Tackling low VOC coatings requirements
- While improving performance

David James, VP Innovation, Sweden
Peter Zhang, Regional Sales manager China

Chinacoat 2015 Seminar

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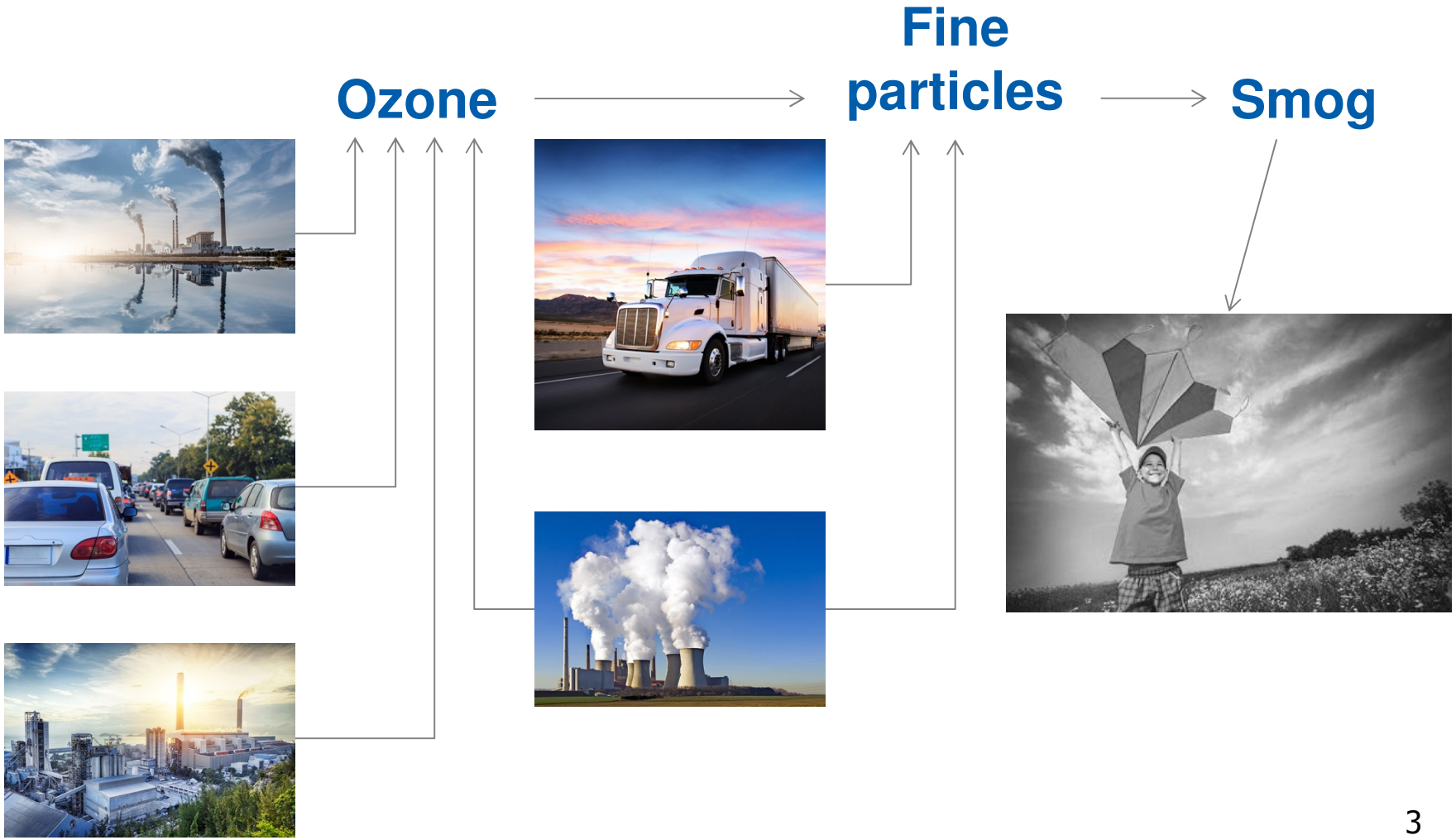
Perstorp in brief

