



Ion Exchange Resins – Purified water for the world

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Agenda

- **ION – Business overview**
- Growth drivers
- New technologies and investments
- Outlook

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Ion Exchange Resins – The water business

Performance Chemicals



Material Protection Products

Inorganic Pigments

Functional Chemicals

Leather

RheinChemie

Rubber Chemicals

Ion Exchange Resins

Applications Ion Exchange Resins



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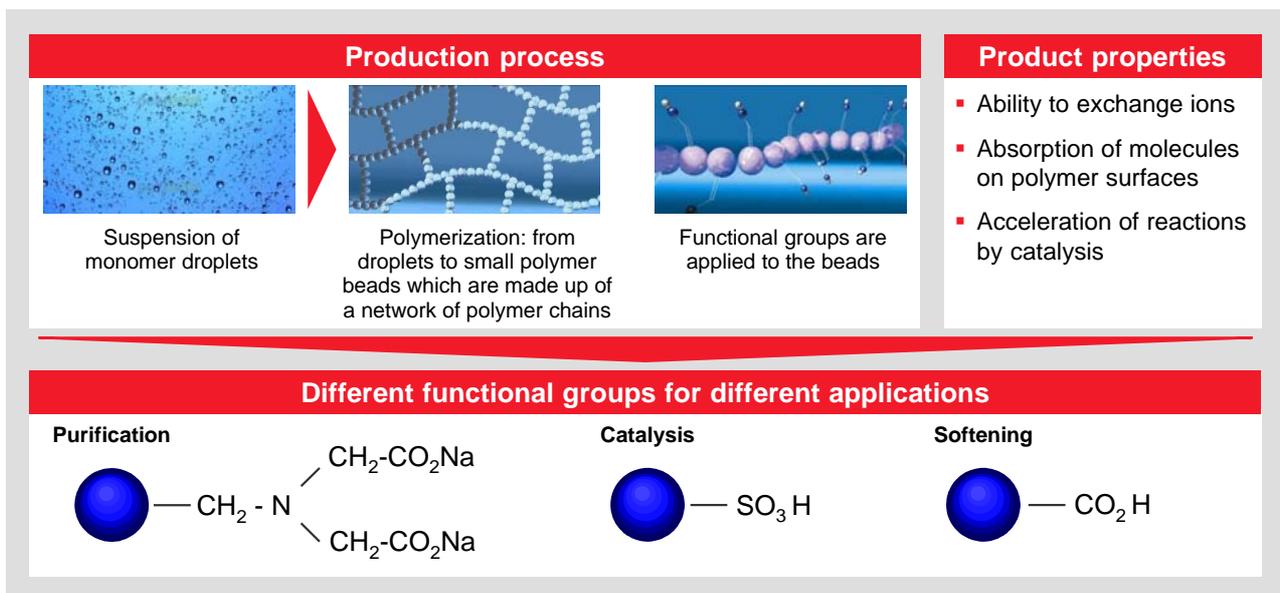
ION – Business overview

Facts	<ul style="list-style-type: none"> ▪ Sales: <€200 m ▪ Employees: ~500 ▪ Customers: >1,500 ▪ Customer industries: >20
Products & brands	<ul style="list-style-type: none"> ▪ Products: ~250 ▪ Brand: 
Markets & competition	<ul style="list-style-type: none"> ▪ Market position: among top 3 global players ▪ Oligopolistic industry structures ▪ Competitors: Dow/Rohm & Haas, Mitsubishi Chemicals

