

Shaping our future



The strength to change

Solvay's position and strategy in hydrogen peroxide

London Investors Morning
September 30th, 2010



Agenda

- Overview of Solvay Group
- Hydrogen peroxide
 - ✓ Main end markets
 - ✓ Solvay's leadership positions and geographical footprint
 - ✓ Solvay's key strengths

Overview of Solvay Group

Strategic refocus – Reinvestment process

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- Solvay, a new industrial benchmark based on
 - ✓ Two existing strong pillars with clear leadership positions
 - ✓ World scale facilities
 - ✓ Global presence with significant Asian and Latin American exposure
 - ✓ Strong product development culture
 - ✓ Very strong financial structure
- With global ambition, aimed at improving Solvay's sustainability profile by focusing on investment in
 - ✓ High value added activities
 - ✓ Low energy footprint
 - ✓ Reduction of the cyclical nature of the portfolio
 - ✓ Contribution to the geographic expansion
 - ✓ Sustainability targets of the Group
- Unchanged philosophy : sustained growth with leading positions; commitment to a conservative financial structure

Overview of Solvay Group

Solvay's core competencies

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- **Strong leadership positions across the portfolio**
- **Competitive cost structure** due to above industry-average plant capacities, cogeneration plants and raw material integration
- **Sound balance sheet and tight capital management**
- Solid track record of **successful portfolio management**

Overview of Solvay Group

Diversified customer base (CH & PL excl IAS)

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in % of 2009 Sales (= EUR 5,250m)



Construction and architecture

21% of Group sales
SBU's : Vinyls, Specialty Polymers, Fluor

Chemical industry

11% of Group sales
SBU's : Electrochemistry, Soda Ash, Fluor

Glass industry

9% of Group sales
SBU's : Soda ash

Water and Environment

7% of Group sales
SBU's : Pipelife, Soda ash, Electrochemistry

Electricity and Electronics

6% of Group sales
SBU's : Specialty Polymers, Vinyls

Detergents, cleaning and Hygiene products

6% of Group sales
SBU's : Soda Ash, Electrochemistry, Hydrogen peroxide

Paper

6% of Group sales
SBU's : Hydrogen peroxide, Electrochemistry

Packaging

5% of Group sales
SBU's : Vinyls, Specialty Polymers

Automotive industry

4% of Group sales
SBU's : Specialty Polymers

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Main end markets of hydrogen peroxide

Hydrogen peroxide, a green oxidant that decomposes in water and oxygen

BLEACHING

- ✓ PULP
- ✓ PAPER RECYCLING
- ✓ TEXTILE

DISINFECTION/ BIOCIDES

- ✓ ASEPTIC GRADES FOR BEVERAGES PACKAGING
- ✓ PERACETIC ACID
- ✓ WATER TREATMENT

INTERMEDIATE CHEMICAL SYNTHESIS

- ✓ PROPYLENE OXIDE
- ✓ CAPROLACTAME

CLEANING/ ETCHING

- ✓ ELECTRONIC GRADES

Main end markets of H₂O₂

Standard grades – Pulp & paper

- Hydrogen peroxide replaced chlorine for paper production in the 90's
- Main market for hydrogen peroxide
 - > 50% of 2009 H₂O₂ sales volumes
 - ↳ Pulp bleaching = 85%
 - ↳ Paper recycling = 15%

- Expectations next 20 years
 1. Increase of global demand from pulp & paper industry for H₂O₂
 2. Consumption moving to emerging markets

	Mature markets	Emerging markets
Per capita consumption	A few 100 kg/y but in decline	A few 10 kg/y but strong growth
Population evolution	Stagnation	Growth + urbanisation ↳ Packaging ↳ Magazine?

Main end markets of H₂O₂ Standard grades – Textile

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Hydrogen peroxide is used as bleaching agent in the textile industry

Growing and moving market

2000 global market

- ✓ H₂O₂ consumption: 190 kt/y
- ✓ China: 50%



2013 global market

- ✓ H₂O₂ consumption: 370 kt/y
- ✓ China: 70%
- ✓ Declining trend in the USA & in Europe

Main end markets of H₂O₂ Standard grades – Mining

Hydrogen peroxide is more and more used in mining applications (gold, silver, uranium, ...)

