



The world is our inspiration



Arkema Glass Coatings

One-Way / Returnable Containers

How to get up to five more litres in every bottle.



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 - Coatings for returnable glass bottles
- Coatings for returnable glass bottles
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 - Solution Packages
 - Tegoglas[®] 3000+ System
 - Opticoat[®] 140 System

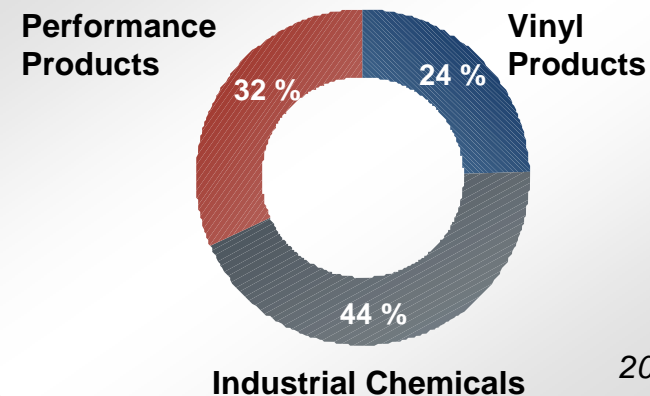
Arkema facts and figures

- **Sales:** €5.7 bn*
- **Ebitda:** €518 M*
- **Capital spend:** €300 M, 5 % of sales
- **R&D:** 3 % of sales, 6 research centers
- **80 industrial sites**
- **Personnel:** 15,200 employees

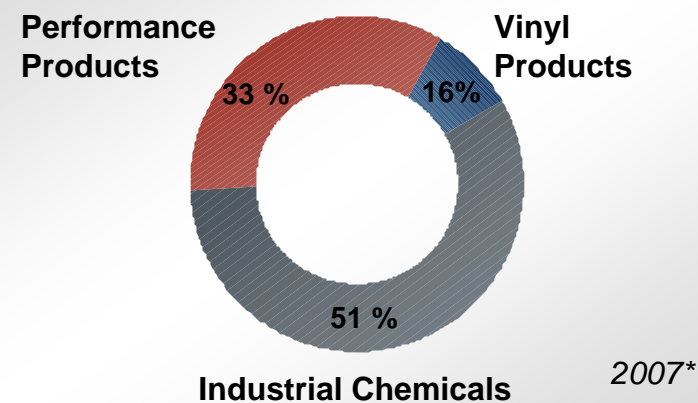
(2007 figures)

