

Tackling low VOC coatings requirements - While improving performance

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Chinacoat 2015 Seminar

Perstorp in brief

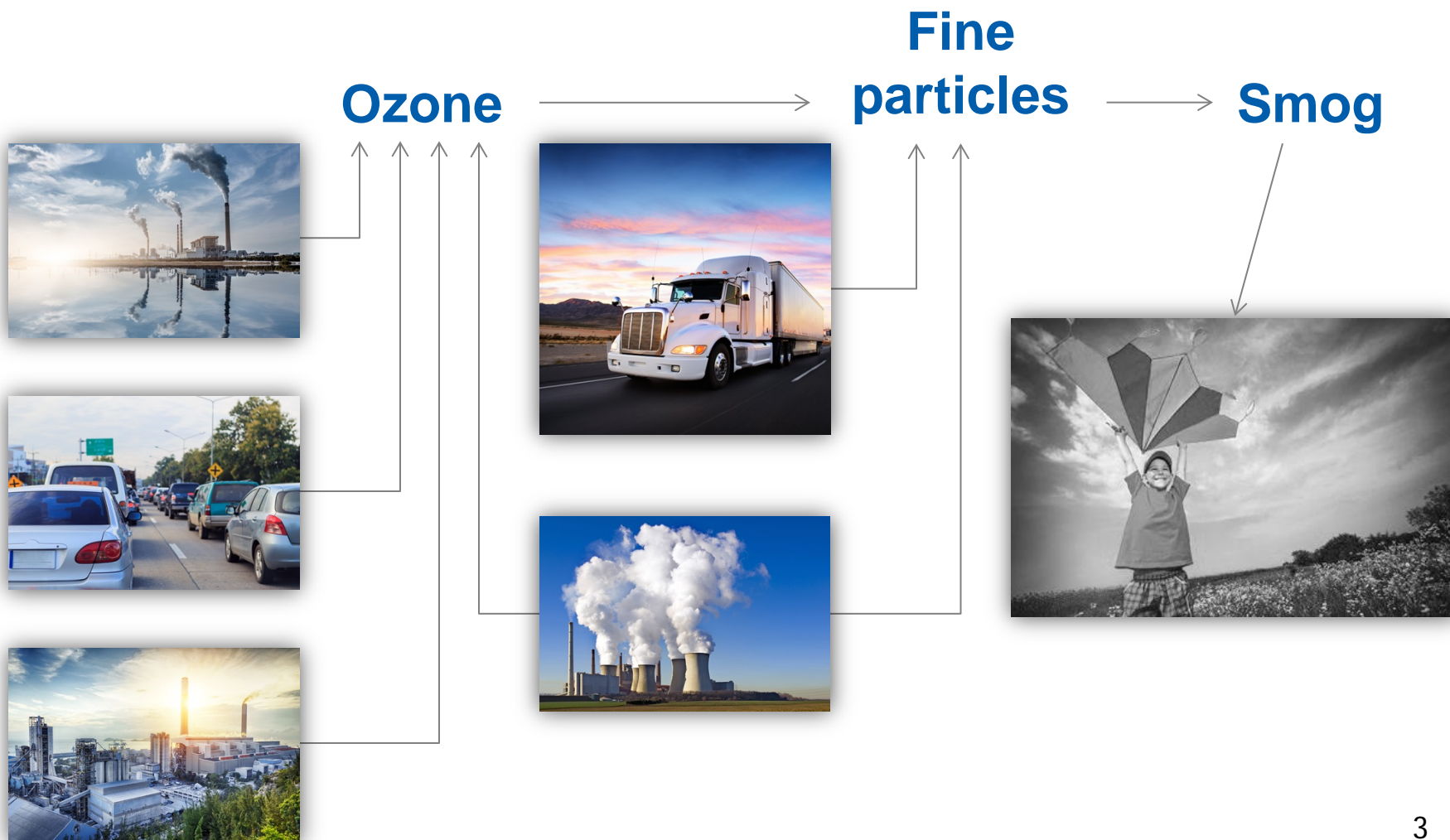
- ➔ World leader in several sectors of the specialty chemicals market
- ➔ Annual turnover of more than 11 billion SEK in 2014
- ➔ About 1,500 employees in 22 countries
- ➔ Production plants in Asia, Europe and North America