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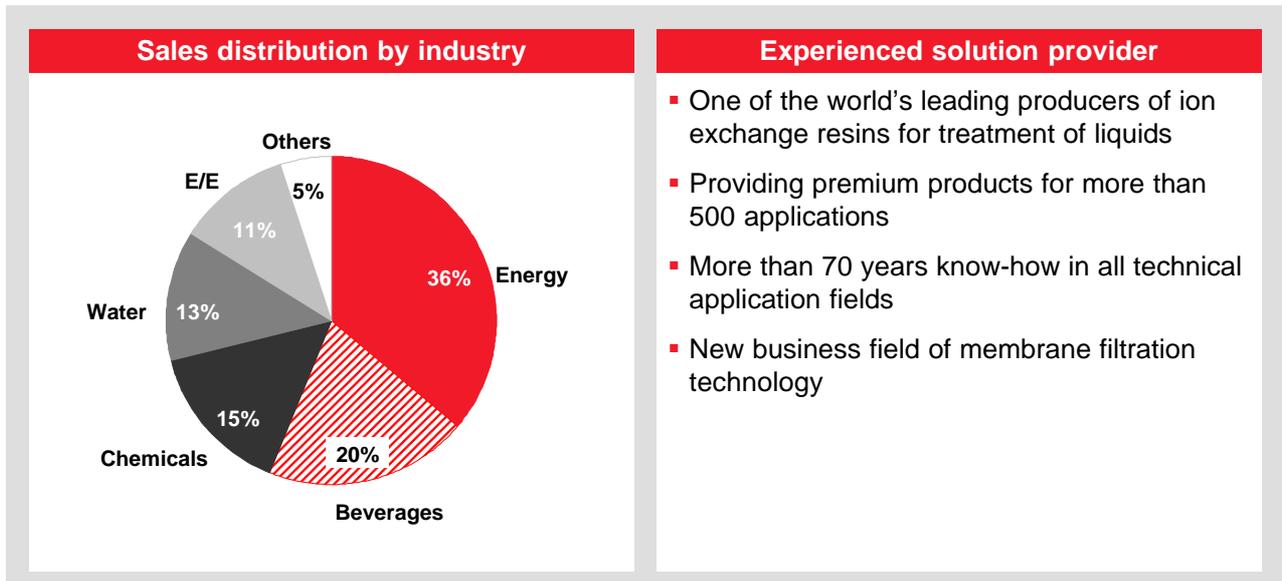
ION production process for application variety



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ION – Various customer industries for water treatment with energy and beverages as main application areas



Source: LANXESS estimates

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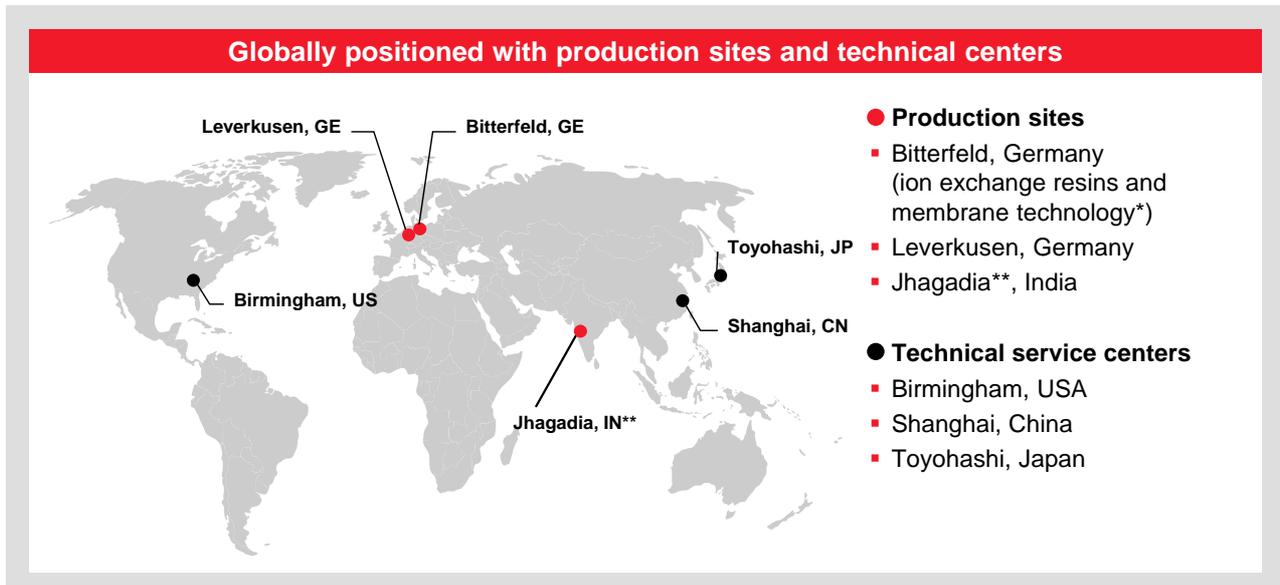
Tailor-made solutions for over 500 applications