- ↳ To **enhance the recovery of metals**
- ↳ To **detoxify water effluents** after metal extraction
- ↳ To **generate superactive oxidants** on site (caro's acid) when hydrogen peroxide is not active enough
- ⇒ **Entry point to develop industrial presence in remote locations**

Main end markets of H₂O₂ Specialties – Disinfection

1. H₂O₂ aseptic grade: special grade with low dry residue used as disinfectant
 2. Peracetic acid: a molecule combining H₂O₂ and acetic acid = biocide
- ⇒ Many applications stimulated by more stringent standards and legislations – food processing, aseptic packaging of beverages, animal farming, aquaculture, sewage, ...
- ⇒ Growth potential in developed countries / high growth potential in emerging countries



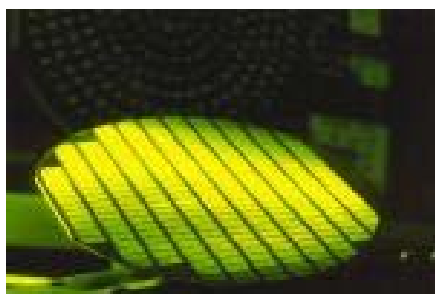
Main end markets of H₂O₂ Specialties – Electronics

Cutting edge purification technology for production of high purity electronic grades – down to 100ppt impurity level (0,1 mg/ton).



Used in the production of

- semiconductors with the most demanding applications in car, telecommunication, and consumer electronics industries
- photovoltaic cells
- LCD



Main end markets of H₂O₂ Specialties – Electronics

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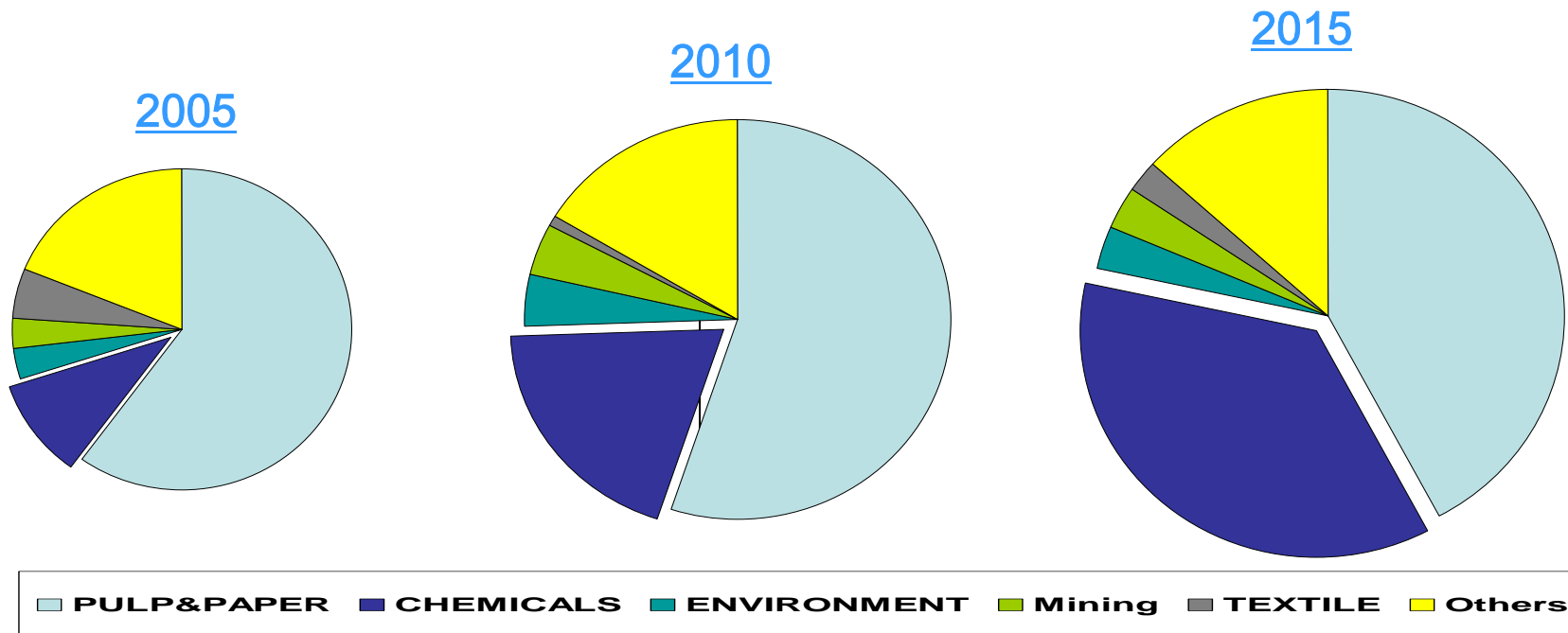
- Entry point to broaden portfolio with other key high purity chemicals
 - ✓ Fluorhydric acid,
 - ✓ Chlorhydric acid,
 - ✓ Phosphoric acid