Innovative chemical solutions for a sustainable world

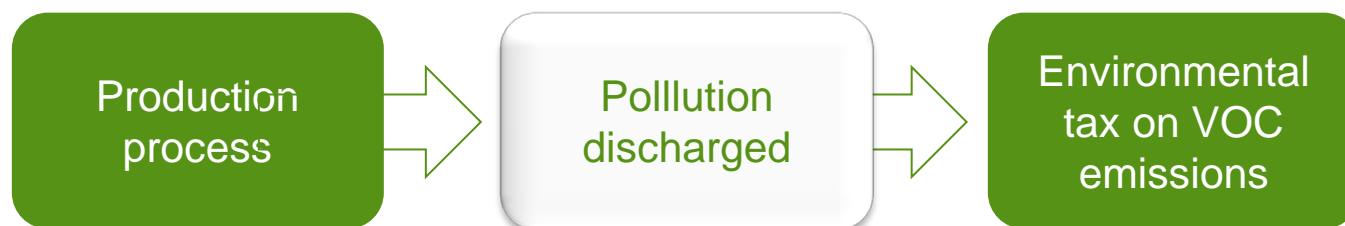
VOC

Volatile Organic Compound



China takes responsibility for the environment

Since Feb 2015, 4% tax VOC >420g/liter



Perstorp and sustainability 1/2

Enabling coatings systems with
low environmental impact
and higher performance

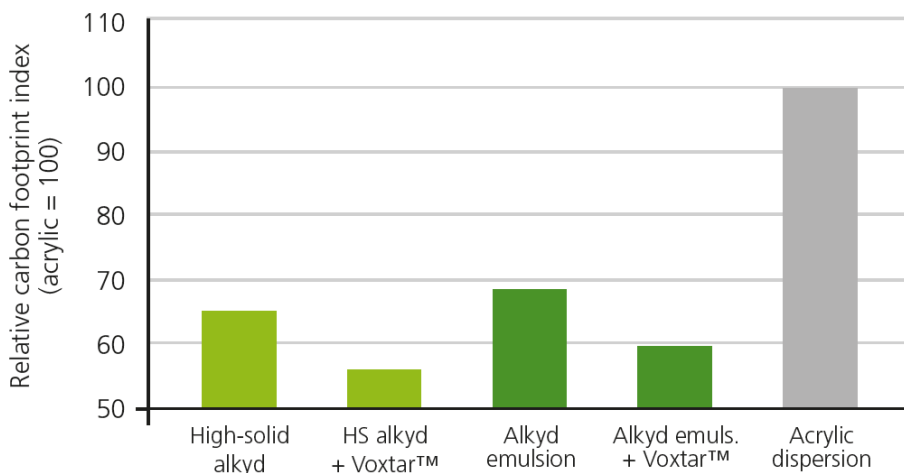
Continuous product
development through
Focused Innovation