Applications in ION key industries	
<p>Energy (nuclear and other power plants)</p> <ul style="list-style-type: none"> ▪ Softening and high purity demineralization for boiler feed water ▪ Prevention of calcium deposits, corrosion, incrustations and precipitation 	
<p>Beverages</p> <ul style="list-style-type: none"> ▪ Softening: reduction dissolved calcium, magnesium, etc. in water and replacing them with non-hardness ions (e.g. cartridges for household water pitchers) ▪ Decolorization: e.g. removal of mineral salts from sugar and binding color impurities for creating pure-white granulated sugar for industrial use (others e.g. color free apple juice) 	
<p>Electric / Electronics</p> <ul style="list-style-type: none"> ▪ Demineralization / polishing: ultra pure water (UPW) for chip manufacturing 	
<p>Chemicals</p> <ul style="list-style-type: none"> ▪ Catalysis: ion exchange resins as catalysts used in production of plastics ▪ Mining: recovery, purification and separation of metals like gold, copper, nickel and cobalt from liquids 	
<p>Water</p> <ul style="list-style-type: none"> ▪ Ground water remediation: removal of impurities like arsenic, chrome and uranium ▪ Cleaning industrial effluent: removal of heavy metal ions and organic pollutants from waste water 	

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ION – Global set up for direct access to customers worldwide



* Production starts 2011; ** Production starts end of 2010

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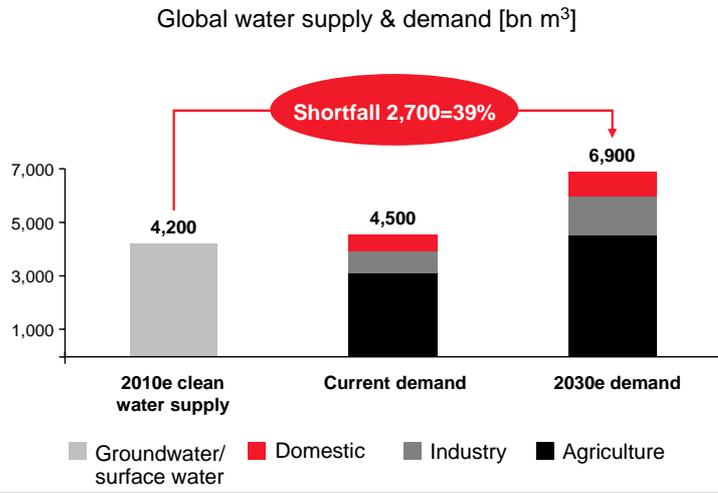
Growth driver megatrend water: Ion Exchange Resins ensures access to limited resource water

Megatrend Water	LANXESS ION products	
	<p>LANXESS ion exchange resins</p> 	<p>LANXESS membrane technology</p> 
<p>⚡ Growing world population and environmental pollution will further limit access to clean water</p>	<ul style="list-style-type: none"> ✓ Better ground and waste-water decontamination ✓ Ensure access to drinking water ✓ Ensure availability of water for special applications 	
<p>Safe and clean water and sanitation declared as a human right (United Nations, 2010)</p> 		

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Expected scarcity of clean water as essential global challenge