* Excl. Cerexagri

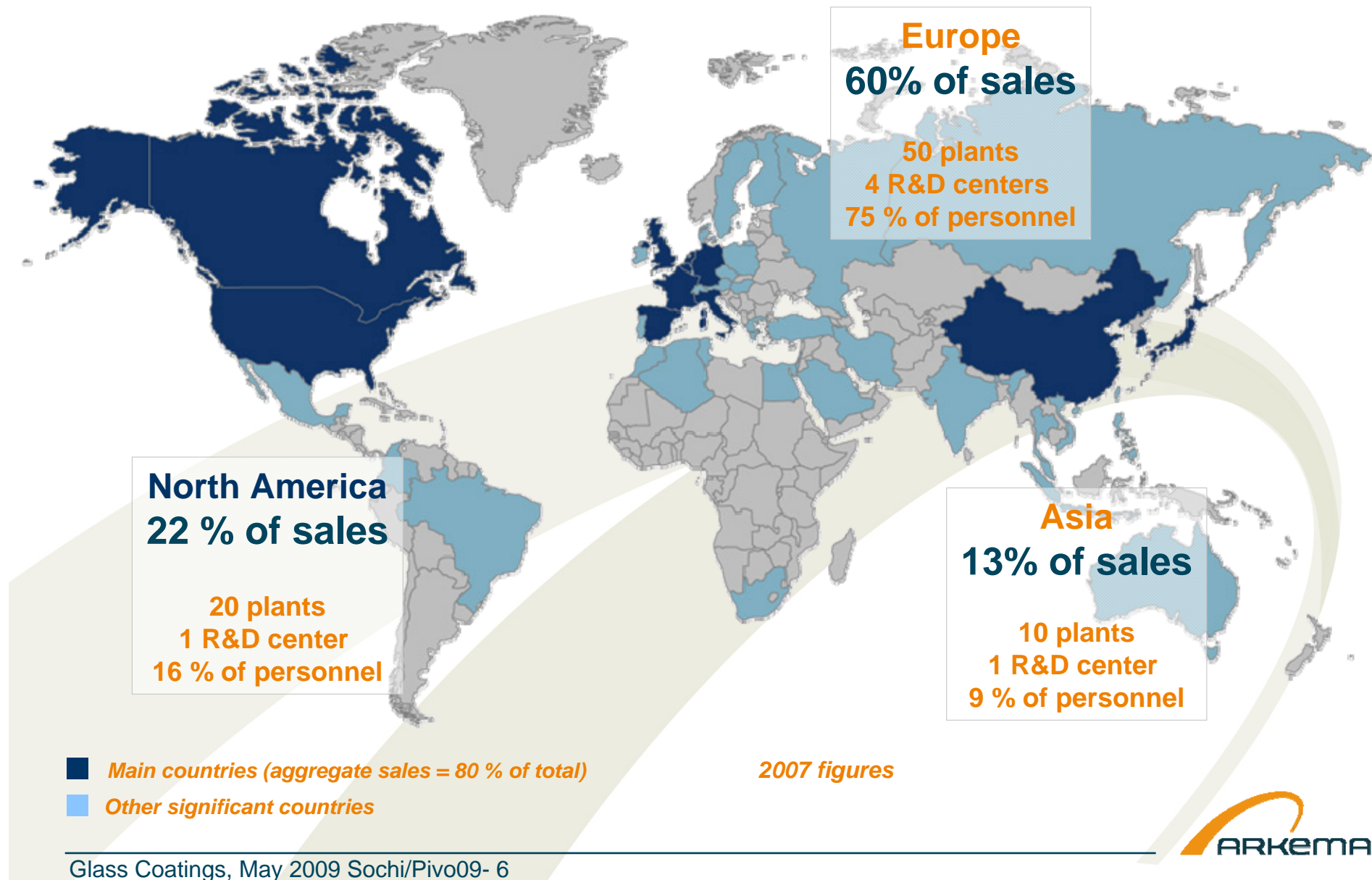
Sales per business segment



EBITDA per business segment



An international presence



Highly diversified markets

Automobile



Packaging



Paper



Sports
& Leisure



Hygiene
& Health



Water
Treatment



Electronics



Construction



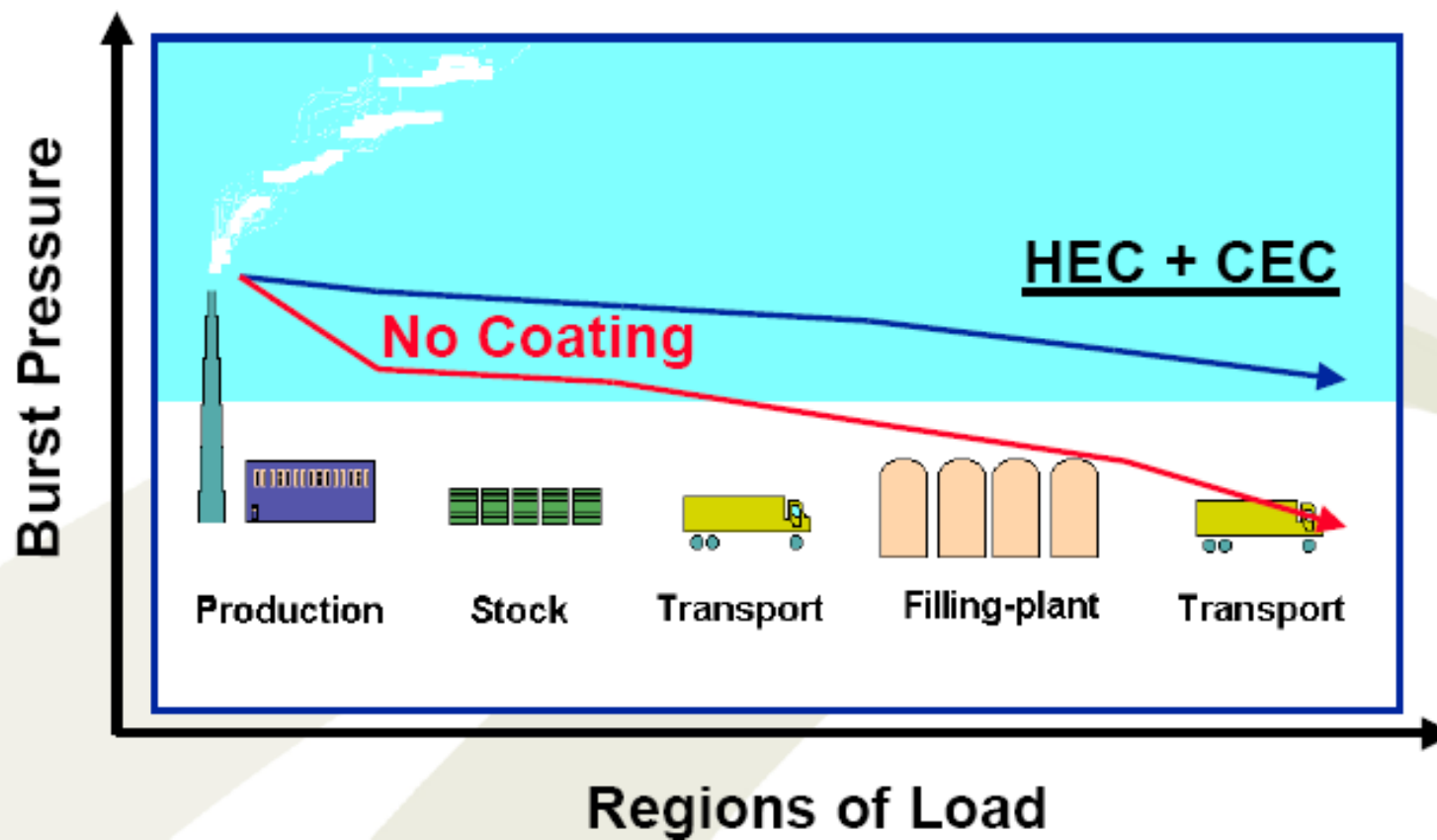
Arkema Glass Coatings

“Our mission: Through innovation and anticipation, to offer the solutions to tomorrow’s glass applications in order to create value for the glass industry”



Container Coatings (Hot & Cold End)

- Without Coating → Bottles will scratch
→ Burst Pressure Strength will decrease



Container Coatings (Hot & Cold End)

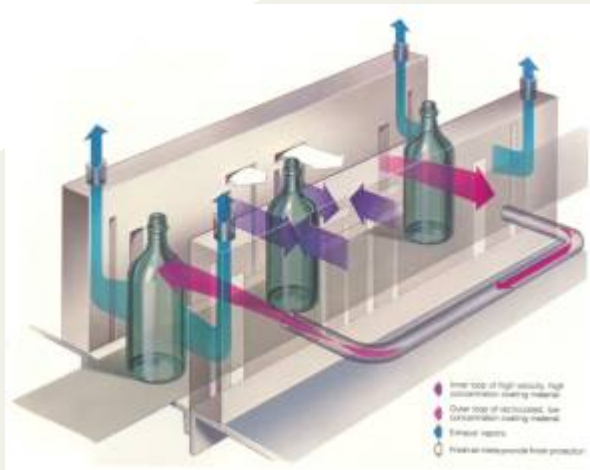
Hot End Coating

Arkema supplies the chemistry, the equipment, and a variety of services including waste recovery and recycling, with n°1 position WW.