- Objective: become a strong integrated player in ultra pure wet chemicals for the electronics industry

Main end markets - Solvay's H₂O₂ sales

Sales volumes from 2005 to 2015

Strong growth of H₂O₂ consumption by chemicals sector (HPPO)⁽¹⁾



In 2015, H₂O₂ market will be based on two strong pillars:

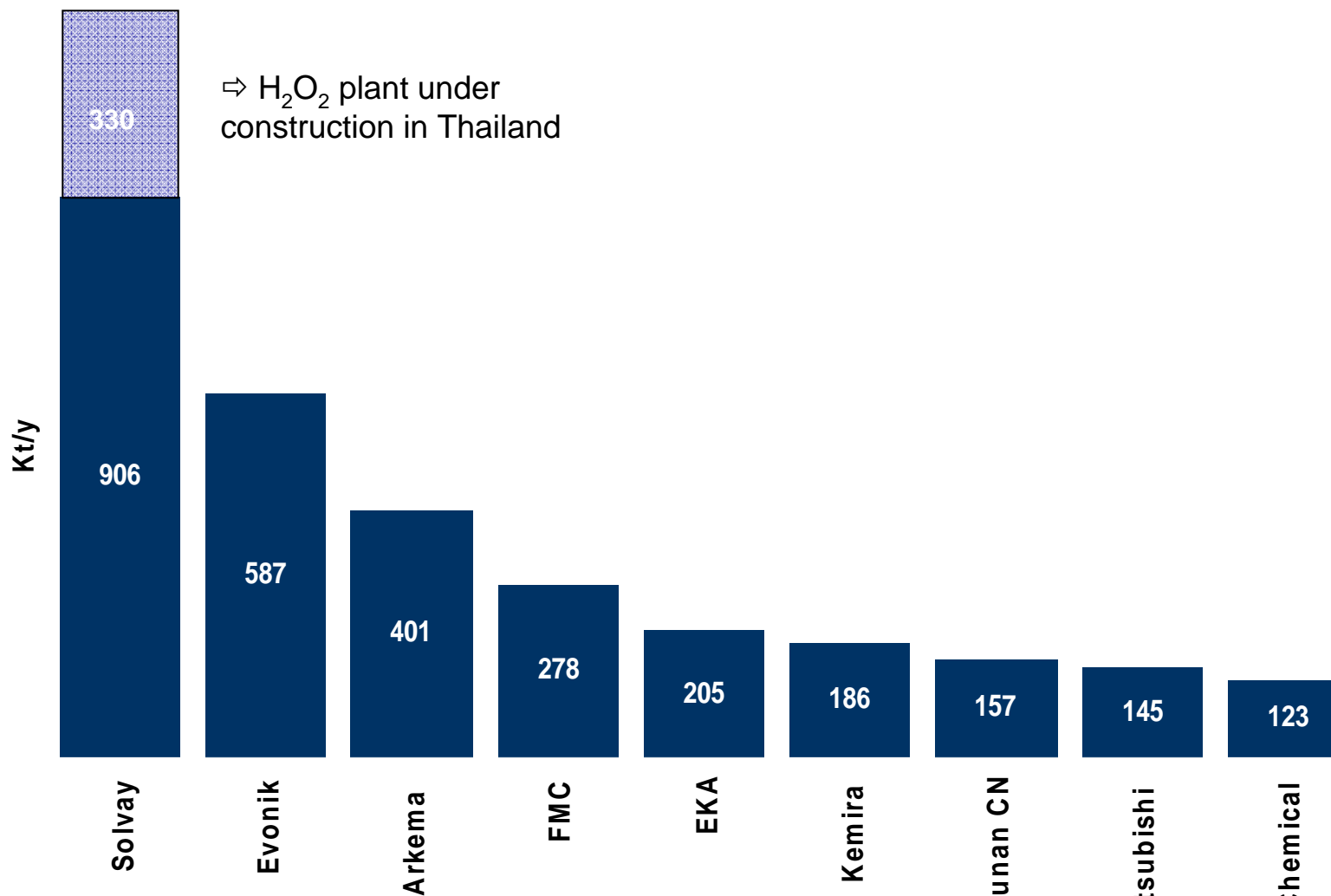
- ✓ Pulp & paper
- ✓ Propylene oxide

(1): HPPO considered at 50%

Leadership positions and geographical footprint

Solvay, the global leader in H₂O₂

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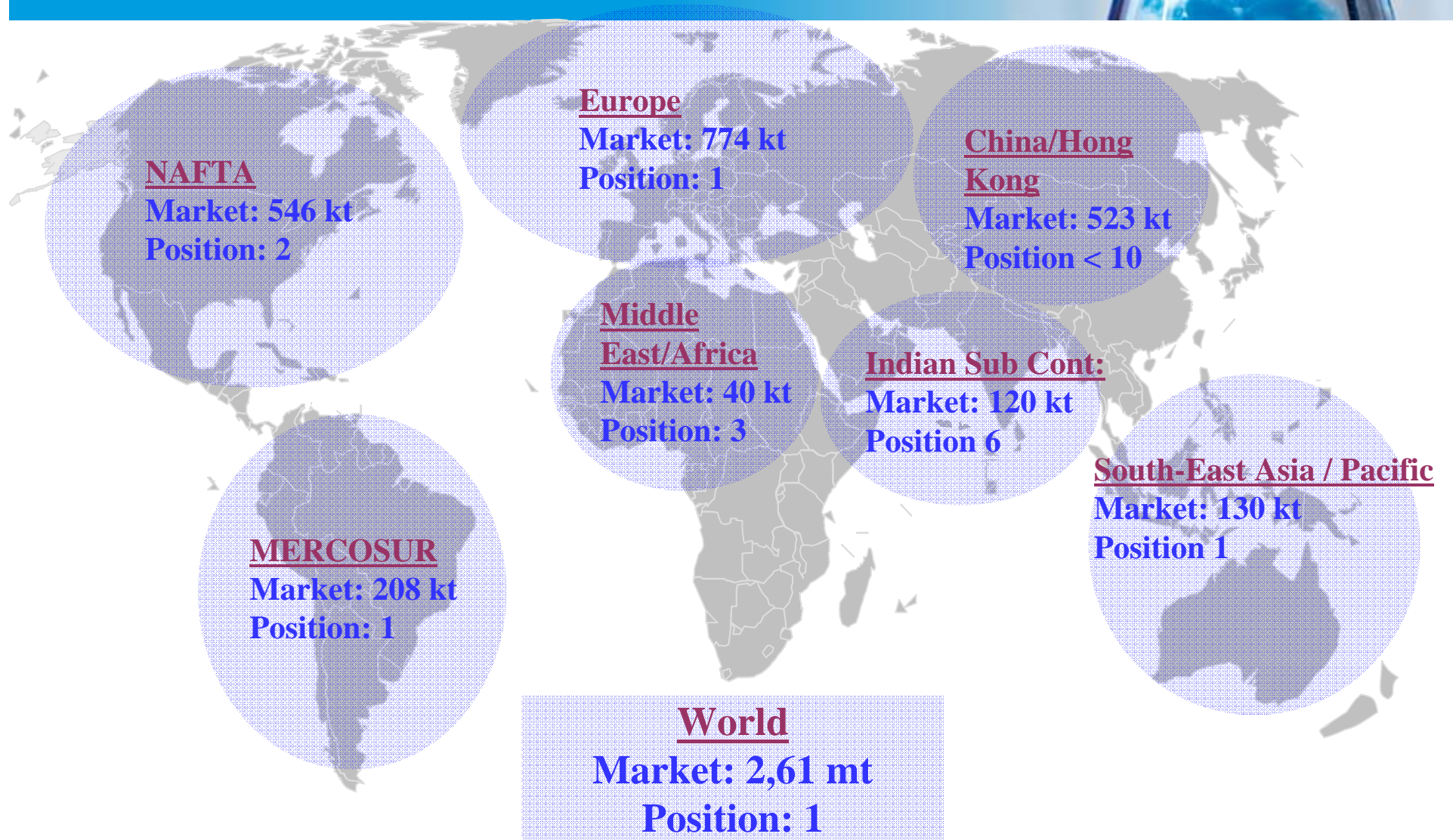