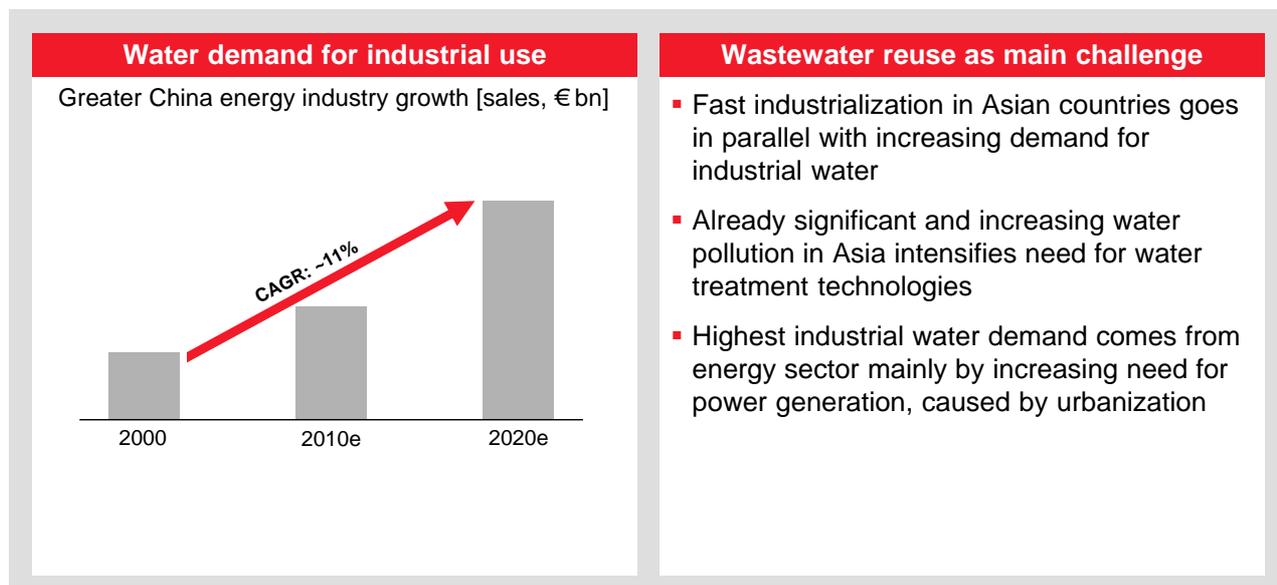
Projected shortfall for clean water	Increasing demand for water								
<p>Global water supply & demand [bn m³]</p>  <table border="1"> <caption>Global water supply & demand [bn m³]</caption> <thead> <tr> <th>Category</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>2010e clean water supply</td> <td>4,200</td> </tr> <tr> <td>Current demand</td> <td>4,500</td> </tr> <tr> <td>2030e demand</td> <td>6,900</td> </tr> </tbody> </table> <p>Legend: Groundwater/surface water (light grey), Domestic (red), Industry (dark grey), Agriculture (black)</p>	Category	Value	2010e clean water supply	4,200	Current demand	4,500	2030e demand	6,900	<ul style="list-style-type: none"> ▪ 47 countries (one third of the world's population) suffer from moderate or severe water stress ▪ Expected global shortfall for clean water of ~40% until 2030 ▪ In 2025 ~4.8 bn people will only have access to polluted water resources ▪ Emerging countries are especially affected with Indian water shortfall ~50%
Category	Value								
2010e clean water supply	4,200								
Current demand	4,500								
2030e demand	6,900								

Source: Charting our water future, McKinsey 2010; The 2030 World Water Resource Group; UNESCO Hydrologic Program

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Asian energy sector with high water demand for industrial use

