



The Company NANO-X GmbH

Products for the Automotive Industry

Dr. Stefan Sepeur, CEO
10th July 2006
Frankfurt am Main

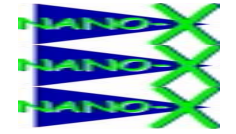
The Company



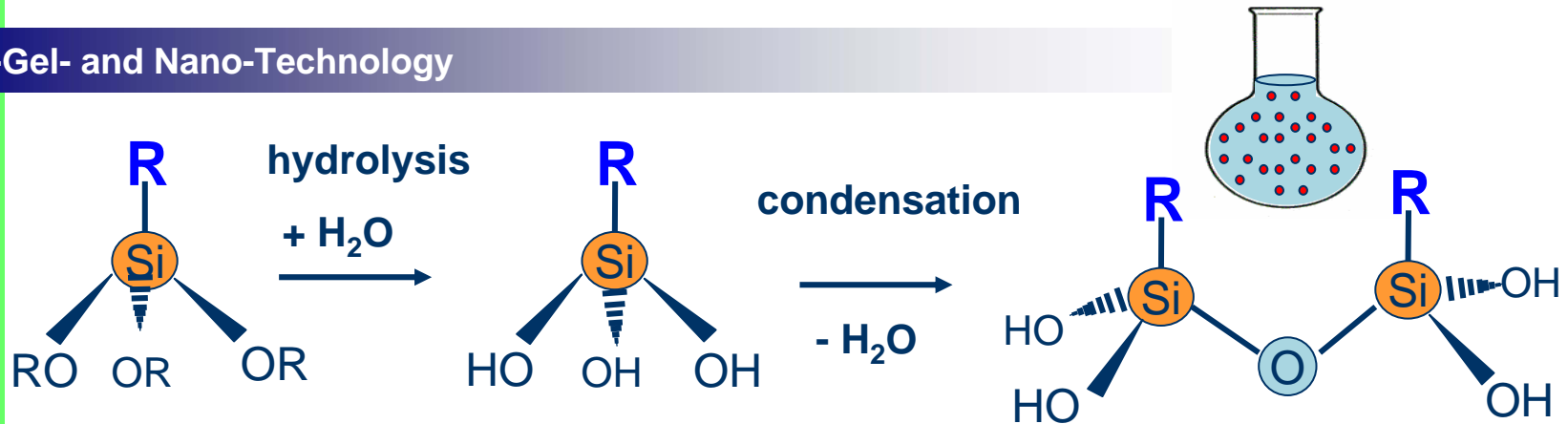
Foundation

Foundation:	October, 1999
Art of foundation:	GmbH, new company
Registered Office/Branch:	Saarbruecken planned: 2007/2008 Japan planned: 2008/2009 Mexiko
Shareholder:	Dr. Stefan Sepeur (52%) Reimund Krechan (35%) Dr. Frank Groß (8%) Dr. Nora Laryea (5%)
Capital Stock:	25.000,00 EUR no venture capital

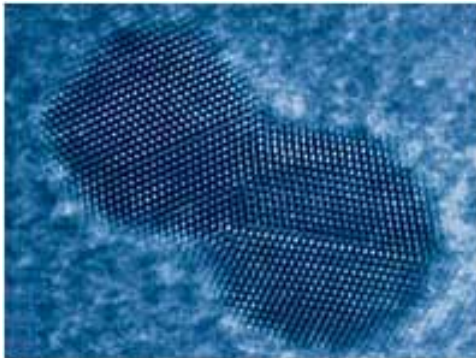
The Technology



Sol-Gel- and Nano-Technology

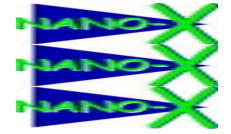


Size ratio



Source: Internet

Market Idea



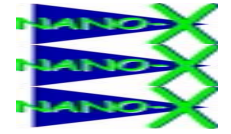
Treatment of surfaces

Innovative coating materials based on chemical nanotechnology have the following properties:

- Prevention of surface defects by e.g. Easy-to-Clean (ETC), Self-cleaning (Catalytic-Clean-Effect[®]), corrosion protection, abrasion protection, UV-protection and more
- Coated component parts get an added value by longer durability, larger areas of application, multi-functionality, less expenses for cleaning, higher security and more
- Innovation for market advantages

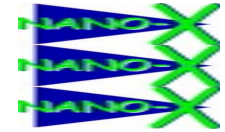
Business of NANO-X: High Performance Coatings