Life cycle analysis
targeting lower emissions
and lower carbon footprint

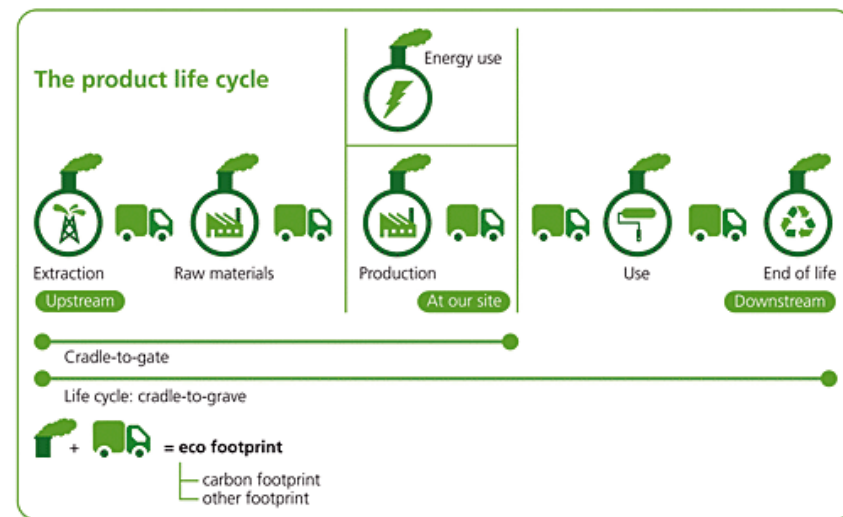


Perstorp and sustainability 2/2

Relative carbon footprint comparison between high-solid alkyds & alkyd emulsion paints vs. acrylic dispersion paints