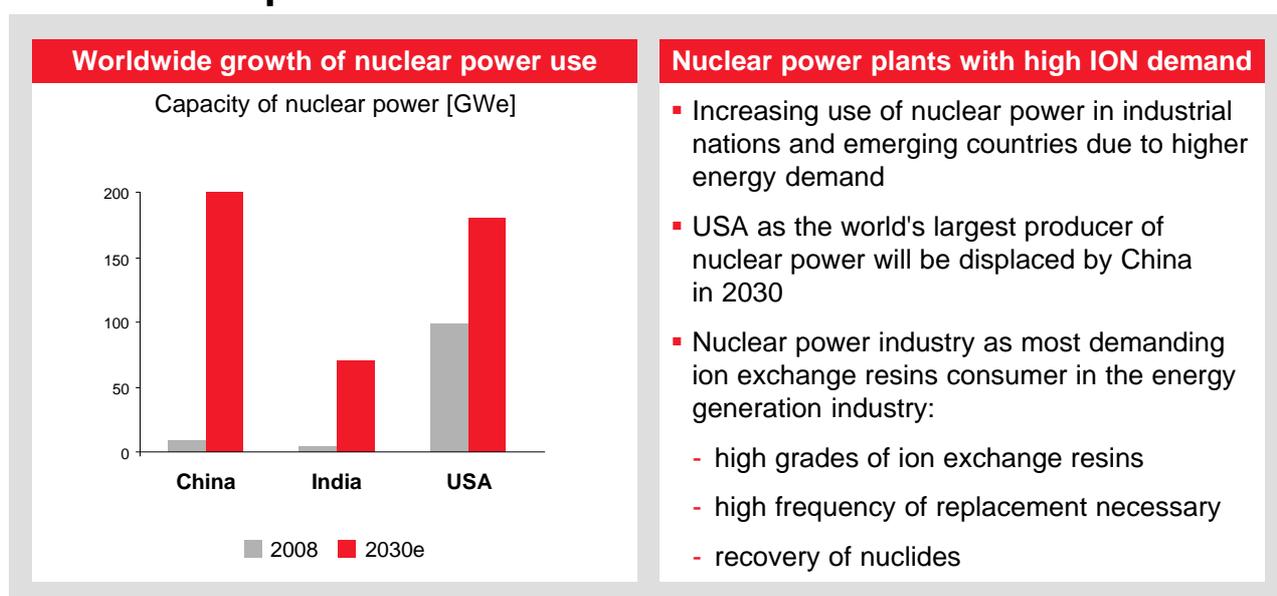


Source: Global Insight, 2010

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Expansion of nuclear power triggers risen need for water treatment in plants

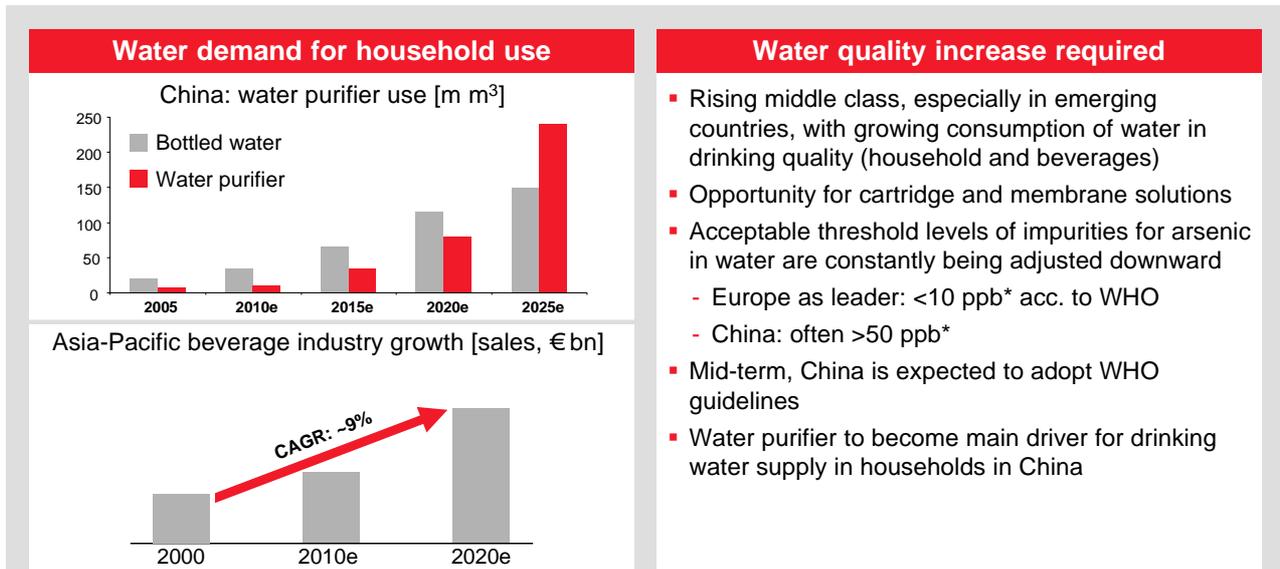


Source: WNA Nuclear Century Outlook Data, 2010

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China with strong increase for cartridge solutions