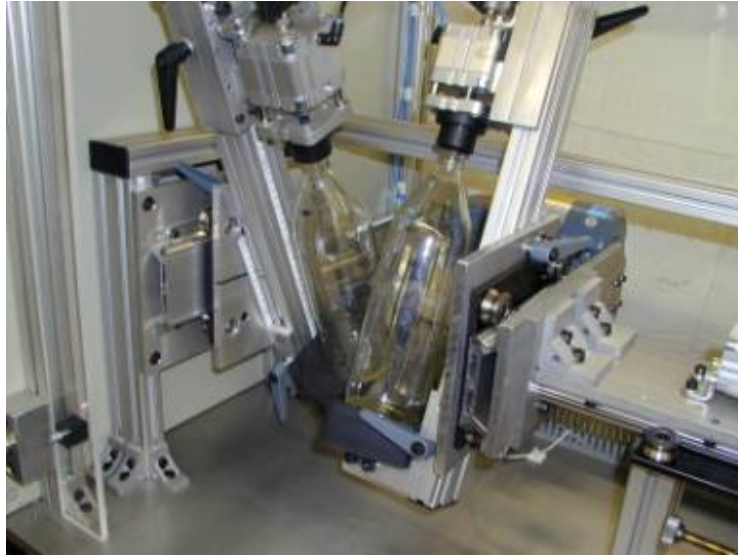
Arkema celebrated in 2007 the 25th birthday of the Certincoat® technology

After the Cold End Coating process the glass carries an additional lubricious (wax) coating. Tegoglas® brand name is recognized worldwide by glass containers manufacturers and fillers.

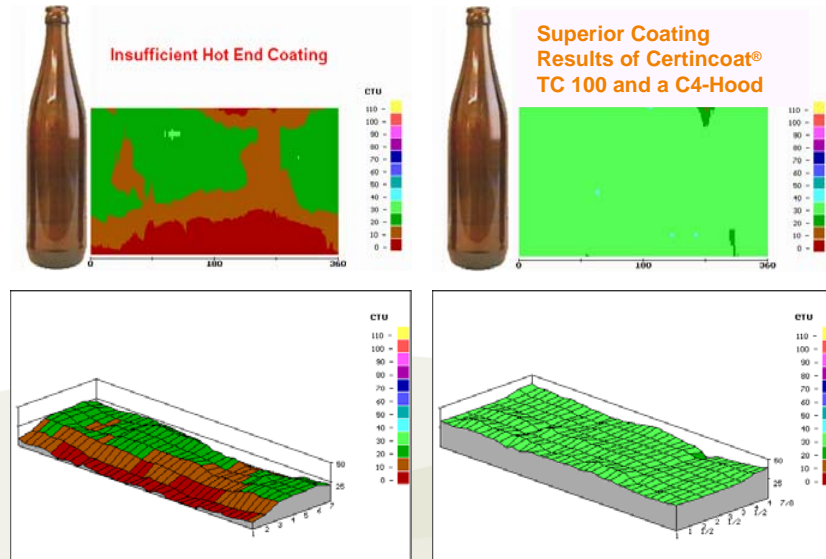
Certincoat hood with patented double loop system and finish protection



Container Coatings Technical Service / Research



Scratch Resistance Measurement



HEC mapping



Surface analysis



Label Adhesion



Tilt Angle

Container Coatings Technical Service / Research (2)



Line Simulation /
Burst Pressure Strength



Caustic Wash / Pasteurizer



Test Conveyor Line

Arkema Coatings For Returnable Bottles

“Make bottle masking and container protection a market standard for the filler industry. Offer complete product range and solutions to cover glass container fleet requirements.”