- 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

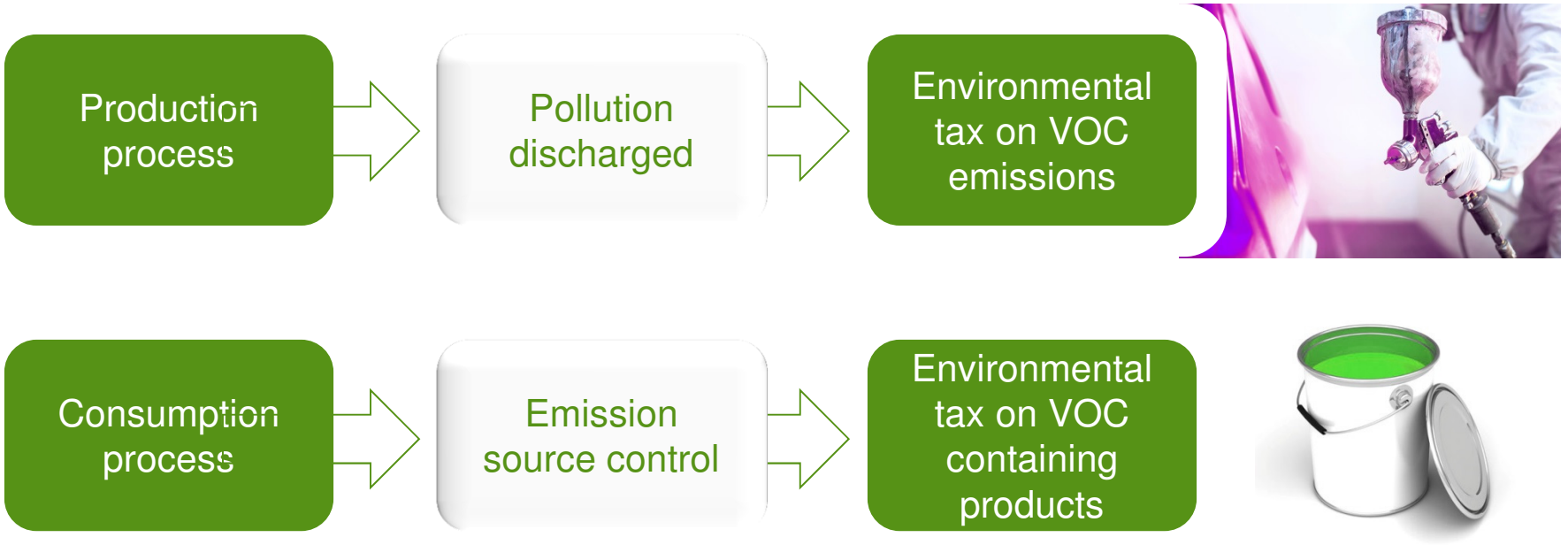
VOC

Volatile Organic Compound



China takes responsibility for the environment

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



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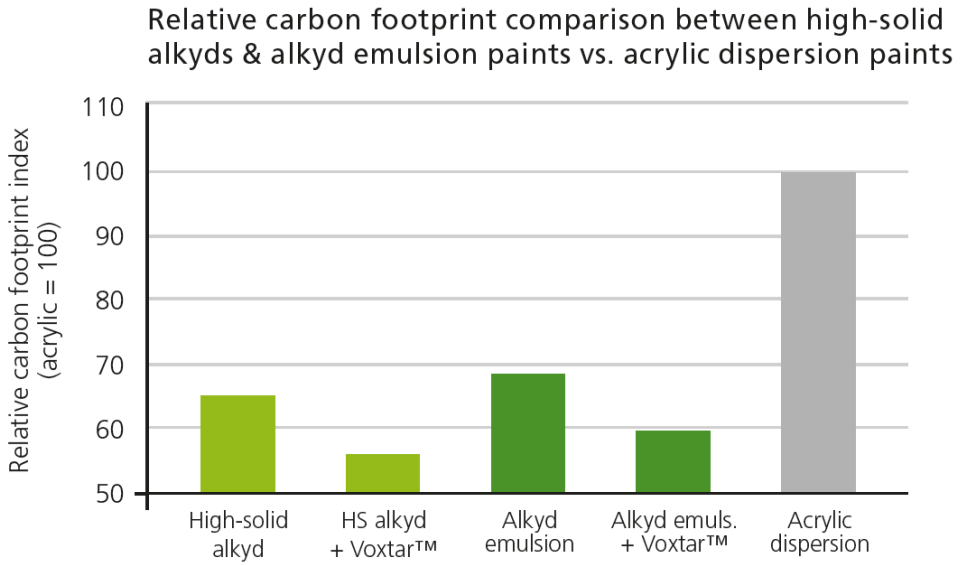
Perstorp and sustainability 1/2

Enabling coatings systems with
low environmental impact
and higher performance

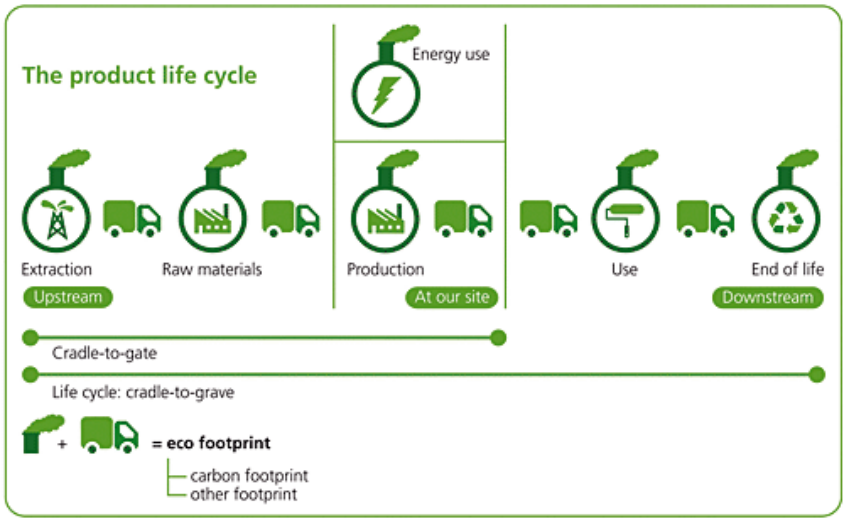
Continuous product
development through
Focused Innovation

Life cycle analysis
targeting lower emissions
and lower carbon footprint

Perstorp and sustainability 2/2



Carbon footprint comparison of high-solid alkyds- and alkyd emulsion paints compared to acrylic dispersion paints [1] plus Voxtar™ effect estimates



Voxtar™ cuts carbon footprint by 75%

World leading provider of low VOC solutions

Capa™ Polyols
Solvent free aliphatic polyester polyols for industrial 2K/1K coating

