PROTECTIVE COATINGS

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SIGMA AQUACOVER™ 80

A NEW STANDARD FOR FLEXIBLE WATERBORNE STEEL PROTECTION

Name of Presenter

Name of Event

Date

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SIGMA AQUACOVER 80 Summary

Extremely flexible, high-build, primer / mid-coat / finish

- One-component, high-build acrylic semi-gloss primer and coating for steel structures
- Excellent flexibility
- Good water resistance
- Good impact and abrasion resistance
- Unlimited overcoating interval
- Excellent adhesion to various types of old and weathered paint
- Application up to 80% relative humidity and temperature down to 5ºC

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Oil and Gas

- Tanks (in countries where waterborne products are required)

Infrastructure

- Bridges
- Steel constructions

Power

- Constructions (onshore)
- In Belgium: specifications by ELIA

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Where?

Environments where human safety and environmental friendliness are key

- Countries with high priority for EHS regulations
- Example: Denmark (Malcode)
- Many applications in Infrastructure segment
- Specified by ELIA (Belgium) for use on high-tension pylons (Power)
- Ideal for all riveted structures thanks to its elasticity
- Steel protection where environmental performance matters
- New-build and maintenance, especially suitable for maintenance
- On constructions where flexibility is important

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In line with ISO 12944-5

Corrosion	Medium durability	High durability
C2/C3	Direct to metal	Direct to metal
C4	Direct to metal	On Galvanized steel
C5	Probably also possible, additional testing is in execution on TSZ and high DFT	

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SIGMA AQUACOVER 80 outperforms competition (mainly NOXYDE)

Some competitive products offer such a high flexibility that it sacrifices many other performance factors. 100% flexibility is more than sufficient

SIGMA AQUACOVER 80 outperforms competition in all other aspects

- Dirt pick-up
- Impact resistance

SIGMA AQUACOVER 80	Competitive products
Flexibility 100%	Flexibility 200%
High-impact resistance	Low-impact resistance
Non-tacky	Tacky
1 coat	2 coats

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Benchmarking against main competitors

Dirt pick-up: Clearly better performance of SIGMA AQUACOVER 80

Pictures of outdoor exposed panels (3 months) next to unexposed panels (left) before cleaning

Noxyde after 3 months outdoor exposition

SIGMA WD D412 after 3 months outdoor exposition

Benchmarking against main competitors

Anticorrosive performance	SIGMA AQUACOVER 80	Competition	
Humidity: 1 coat	SIGMA AQUACOVER 80	1 coat	Similar results
Humidity: with topcoat	SIGMA AQUACOVER 80 / SIGMA AQUACOVER 45	2 coats	Similar results
Salt spray: without topcoat	SIGMA AQUACOVER 80	1 coat	Similar results
Salt spray: with topcoat	SIGMA AQUACOVER 80 / SIGMA AQUACOVER 45	2 coats	Similar SIGMA AQUACOVER 80 slightly better

Remark: the swelling behaviour of Noxyde after humidity and salt spray exposure was so strong that it was difficult to judge the corrosion creep from the scribe!

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Benchmarking against main competitors

	SIGMA AQUACOVER 80 Competition
Direct impact	SIGMA AQUACOVER 80 performs much better
Indirect impact	Similar results
Abrasion resistance	SIGMA AQUACOVER 80 performs much better
Adhesion	SIGMA AQUACOVER 80 is better

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Case example 1 (existing product from competition)

Project: Storstrømsbridge, Vordingborg, Denmark (maintenance)
Connects two of Denmark's main islands over a Sea street

A bridge over the sea in a 100% waterborne system

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Case example Storstrømsbridge Denmark. Details

Project: Storstrømsbridge, Vordingborg, Denmark (maintenance)
Connects two of Denmark‘s main islands over a Sea street

At first sight, we would classify this as a clear C5M environment…

…so difficult to protect with a 1K waterborne system only!

Bridgetype	Bow- and beambridge
Sea street / Ocean	Storstrømmen
Length	3.199 meters
Width (only road)	5.6 meters
Width (incl. railway)	14 meters
Sailing height	26 meters
Sailing width	136 meters
Building period	1933 – 1937
Inauguration date	26th September 1937

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Case example Storstrømsbridge Denmark. Specified system

- Grit blasting ISO 8501-1 Sa 2,5
- TSZ only on areas susceptible to stagnant water
- 100 µm AC Antiox, thinned 7% H_2O (airless)
- Stripecoat AC Antiox, not thinned (on all rivets and all edges)
- Stripecoat AC Antiox, not thinned (on all rivets and all edges)
- 150 µm AC Antiox, not thinned (airless)
- Stripecoat AC Antiox, not thinned (on all rivets and all edges)
- 150 µm AC Antiox, not thinned (airless)
- 70 µm WB topcoat from acrymatic (airless)
- 470 µm in total
- 5-year guarantee is issued!

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Case example Storstrømsbridge Denmark. Why is this specification “smart”?

At first sight, the environment is clearly C5M, but 90% of the surface is protected from rainfall thanks to the bridge deck, so this is a C3/C4 rather than a C5 environment

Those areas that receive rainfall And are susceptible to-stagnant water are first treated with zinc metallization (TSZ)

All the critical areas do not receive 470 µm DFT but up to >1000 µm thanks to the multiple stripecoats (3x)

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Case example Storstrømsbridge Denmark. The guarantee is also smart!

5-year guarantee BUT:

- Paint value only
- Sliding scale
- On condition of a yearly inspection and touch up of rust points!
  A specially designed inspection cart, which hangs under the bridge has been installed to facilitate this yearly inspection

Conclusion 1:

The real truth is a bit different than how it looked at first sight!

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Case example Storstrømsbridge Denmark. The guarantee is also smart!

Conclusion 2:

There is no reason why we couldn't be as smart – or why not smarter!

An internal test programme is running:

- To test a system in different DFTs for ISO 12944-6 C5M high on TSZ
- To test a DTM system in different DFTs for ISO 12944-6 but salt spray without scratch
- To test a DTM system in different DFTs for regular ISO12944-6 to see how far we can come (C3,C4,C5?)
- Testing SIGMA AQUACOVER 80 on top of SIGMA AQUAWELD 100

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Case example 2

Project: External Silo Coating Trial, Portasilo, York, UK

Trial application of SIGMA AQUACOVER 80 as a direct, typical working trial against the current supplier of a similar coating (Rustoleum Noxyde)

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Pictures of the application process

QC check for standard of cleanliness

Application via airless spray to top of silo

Application via airless spray to side of silo

Application of stripe coat - note size of brush

The result: the coated silo

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Some comments comparing SIGMA AQUACOVER 80 to Noxyde

- Coating dried “harder” after overnight drying. Coating generally dried to a smoother finish than Noxyde
- Areas flatted down were found to be better than Noxyde as this did not clog up the flatting paper. The result was a smooth, flatted finish ready for repaint
- Coating smoother and creamier than Noxyde to apply

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Summary: Extremely flexible, waterborne solution

Outperforming alternatives from the competition

Anticorrosive performance	Competition
Waterborne	Health and environment friendly
One-coat application	Fast production
Excellent adhesion to old and weathered paints	Reduced costs
Direct to metal	Single product
Fast drying	Reduced out-of-service time
Semi-gloss appearance	Easy to clean
Unlimited overcoating interval	Extended at low costs
Non-tacky surface	No dirt adhesion
High elasticity up to 100%	No risk of adhesion loss
Impact and abrasion resistant	Improved lifetime expectancy
Application at 80% RV and temperature down to 5°C	Comfortable application window