Arkema Returnable Coatings Solutions

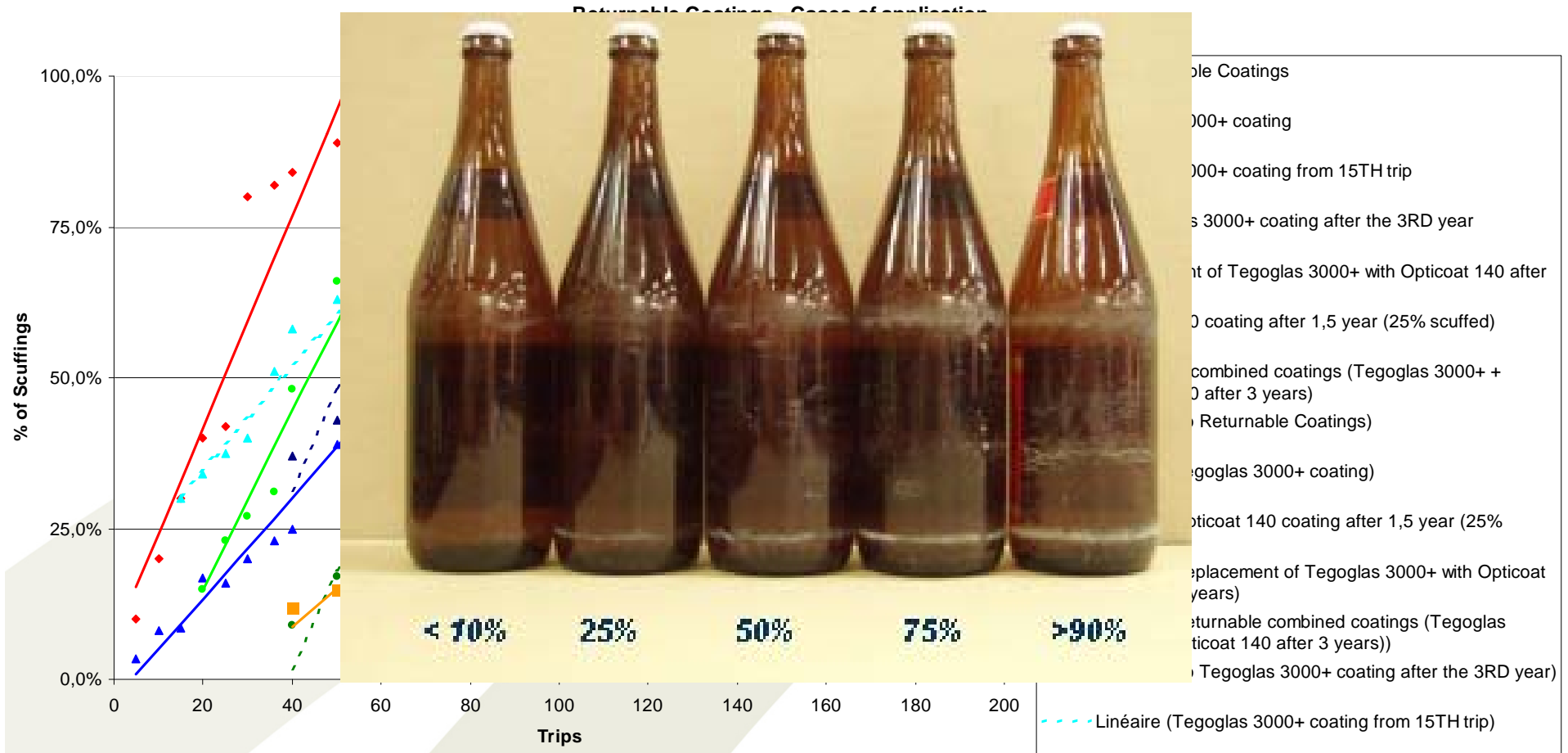
What is Tegoglas[®] 3000+

What is Opticoat[®] 140

Solutions to improve the life time of a bottle fleet:

- ✓ Economical advantages
- ✓ Marketing Advantages
- ✓ Ecological Advantages

Arkema Coatings Solutions combination

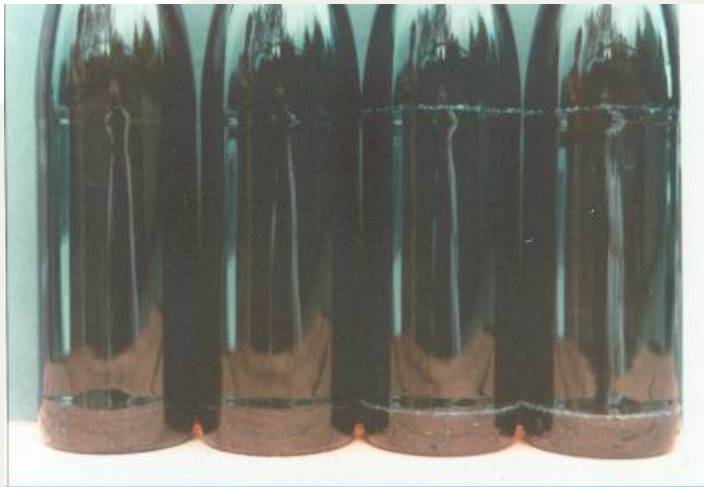


What is Tegoglas[®] 3000+ ?



- A protective coating that will adhere to “raw” (washed) glass surface
- That will significantly retards scuffing
- Resulting in longer bottle fleet lifetime (*at least x 2*)
 - Better appeal
 - Decelerate decrease of burst pressure strength – (*around 19%*)
- Can also Improves bottle flow → filling yield, reduced noise
 - Decrease of the friction coefficient between bottles