NANO-X at Present

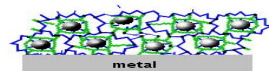


- Total area: 7000 m², building area: 1500 m²
- Modern R&D-laboratory with 12 work desks
- QS and application laboratory
- Production plant and chemical warehouse with annual production capacity about 2.000 t
- Application and hardening units including all usual procedures/methods
- Testing equipment, like QUV-test, salt spray test, equipment for measuring of layer thickness, determination of adhesion, determination of abrasion resistance and more
- 37 employees in the fields of chemistry, chemical and process engineering, machine construction, administration and marketing
- Turnover 2005: 5 Mio Euro, 2006: ~ 7 Mio Euro

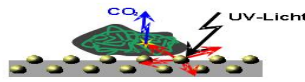
Activities of NANO-X



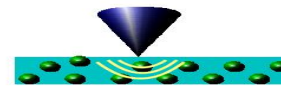
Research & Development



corrosion protection
scaling protection



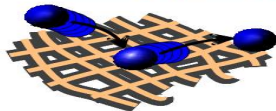
Catalytic-Clean-Effect®



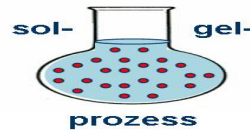
abrasion protection



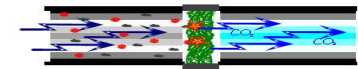
antifingerprint



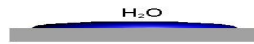
impregnation of fabrics



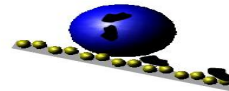
prozess



smell/ solid catalysis



antifog-effect



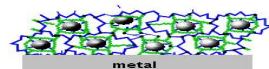
self-cleaning-effect



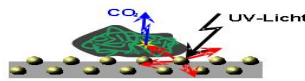
binder and additives



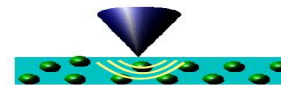
easy-to-clean



corrosion protection
scaling protection



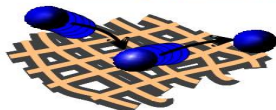
Catalytic-Clean-Effect®



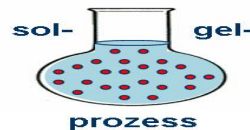
abrasion protection



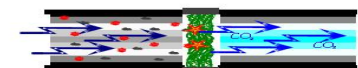
antifingerprint



impregnation of fabrics



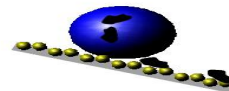
prozess



smell/ solid catalysis



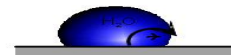
antifog-effect



self-cleaning-effect



binder and additives



easy-to-clean

Products



Brands of NANO-X®

x-tec®

Technical

x-clean®

Easy- and Self-Cleaning

x-view®

Hydrophilic



Innovative Products

x-add®

Additives

x-bond®

Binders

x-coat®

Coloures

x-protect®

Scratch Resistant

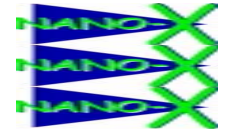
Example: Anti-scaling



Research & Development

<p>corrosion protection scaling protection</p>	<p>Catalytic-Clean-Effect®</p>	<p>abrasion protection</p>	<p>antifingerprint</p>
<p>impregnation of fabrics</p>	<p>sol- gel- prozess</p>	<p>smell/ solid catalysis</p>	
<p>H₂O antifog-effect</p>	<p>self-cleaning-effect</p>	<p>binder and additives</p>	<p>easy-to-clean</p>
<p>corrosion protection scaling protection</p>	<p>Catalytic-Clean-Effect®</p>	<p>abrasion protection</p>	<p>antifingerprint</p>
<p>impregnation of fabrics</p>	<p>sol- gel- prozess</p>	<p>smell/ solid catalysis</p>	
<p>H₂O antifog-effect</p>	<p>self-cleaning-effect</p>	<p>binder and additives</p>	<p>easy-to-clean</p>