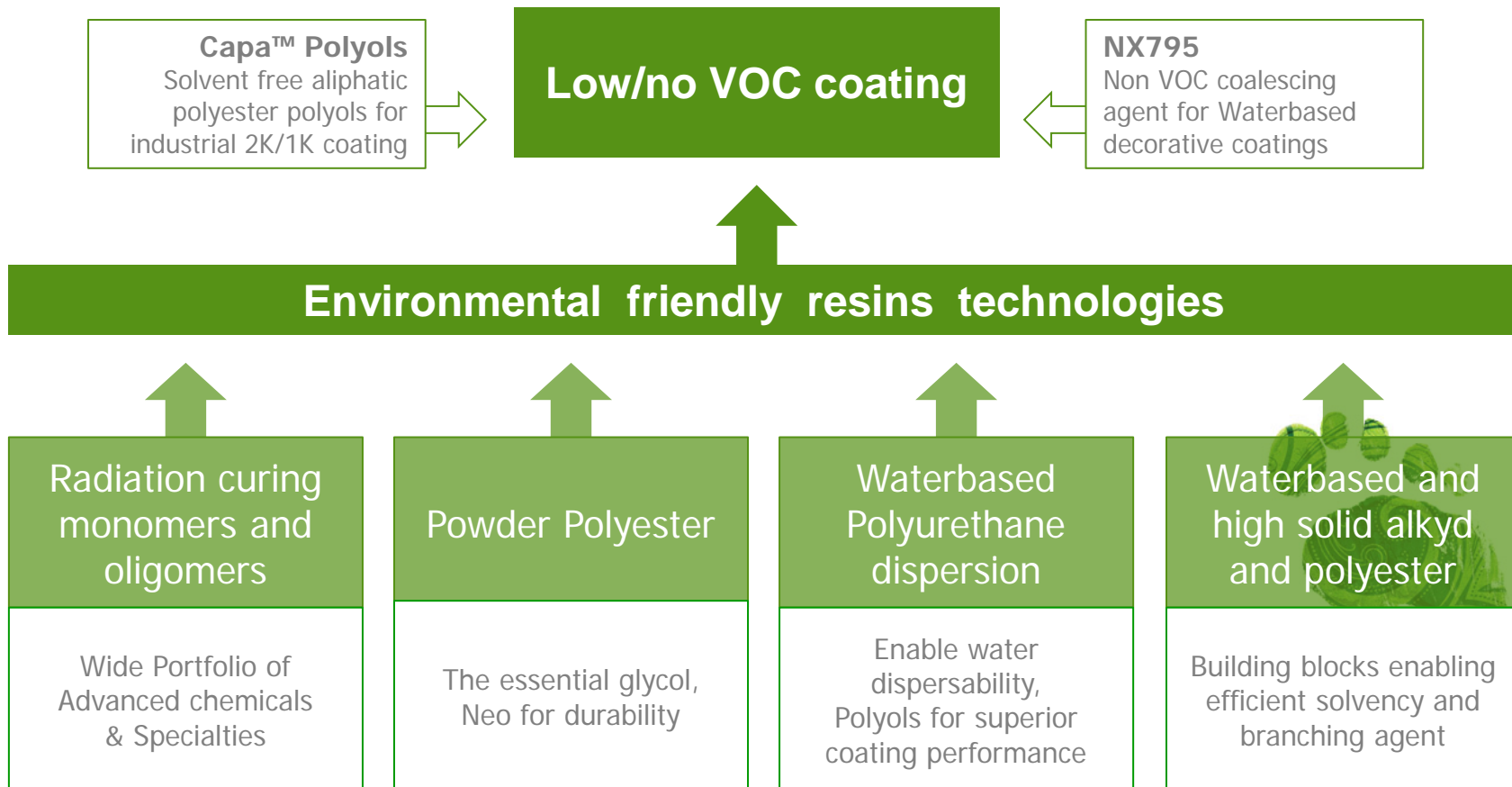


Carbon footprint comparison of high-solid alkyds- and alkyd emulsion paints compared to acrylic dispersion paints¹⁾ plus Voxtar™ effect estimates



Voxtar™ cuts carbon footprint by 75%

World leading provider of low VOC solutions

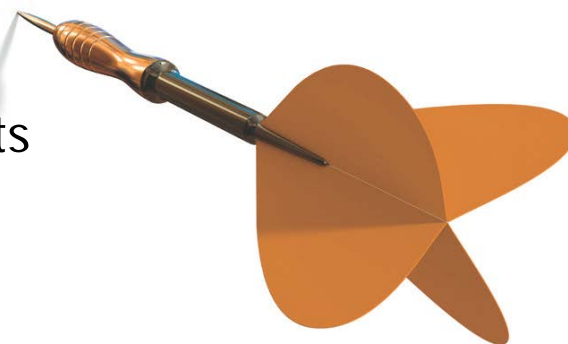


Complete, sustainable & innovative offering

Unmatched portfolio toolbox

For Radiation curing monomers & oligomers

- ➔ More than 35 building blocks
- ➔ From raw materials to specially designed products
- ➔ Low viscosity monomers & oligomers



Acrylated Polyol type	Di-Penta acrylate (DPHA)	Acrylate of Boltorn™ P501
Viscosity, mPas @ 23 °C	13 000	600
Pencil hardness 72 hours	5H-6H	5H-6H
Scratch (scotch brite, 50 rubs) Final Gloss	90,3	88,1
Erichsen-flex (Aluminium, mm)	0,4	1,7
Adhesion (cross-cut, PC Sheet)	No	Yes

Vis

Hexane diol-adipate
polyester urethane
diacrylate

Capa 21017
urethane diacrylate

A new concept for powder polyesters

Traditional Powder coating

- ➔ **NEO:** Key building block, enabling solid polyester with required Tg and durability
- ➔ **TMP:** Branching agent increasing functionality
- ➔ Production of TMP & NEO in Zibo

Low temperature Powder coating

- ➔ Expertise in your powder resin development
- ➔ Lower energy consumption
- ➔ Concept crosslinker for low temperature matt powder hybrid polyesters (140C, 25 min)