Bottles after 10 – 15 cycles



With T3000+

Without T3000+

Bottles after 20 - 25 cycles



With T3000+

Without T3000+

Ex. with Beer Bottles – 15 Cycles

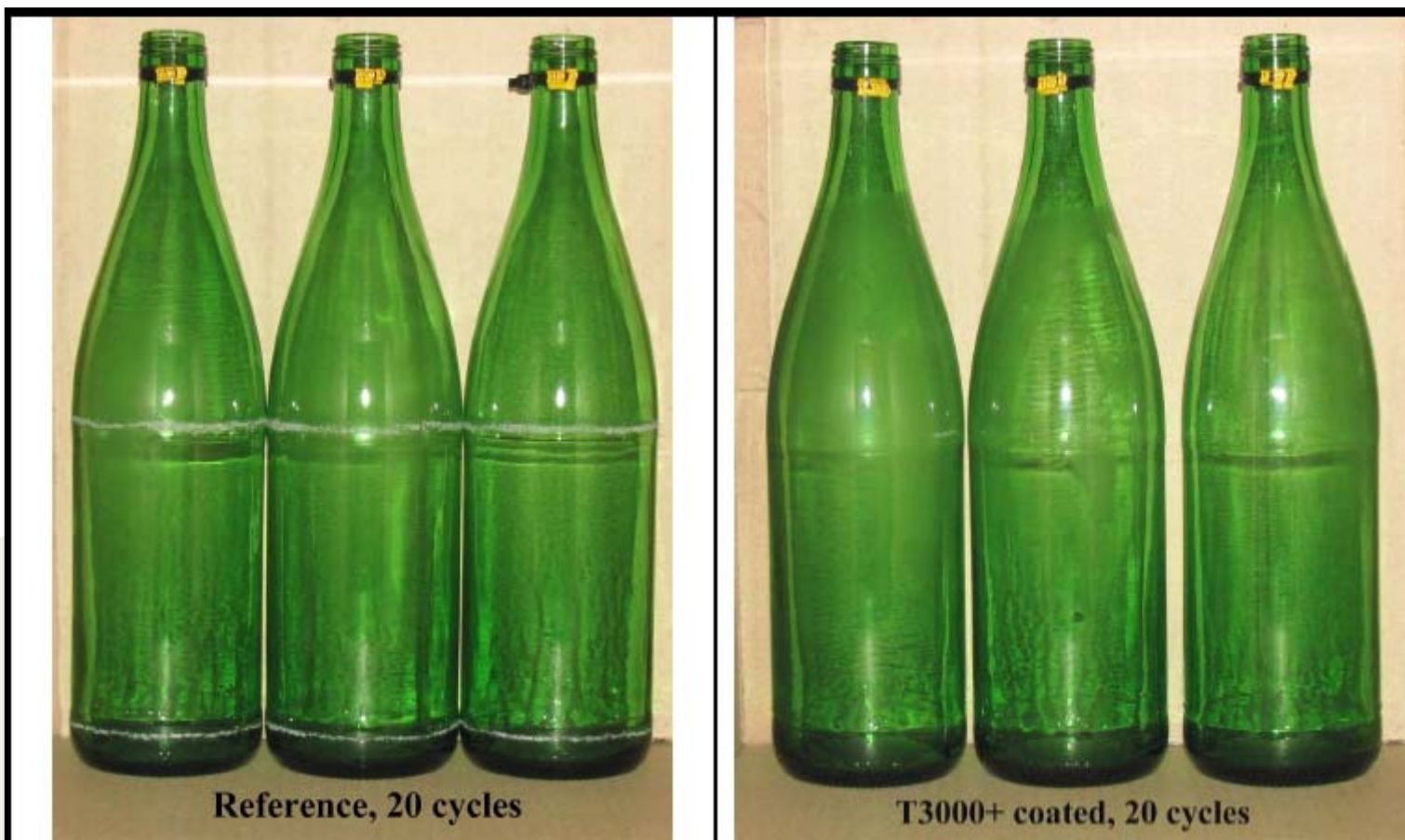


With using Arkema's
Tegoglas 3000 plus



Without using Arkema's
Tegoglas 3000 plus

Comparative picture – 750ml bottles



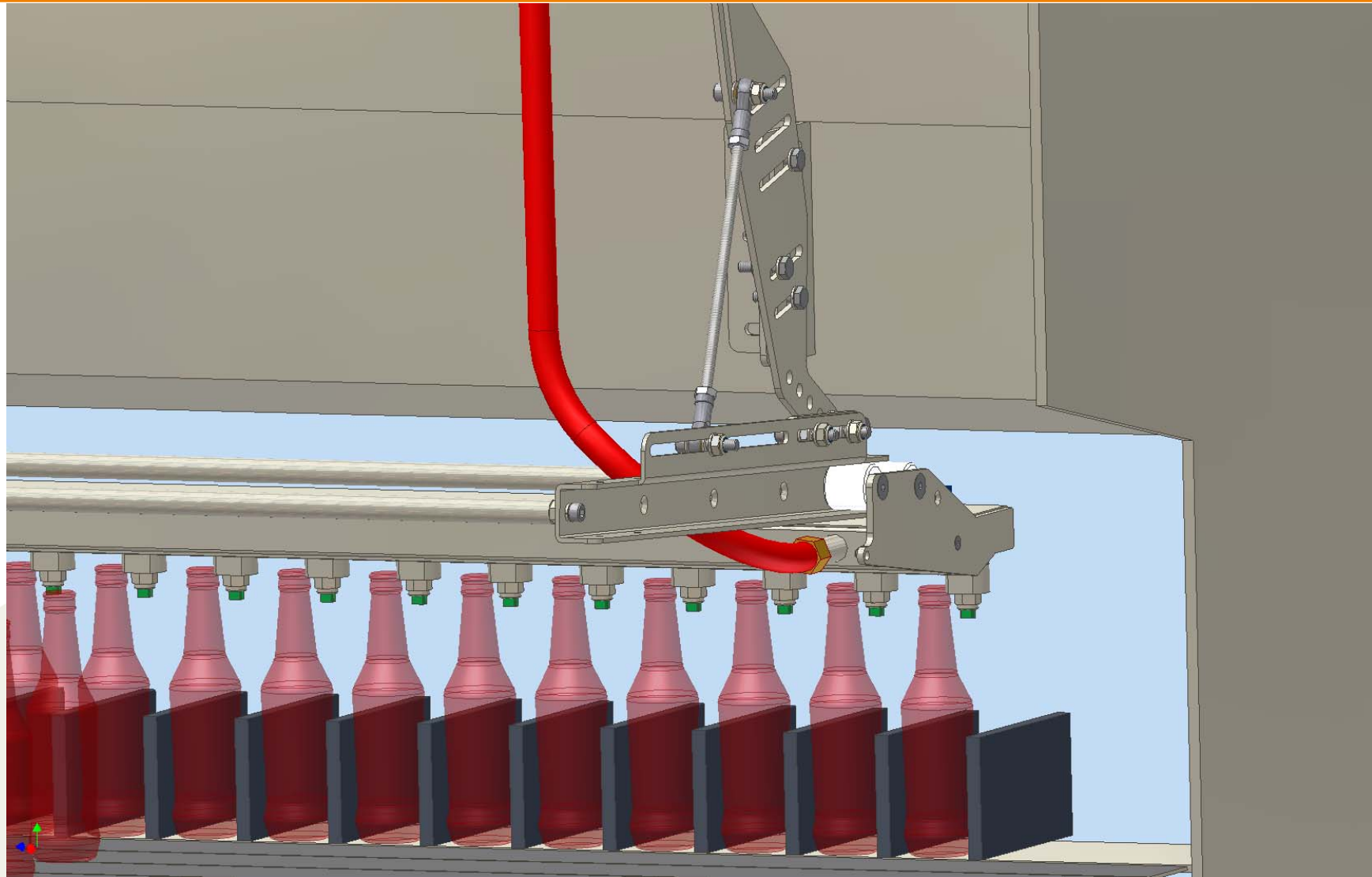
Comparative picture – 1L bottles



Adaptable to Any Operation



Spray Bar mounted at Washer Outlet





Global Technology Roll Out

Coating solutions for returnable glass bottles: Arkema and SABMiller sign an agreement for the worldwide implementation of Tegoglas® 3000+ Spray Application Technologies

Arkema will provide SABMiller with glass coating products and technology designed to protect and improve the appearance of their vast stock of reusable bottles.