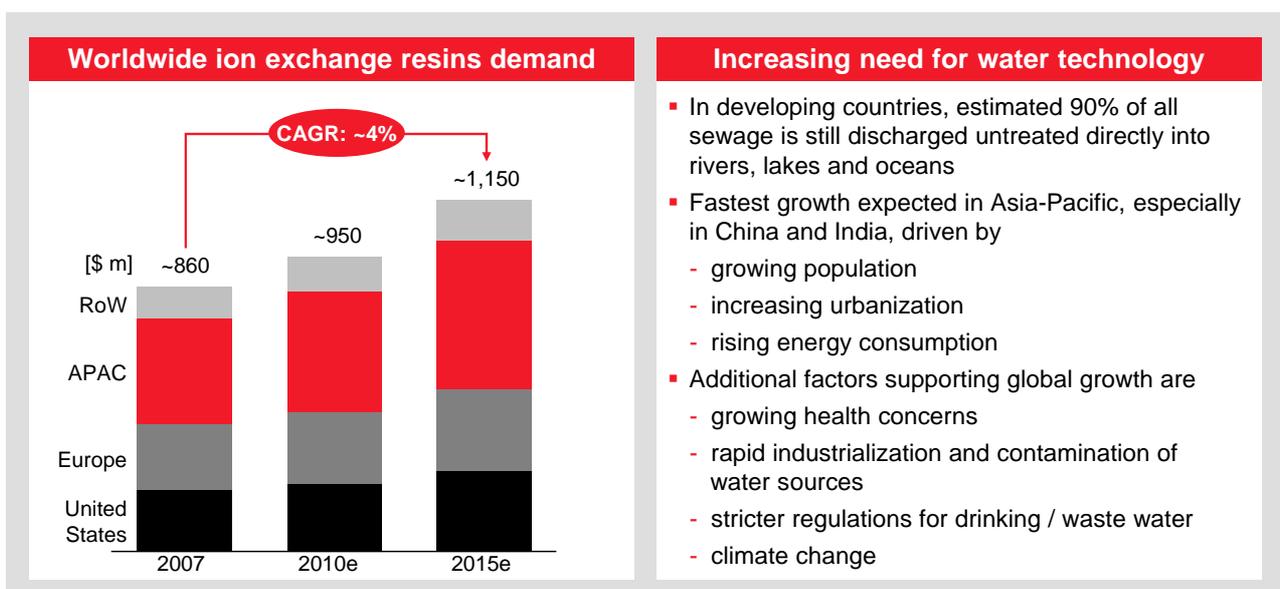


Source: China drinking water industry report, 2009-2010; Global Insight, 2010; * parts per billion

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Strong demand for water treatment with Asia driving growth