Coating properties, cured 25 min at 140 °C

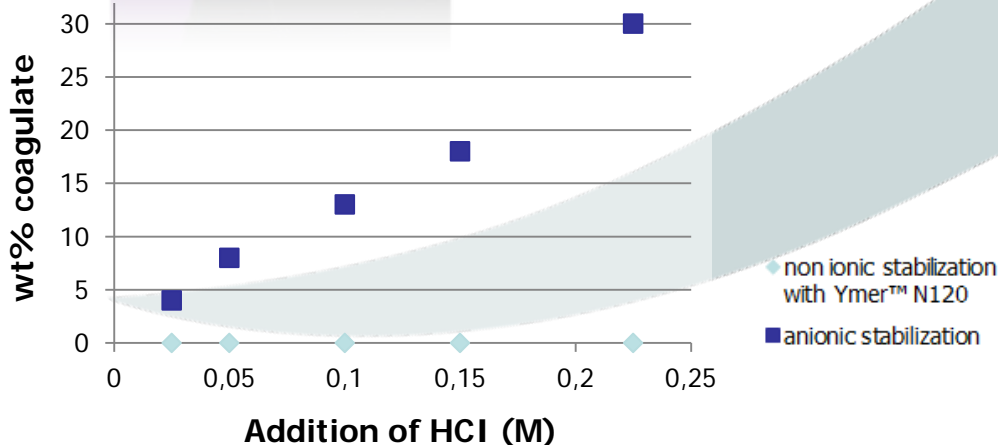
Erichsen flexibility (mm)	8
Buchholz hardness, DIN 53 153	118
Cross-cut, 0 - 5, where 0 is best	0
Surface resistance to cold liquids (EN 12720), where 5 is best	
Distilled water, 24 hrs	5
Ethanol 48 w%, 16 hrs	5
Acetone, 2 min	4

Enabling superior waterbased Polyurethane dispersions



Lower VOC

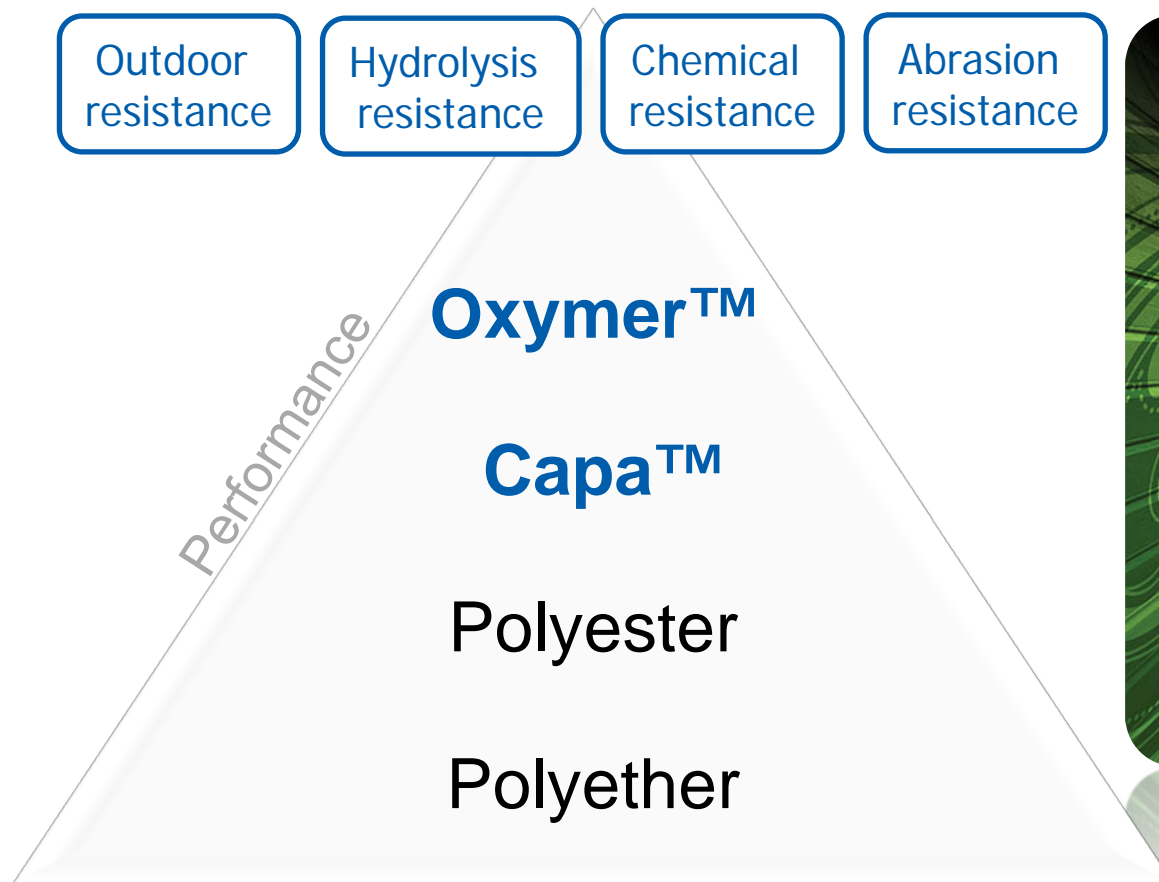
Reduced cosolvent and lower amine neutralization with Ymer N120