Arkema's Post Washer Spray Application Technology, developed in collaboration with Spraying Systems Co.®, after having been used successfully in South Africa, will be implemented in key SABMiller breweries.



**beverage
innovation
awards
2008**

Moscow, 10th April 08

Arkema's Tegoglas 3000+ has been rated highly commended within the category "Best Packaging Innovation 2008"



What is Opticoat[®] 140 ?



- A masking coating that will penetrate into scuff marks
- Significantly improves the appeal of already used Returnable Container. -> Marketing Value



Comparative pictures – Beer bottles

without Opticoat



Opticoat coated

Comparative pictures – soft drink bottles

Bottles not masked



Bottles masked with
Opticoat[®] 140



Comparative pictures – Beer bottles



Not coated

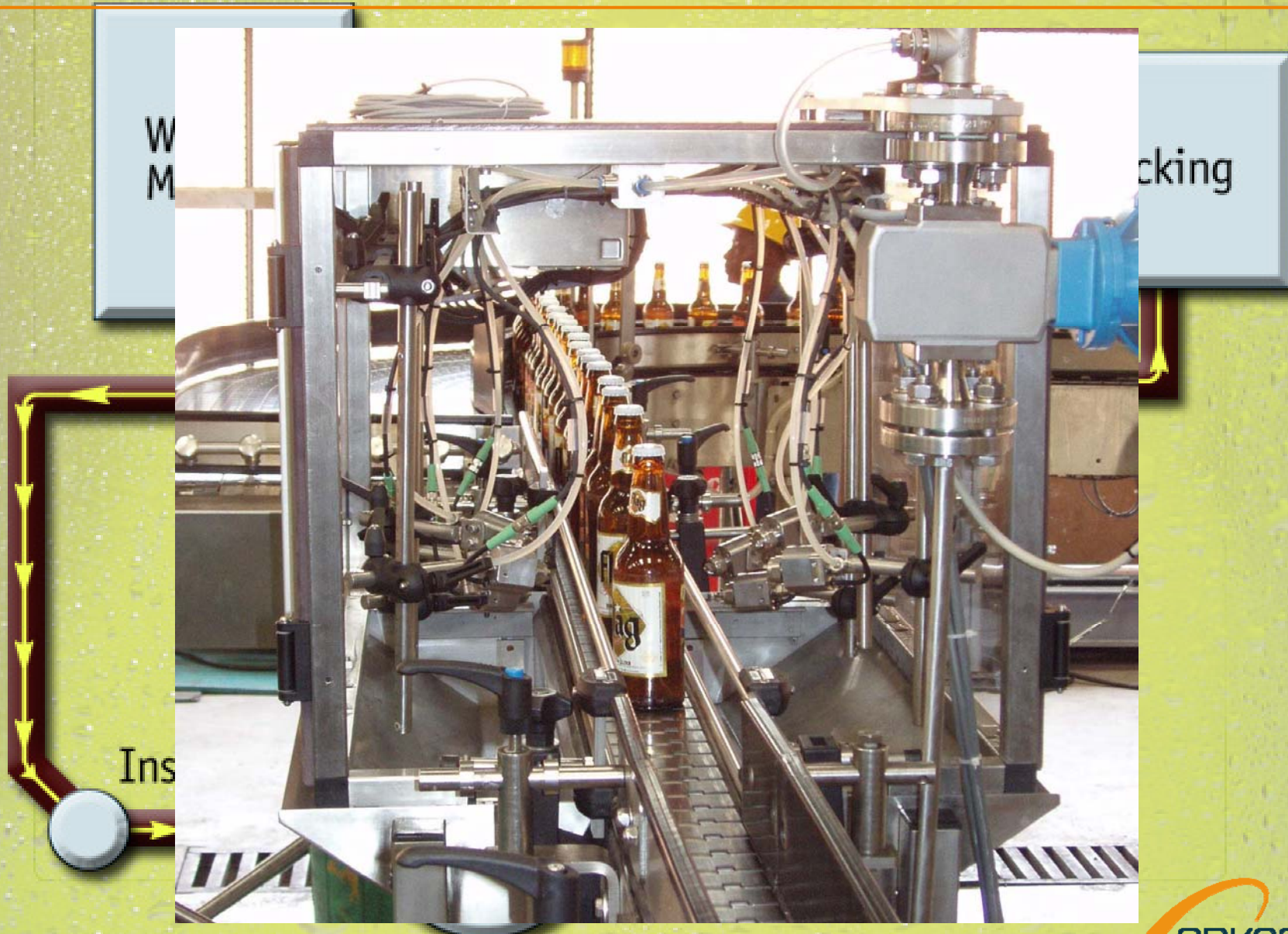
Coated



Not coated

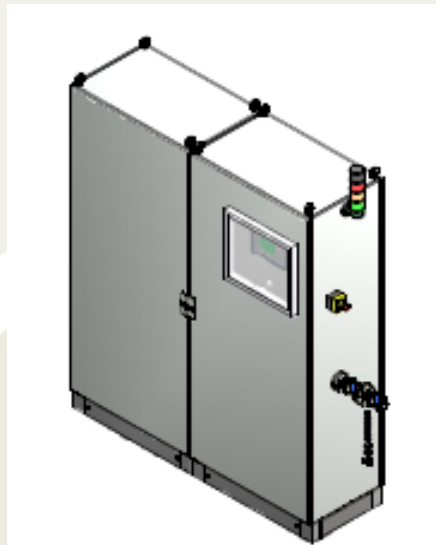
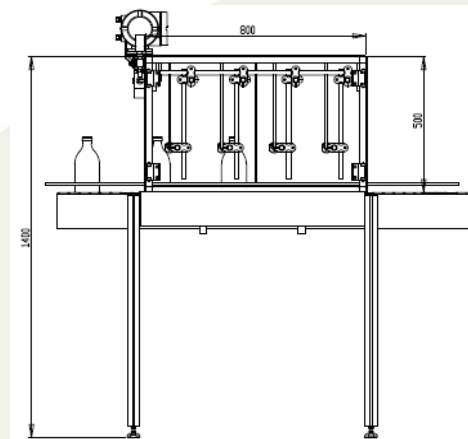
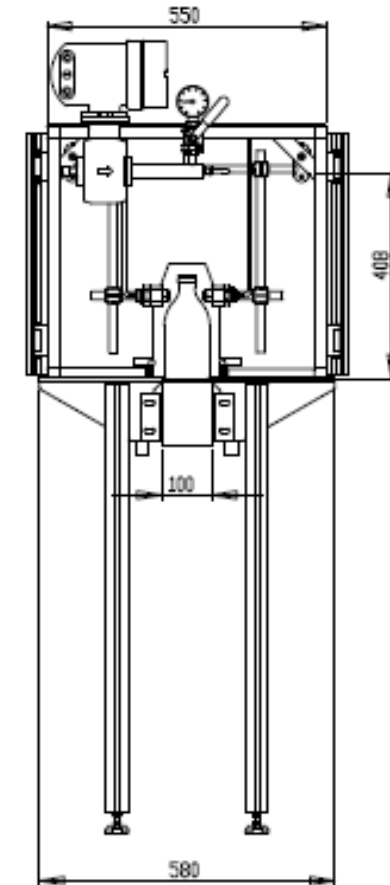
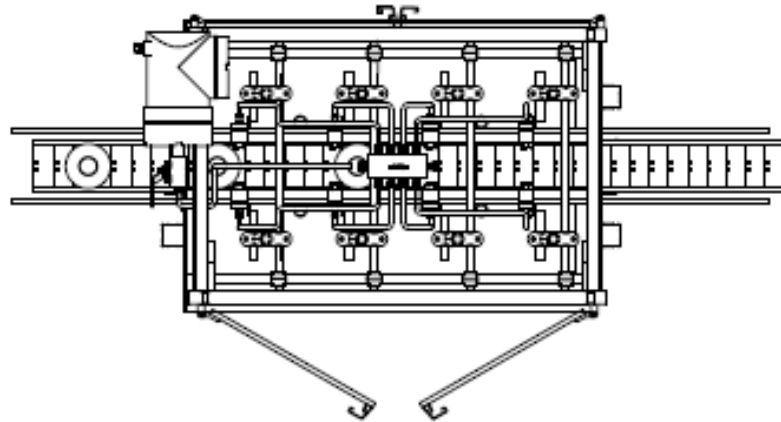