Low/no VOC coating

NX795
Non VOC coalescing agent for Waterbased decorative coatings

Environmental friendly resins technologies

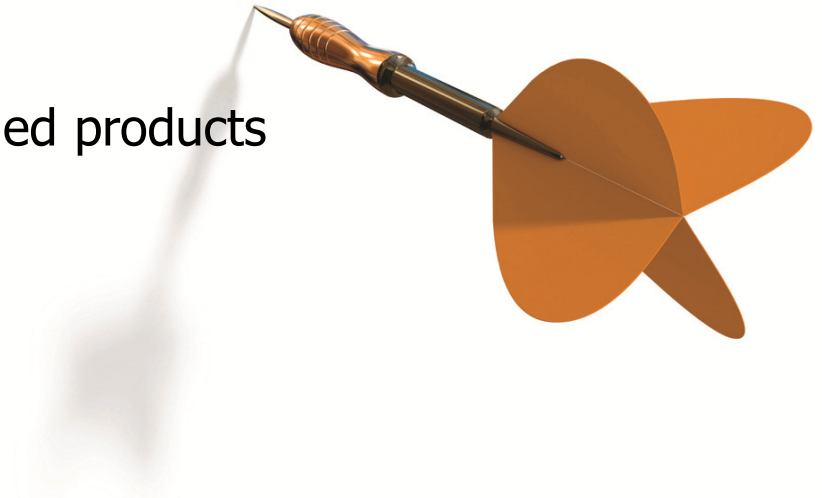
Radiation curing monomers and oligomers	Powder Polyester	Waterbased Polyurethane dispersion	Waterbased and high solid alkyd and polyester
Wide Portfolio of Advanced chemicals & Specialties	The essential glycol, Neo for durability	Enable water dispersability, Polyols for superior coating performance	Building blocks enabling efficient solvency and branching agent

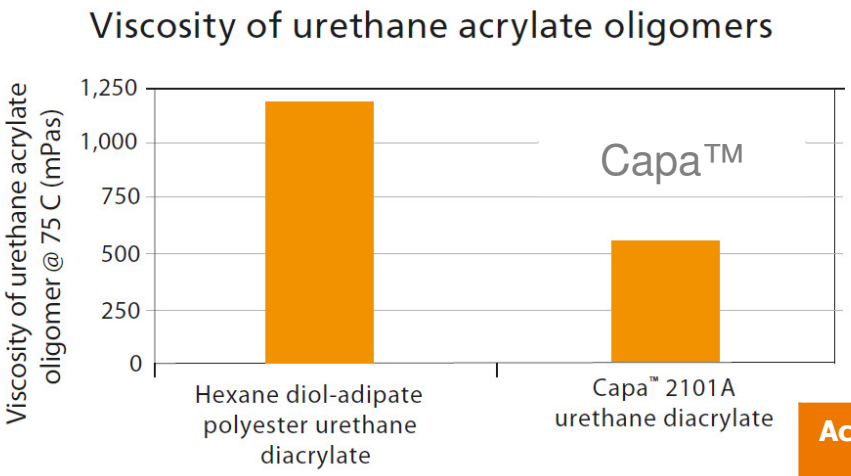
Complete, sustainable & innovative offering

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

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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

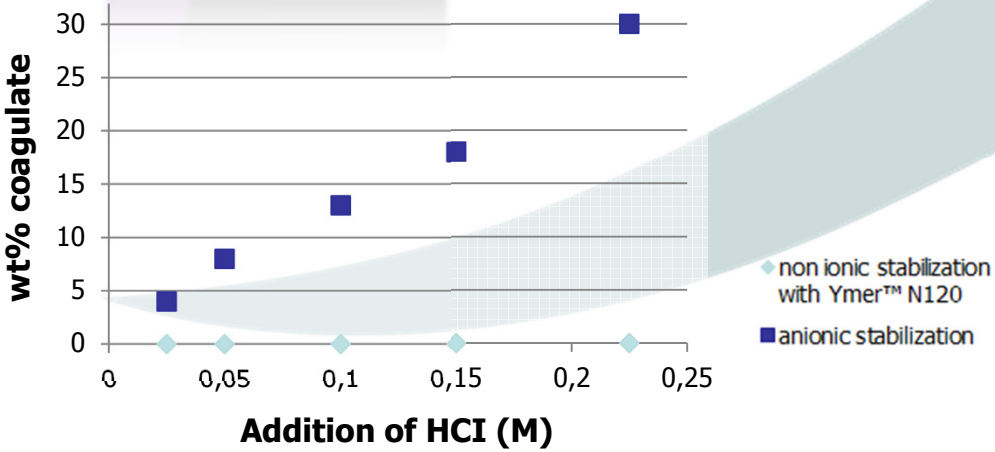
- Expertise in your powder resin development
- Lower energy consumption
- Concept crosslinker for low temperature matt powder hybrid polyesters (140C, 25 min)

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

Outdoor resistance | Hydrolysis resistance | Chemical resistance | Abrasion resistance