Even better performance

- Less sensitive to pH variations
- Lower freeze
- Shear stability

Made for the toughest environment



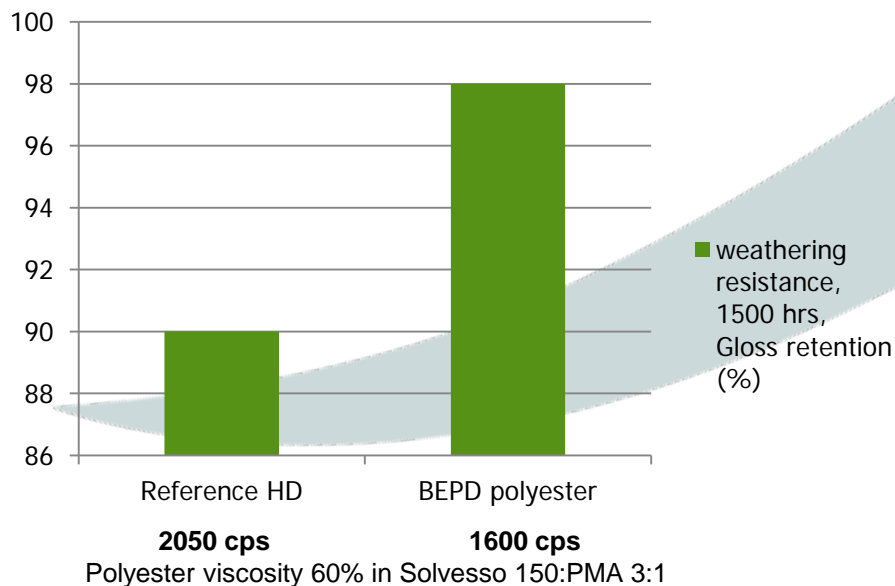
Solutions for high solid & waterbased polyesters and alkyds



Lower VOC

Lower viscosity liquid polyester using 10 to 20% of BEPD

**Weathering resistance, 1500 hrs
Gloss retention (%)**



Even better performance

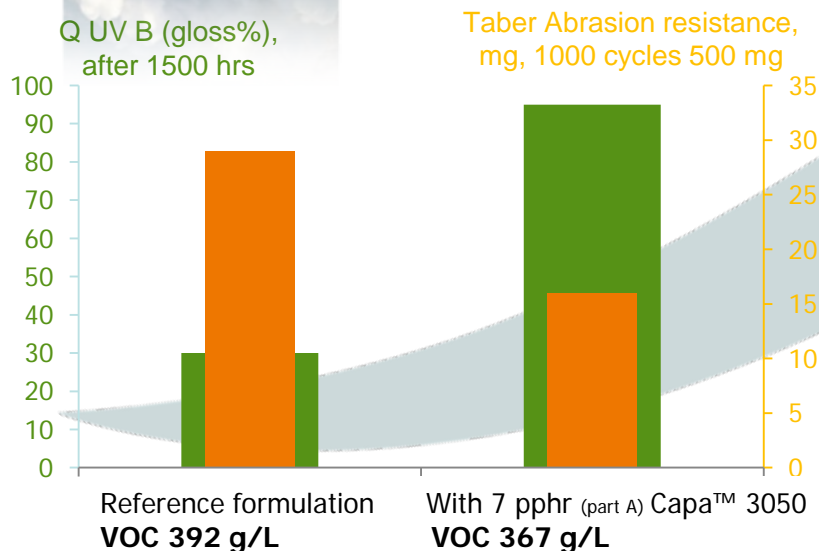
- Enhanced durability
- Enhanced outdoor resistance
- Flexibility