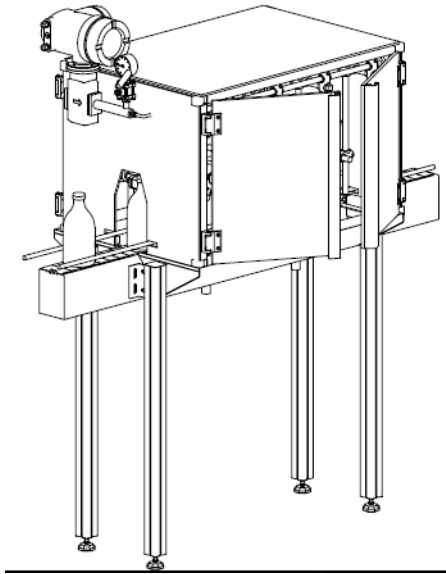
Coated

Adaptable to Any Operation





Spray System Drawings



Spray Applicator – Equipment Development



Spraying Systems Co.[®]

- **Experts in Spray Technology** for almost 70 years
- Application expertise in over 200 industries
- Database with more than 10,000 application drawings
- Manufacturing more than 20,000 different spray nozzles
- More than 10 million precision spray nozzles sold annually
- Global presence, with direct representation in 50 countries

Partnership Agreement with Spraying Systems Co.

Arkema and Spraying System Co. have reached a partnership agreement for the technical and commercial development of coating solutions for returnable glass bottles.

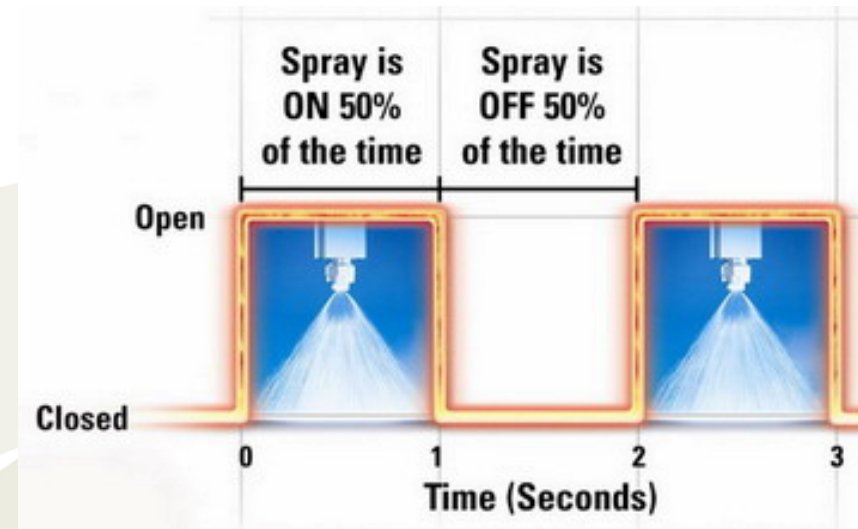


- Chemistry
- Equipment Supply
- Pulsajet technology
- Installation, Commissioning WW
- Warranty handling related to Equipment
- Technical Service, Hot-Line, Remote control
- Spar Part sales (Audit)
- Service Contract



