat 4

B-9810 E K E (Naz.)

Ihr Zeichen	Unser Zeichen	Ihre Nachricht vom	Datum
Your request	Hs-zm.sy.	Febr.2003	March 2003-03-18

Cement factory SCHWENK at Bernburg /East Germany / Inspections on ZINGA after over 10-years after application and submission under rough production conditions.

On your request I travelled most recently to the above referred cement factory and executed a variety of inspections and tests The steel constructions were assembled in 1991 and completed in 1992. The steel bars and other constructions were blasted by steel-pellets to the degree of Sa 2.5 and subsequently degreased by ZINGASOLV before the application of ZINGA.
The actual applications were done by the known airless-spraying - system under dry and clean production conditions. The specified and achieved layer thickness were around 120 microns. A certain lot was supervised by me personally and therefore certain guarantee documents had been signed by me in 1992. The demanded guarantee time period was 5 years plus 1 day as it is common practice in Germany. A Special form sheet according to DIN 55928 part 7 was used and signed by the all parties involved including myself.
The total amount of ZINGA that had been applied for this installation was around 30 metric tons plus around 3000 litres of ZINGASOLV..

Visual inspections:

visual inspections showed an undefined layer of dirt on top of the ZINGA which appeared light greyish in colour as shown in the photographs. This dirt layer apparently acts as a " free of charge protective passive coating" as described later on.

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On the weather-side no such dirt could be detected on top of the ZINGA layers, where abrasive media, rain, snow etc. washes the surfaces clean. Refer to photograph no 5 and one finds darkish grey surfaces of ZINGA. At no situation could the beginning of rust be detected. At no places were cracks or brittle spots discovered. The layers of ZINGA at each and every spot appeared to be extremely hardened.

Thickness meter instrument:

An instrument called MIKROTEST IV AUTOAMTIC had been used which is performs as a magnetic coating thickness gauge. This instrument complies with standards like DIN 50 981 and 50 982, ASTM ,B 499,E 367,D 1186,G12, B 530,BS 5441, ISO 2178,2361 and stems from the firm with the name ELEKTRO PHYSIK, Cologne, Germany. Before measuring the afore mentioned layer of dirt had to be removed by scraping with the backside of a knife so that no harm to actual ZINGA layer occurred.

Thickness:

After over 10 years under very rough cement factory conditions I found the following: Situations with that particular coating of dirt on top of ZINGA showed an almost not measurable decrease of layer thickness. I estimate roughly 5 microns or 0.5 micron per year. At those places I measured several times in order to be absolutely sure , because I could not believe my first readings. This results in remaining layer thickness of around 115 microns. Where there was no such dirt layer on top of ZINGA ,a remaining layer thickness of ZINGA was found to be around 70 microns. This results in a decrease of around 50 microns during a time period of one decade. Under the prevailing hard environmental conditions a mere decrease of around 5 microns per year is surprisingly good. The ambient temperatures in that geographic region vary from –26/30 to + 30/35 centigrade including very intensive ultraviolet rays,.

Electrical measuring:

A standard e-multi-meter was used to find out whether the substance of the ZINGA layers had changed in respects to both the electrical conductivity and the electrical (ohm)resistance. I can state that after over 10 years under production conditions there was no detectable change in those respects at all. This again proofs the perfect ZINGA layers and the good performance as an electrical conductive metallic coating. It also proofs that no detectable aging of the layers had occurred and that the very fine and small zinc particles plus the binding agent are still in perfect working condition and that the applications back in 1992 , had been carried according to my instructions.

Conclusions

Since all inspections and tests that had been carried out produced only positive results I can conclude with one sentence only: " It is all in perfect shape". The customer is very satisfied and happy with ZINGA an now wishes to use ZINGA at other places in the works.

Kind regards

H .Schwarz

The dark grey on the upper installation is **ZINGA**, and is found to be in perfect condition. The light grey is hot-dip galvanizing, where rust begins to appear.