As of January 2010; capacities at 100%

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Leadership positions and geographical footprint Solvay, the global leader in H₂O₂

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Leadership positions and geographical footprint

Focus on China

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- Hydrogen peroxide **joint venture with Huatai Group**, a pulp & paper player integrated in chemicals production
 - ↳ Build a **new plant of 50 kt** per year in Shandong province by 2011
 - ↳ Production of **standard grades** (pulp & paper, textile, chemicals, ...) **and specialties** (high purity grades and peracetic acid)
- **Project for a second plant in South of China** focused on regional pulp & paper industry

Leadership positions and geographical footprint Focus on Thailand

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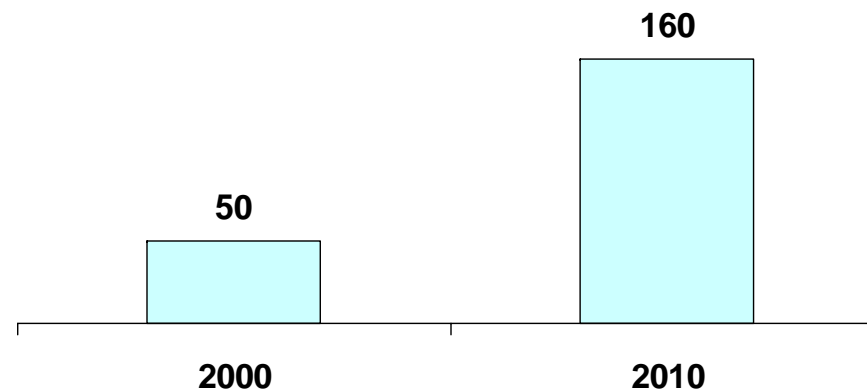
- Construction of **hydrogen peroxide for propylene oxide (HPPO) mega plant** (330 kt per year) in Joint Venture with Dow Chemical
 - ↳ To supply H_2O_2 to adjacent propylene oxide plant of Dow Chemical
 - ↳ Start-up expected in 3Q 2011
- **Synergies** of large integrated site
- **Strong basis to support Solvay's growth** in the region

Leadership positions and geographical footprint

Focus on South America

- Strong expansion of production capacity of Solvay's hydrogen peroxide unit in Brazil over the 10 last years

Production capacity of Solvay's H₂O₂ unit in Brazil (in kt/y)



- Continuous investments in distribution / terminals network in South America (Chili, Argentina, Colombia, Peru, ...)