Performance

Oxymer™

Capa™

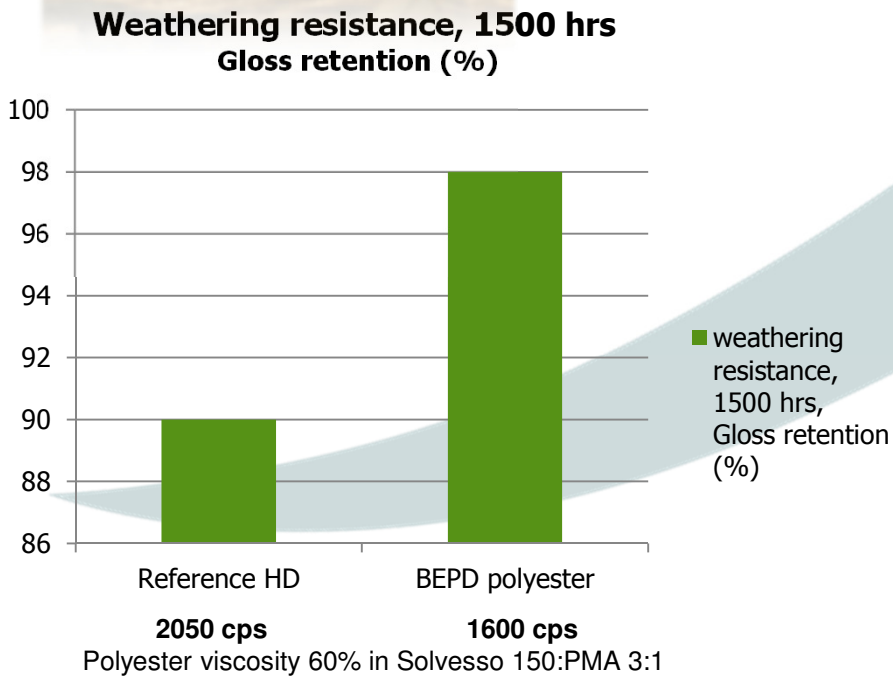
Polyester

Polyether

Solutions for high solid & waterbased polyesters and alkyds

Lower VOC

Lower viscosity liquid polyester using 10 to 20% of BEPD



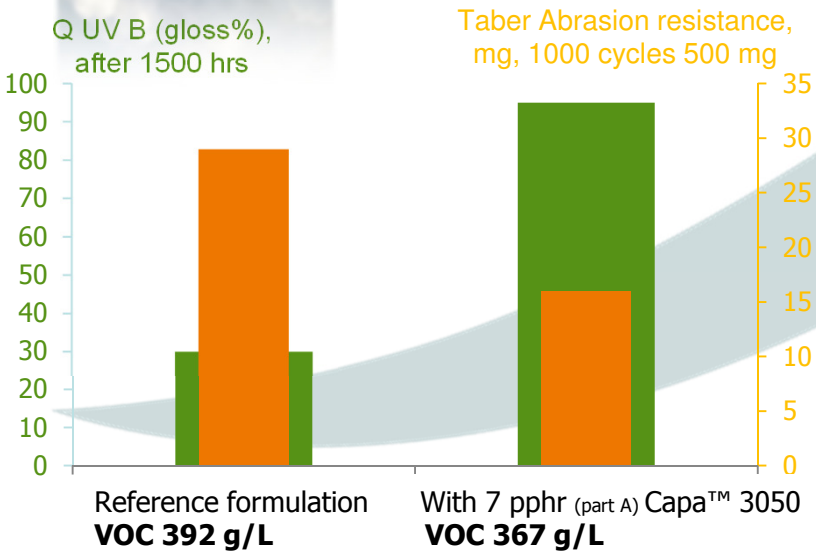
Even better performance

- Enhanced durability
- Enhanced outdoor resistance