Source: Estimated demand based on SRI data; UNEP 2010

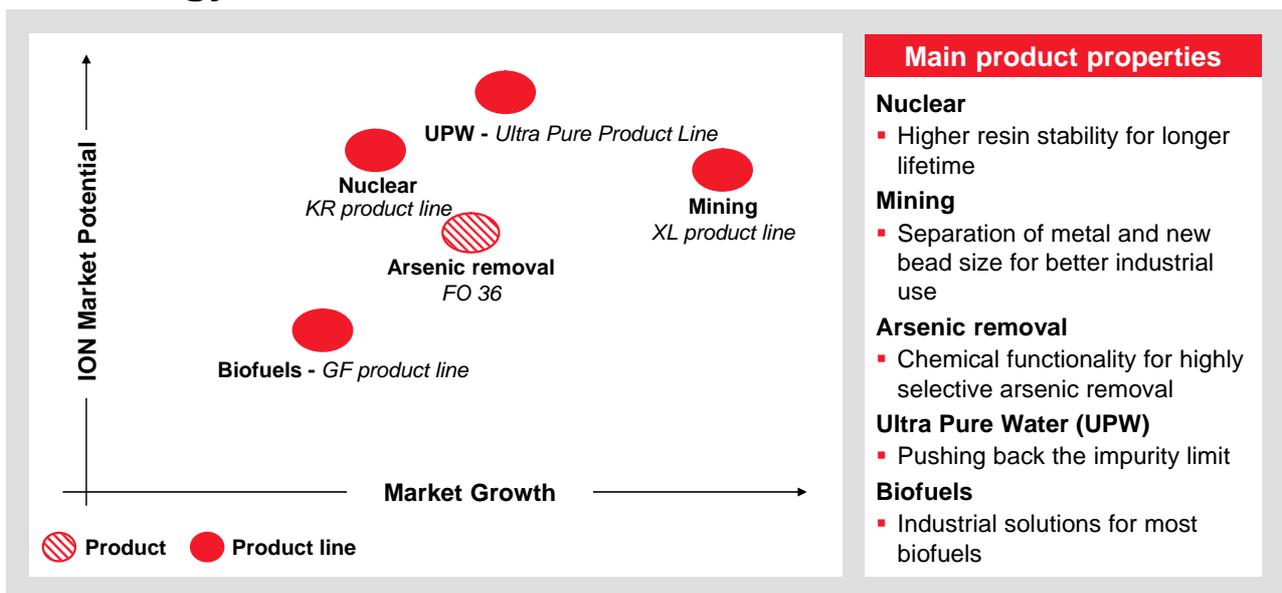
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ION – Driving innovations for new standards in water technology



Membrane technology for high-quality water treatment fits perfectly in ION portfolio

ION – “one stop shop” with membrane technology

Membranes: acting as a barrier for substances dissolved in the water

The diagram illustrates the size ranges for different membrane technologies and the particles they can filter. From left to right: MF (0.1 - 1 µm) filters out bacteria, spores, and viruses; UF (0.01 - 0.1 µm) filters out SiO₂ coll. and H₂O; NF (0.001 - 0.01 µm) filters out monovalent ions; and RO (< 0.001 µm) filters out divalent ions and suspended solids. Water molecules (H₂O) are shown passing through all stages.

Technology properties

- Membrane technology for additional high-quality water treatment
- Global market size for membrane technology ~€1 bn, expected to grow ~10% p.a.
- Membrane technology is complementary to ion exchange resins filtration processes:
 - Membranes offer additional filtration, e.g. nitrates, heavy metals, pesticides, herbicides, viruses, bacteria
 - Membrane filtration is physical vs. ion exchange resins is chemical based

MF: Micro Filtration, UF: Ultra Filtration, NF: Nano Filtration, RO: Reverse Osmosis

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ION – Investment in membrane technology for access to market with high growth potential

New plant in Bitterfeld, Germany

- €30 m investment in new, 2nd ION facility in Bitterfeld, Germany
- Development and production of new membrane filtration technology
- Creation of 200 jobs on a long-term basis
- Groundbreaking January 2010; new plant taken into operation for pilot and development phase end of 2010; first products to be launched end of 2011

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ION – Investment in India for direct access to strong growing emerging markets

New plant in Jhagadia, India

- First mover in India; no western ion exchange-company with production sites in India so far
- €35 m investment in plant in Jhagadia, Gujarat, India
- Construction well on schedule, start-up in Q4 2010
- 250 workers employed by LANXESS on site
- Most modern plant of its kind in Asia
- German standards regarding sustainability, safety and product quality on Jhagadia site



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ION – Leading technologies and excellent market position enable profitable growth in important water market

Growth perspectives	<ul style="list-style-type: none">▪ Megatrend water in emerging countries drives long-term growth of ION▪ Targeted investments in attractive markets further strengthen ION global position▪ Value generation through strategic positioning as a full service provider with “one stop shop”
Markets	<ul style="list-style-type: none">▪ Knowledge and technology leadership as a main competitive advantage and base for strong long-term customer relations▪ Focus on premium application areas with premium products
Products / technology	<ul style="list-style-type: none">▪ High-quality, balanced specialty and consumer product portfolio▪ Strong R&D and innovation driver in further product diversification

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