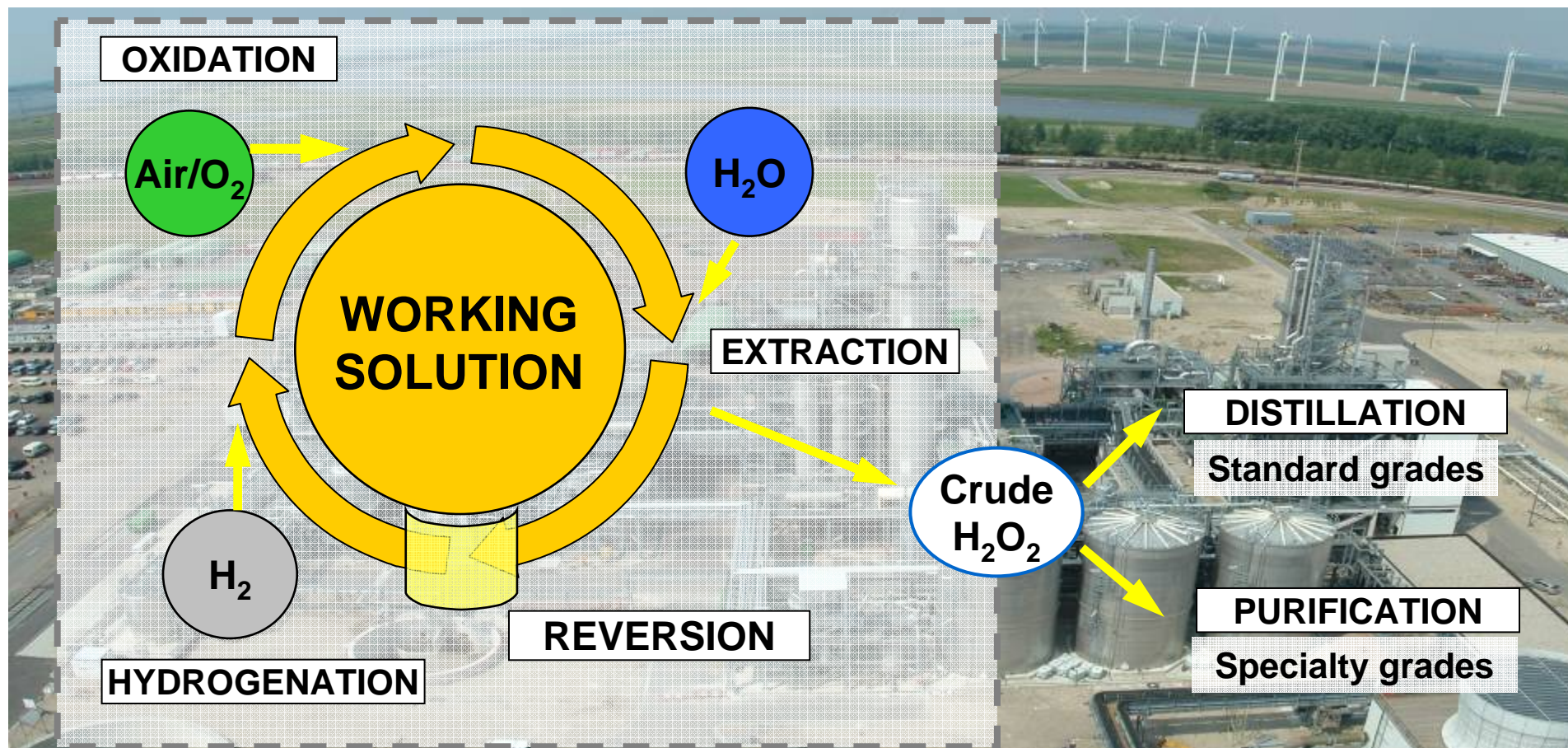
Solvay's key strengths in H₂O₂

- Strong leadership position in:
 - ✓ Standard grades
 - ✓ Specialty grades
- Global presence ⇒ follow the consolidation of two major industries: pulp & paper and chemicals
- High productivity technology
- Intensive R&D programs

Solvay's key strengths in H_2O_2 High productivity technology

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Anthraquinone auto-oxidation process



Solvay's key strengths in H₂O₂ High productivity technology

- One of the key ingredients of the working solution, the anthraquinone (AQ), determines the productivity of the process
 - ✓ Solvay has developed a **proprietary AQ (AMYL AQ)** which gives a **higher productivity** than the AQ used by the industry (ETHYL AQ)
- The high productivity technology allows to build the largest capacities with
 - ✓ The **lowest specific investment cost**
 - ✓ **Reduced fixed costs**
 - ✓ **Optimized variable costs**

Solvay's key strengths in H₂O₂

High productivity technology and HPPO

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- SOLVAY has the capability to engineer and build mega plants
 - ✓ HPPO mega plants, the largest H₂O₂ plants in the world (Antwerpen: 230 kt/y; Thailand: 330 kt/y)
- HPPO in partnership with BASF and Dow Chemical
 - ✓ Alliance between leaders
 - ✓ The quality of H₂O₂ has been developed and adapted to the HPPO process during many years
 - ✓ BASF, Dow Chemical and Solvay have a privileged relationship to build future projects

Solvay's key strengths in H₂O₂ Research and development

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- Being the technology leader in H₂O₂, Solvay innovates in
 - ✓ Technical solutions for the **AO process**, adapted to the different levels of plant sizes (from mini to mega)
 - ✓ The **next generation technology** with a strong focus on sustainability (direct synthesis, H₂O₂ production in fuel cells, ...)
 - ✓ **New markets** through application developments and privileged customer relationships
- Strong internal and external **R&D partnerships** (a.o. in Asia)

Conclusion

Strategic alignment of hydrogen peroxide activity

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- **Sustainability targets & low energy footprint**

- H_2O_2 as a green oxidant \Rightarrow by-product is water
- Environmental benefits of HPPO technology: 70% less waste water, 35% less energy consumption, 25% lower CAPEX

- **High value added activities**

- Development of high value added special grades

- **Reduction of the cyclicity of the portfolio**

- HPPO \Rightarrow 45% of 2011 capacity downstream integrated; less exposure to cycles

- **Geographic expansion**

- High growth expected in Asia ; major ongoing investments there
- Asia $\frac{1}{4}$ th of 2015 sales

Questions & Answers



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