- Flexibility

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

Lower VOC

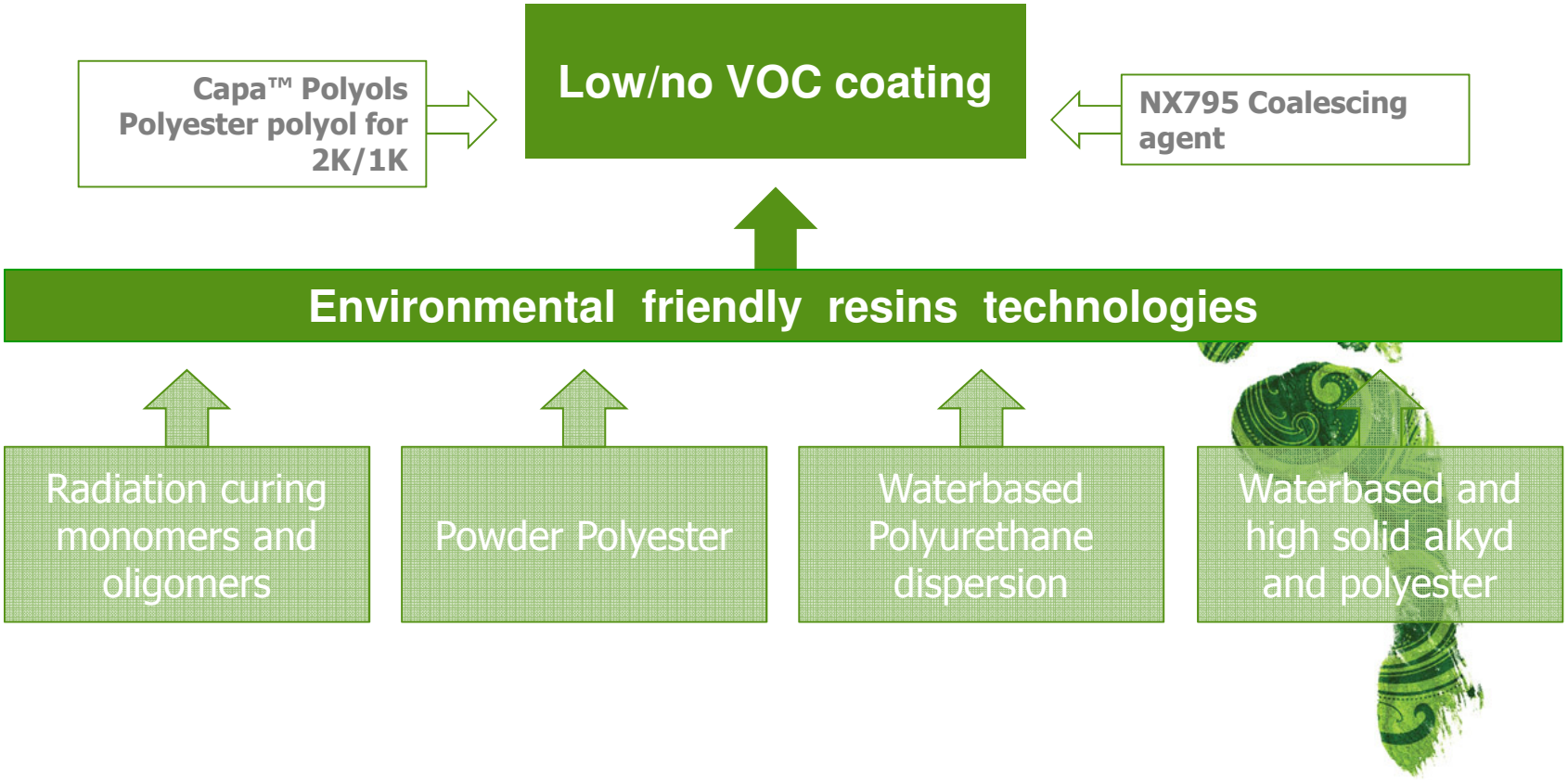
- **Reduced VOC by up to 10%** with partial acrylic polyol replacement
- By adding only 5-10% Capa™



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

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