High performance low VOC 2K/1K coatings with CAPA polyols



Lower VOC

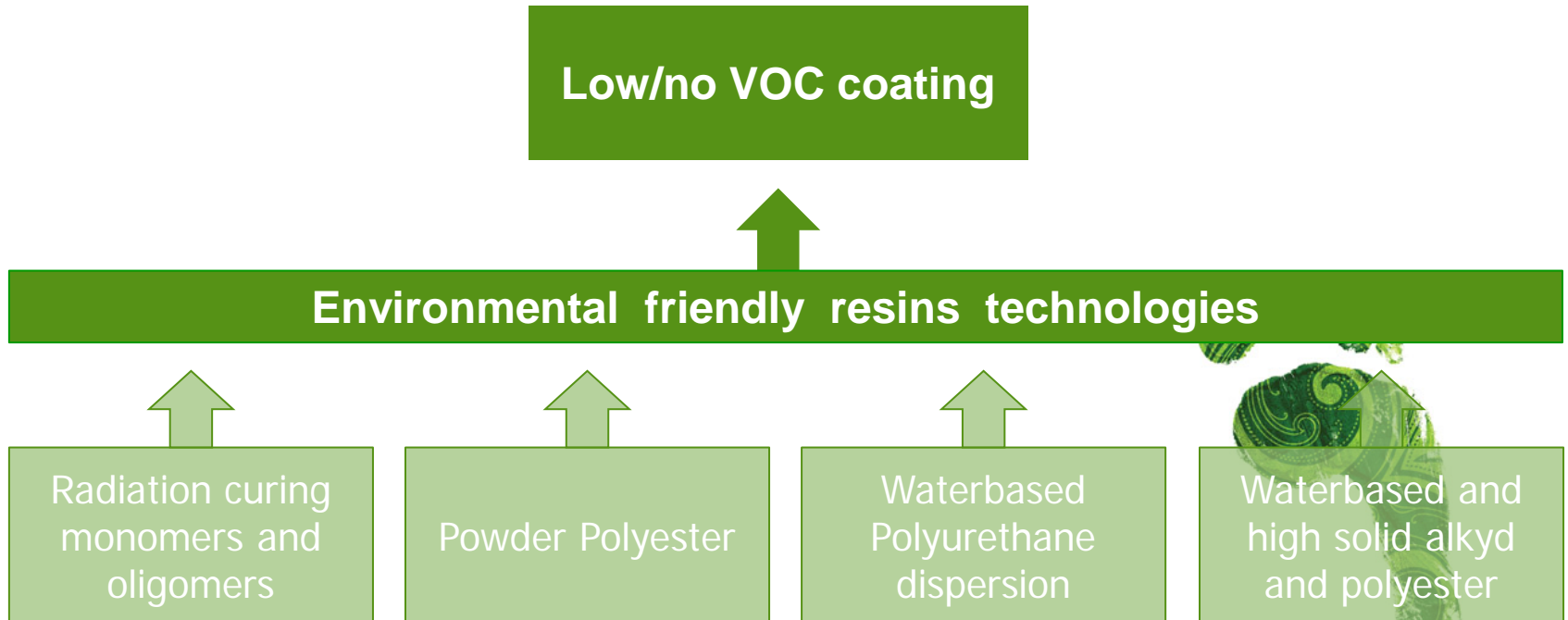
- **Reduced VOC by up to 10%** with partial acrylic polyol replacement
- By adding only 5-10% Capa™



Even better performance

- Enhanced durability
- Abrasion resistance
- Impact resistance
- Robust and reproducible results

World leading provider of low VOC solutions



Even lower VOC & Even better performance

Delivering innovative chemical solutions
for a more sustainable world



Welcome to Hall E3, Stand D104-108