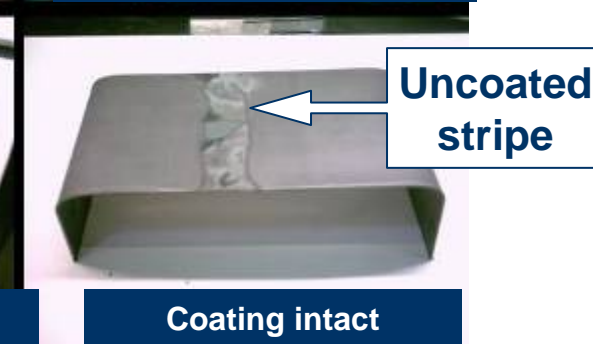
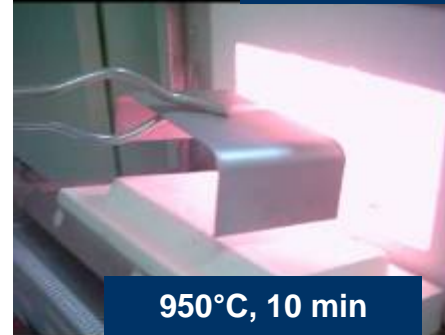
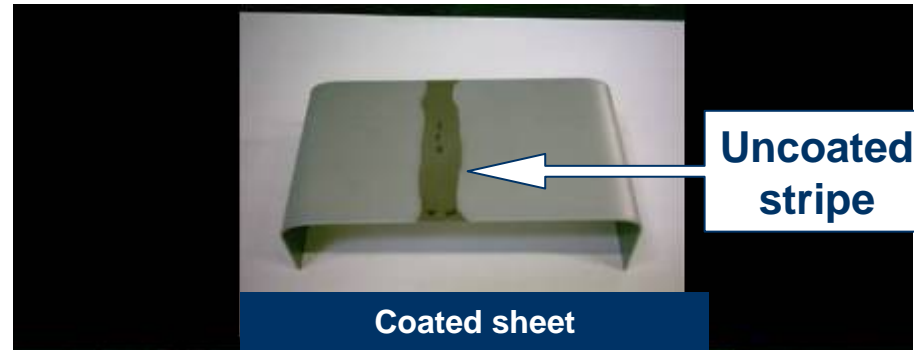
In-Mold Hardening



In-Mold Hardening



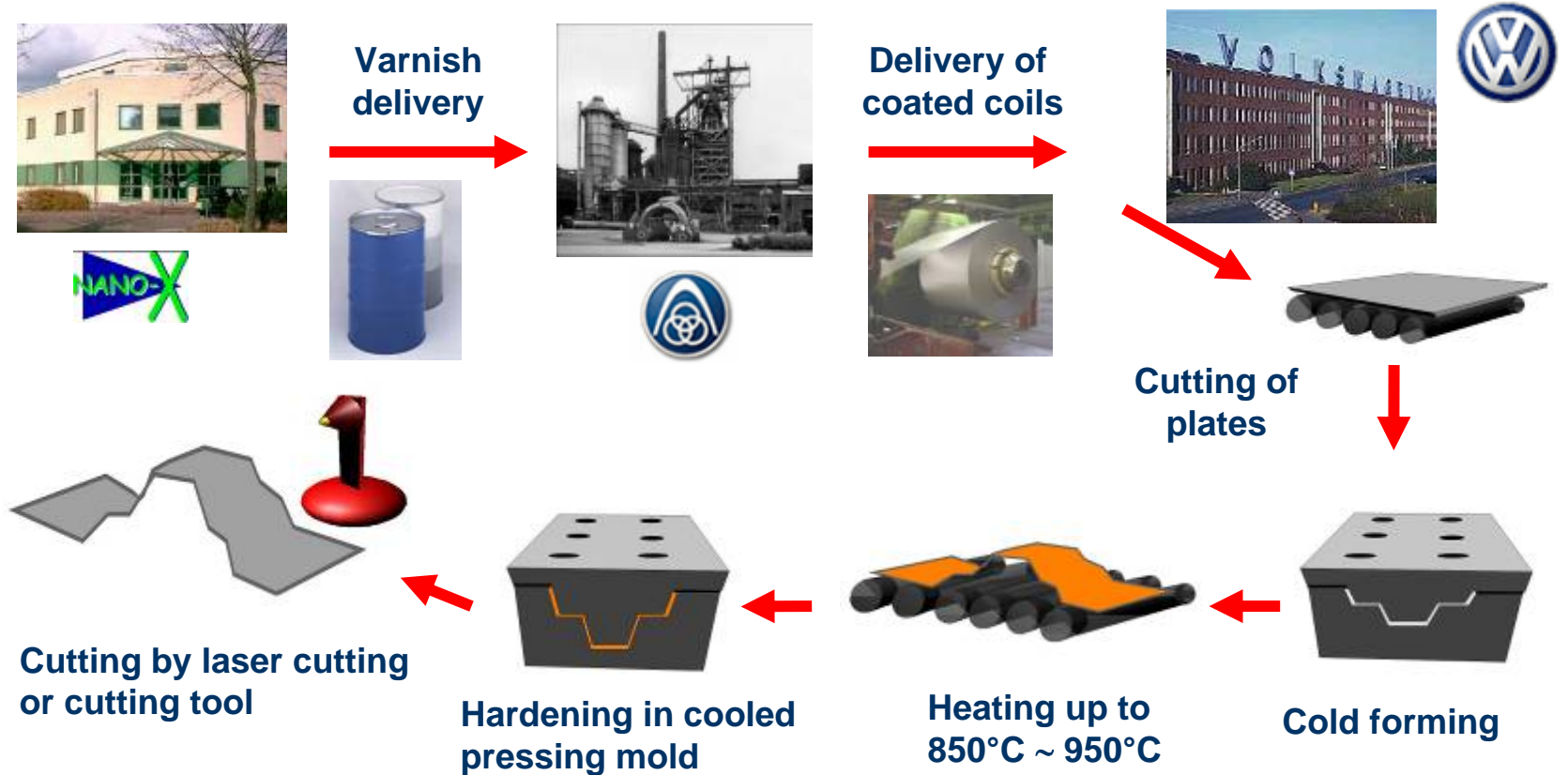
- New production process at VW: hot in-mold hardening at 950°C (cold and hot forming)
- Extremely high strength, up to 1.650 MPa
- Less weight by high strength at lower sheet thickness
- Bearing car body parts in vehicle construction
- Problem: surface scaling
- Solution: x-tec[®] CO 4017 prevents scaling