Customer

Pulsajet nozzle technology=> mist Suppression



Conclusion

- A high quality HEC+CEC will give you best initial protection for your bottles
- Apply Tegoglas[®] 3000+ for your own bottles
 - Max value to start with new bottles
 - Extend the lifetime of bottles
 - Significantly longer premium bottle appeal
 - Approx. 20% higher average burst pressure strength → less breakage
 - Better smoother bottle flow on the line → improve line efficiency
 - Total cost assumption (equipment+chemistry) less than half of a paper label
- Apply Opticoat[®] 140 for already scuffed bottles
 - On your own pool, value stays with you.
 - Restore premium appearance of your bottle fleet
 - Differentiate from the competition
 - Total cost assumption (equipment+chemistry) half of a paper label
- Value Package “Equipment, Coating, Service”
 - Equipments (according to Arkema specifications) + Chemistry
 - Installation supervision
 - 2 “first-year” audits (with optional Services offers)
 - A software for a direct link to your spraying system installation

Protection of Returnable Glass Containers

“Make bottle masking and container protection a market standard for the filler industry.

Offer complete product range and solutions to cover glass container fleet requirements.”



Tegoglas®

Anti-Scuff Protective Coating

- ✓ delays the appearance of scuffing
- ✓ protects the strength of glass bottles
- ✓ reduces online glass breakage
- ✓ extends the life of a returnable bottle
- ✓ enhances the efficiency of the filling plant



Opticoat®

Masking Coating

- ✓ improves the appearance of used bottles
- ✓ restores the “new glass feel”
- ✓ increases the Marketing & Brand values

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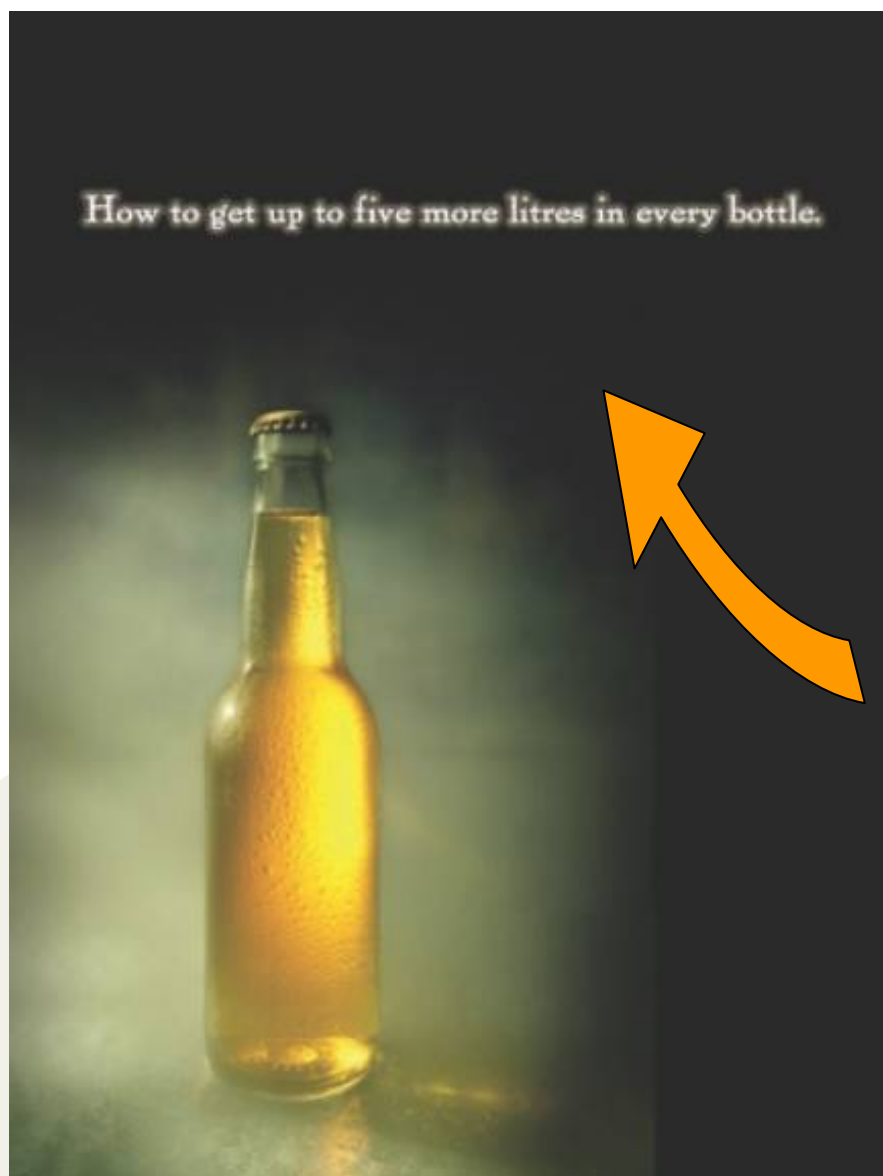
Contact: Mr. Alexis Monlun

Business Development Marketing Manager

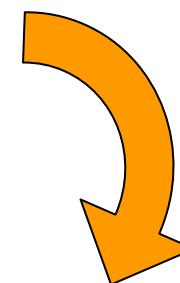
alexis.monlun@arkema.com



Answer: Glass Coatings from Arkema



 Certincoat®



 Tegoglas®

 Opticoat®



 ARKEMA