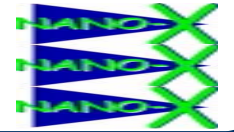
x-tec[®] CO 4017



Anti-scaling



In-Mold Hardening

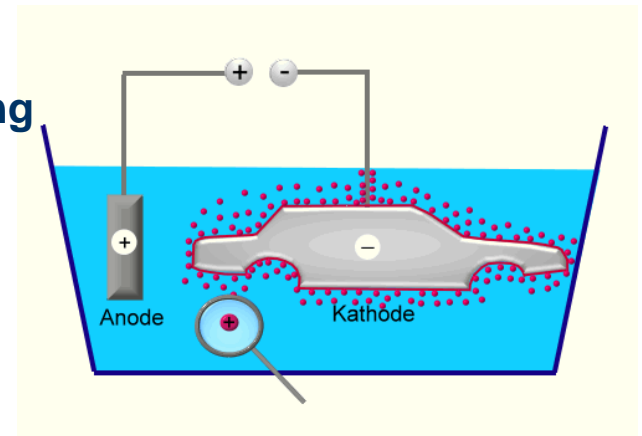


Processing



Transmission Tunnel

- Phosphating
- Cathaphoretic painting



Three parts on more than 2000 cars/day



The new PASSAT by Volkswagen

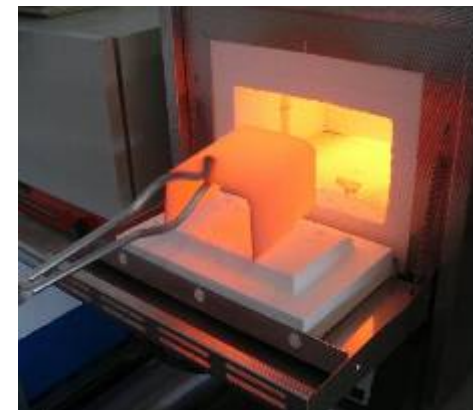
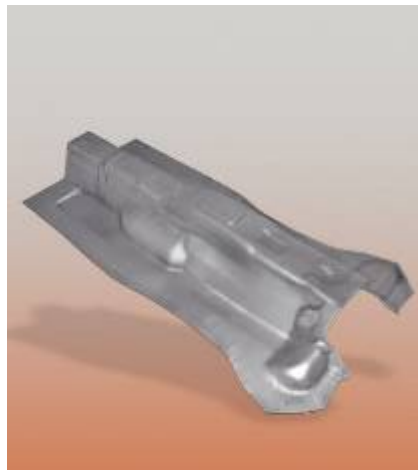
Award for Innovation



Stahl-Innovationspreis



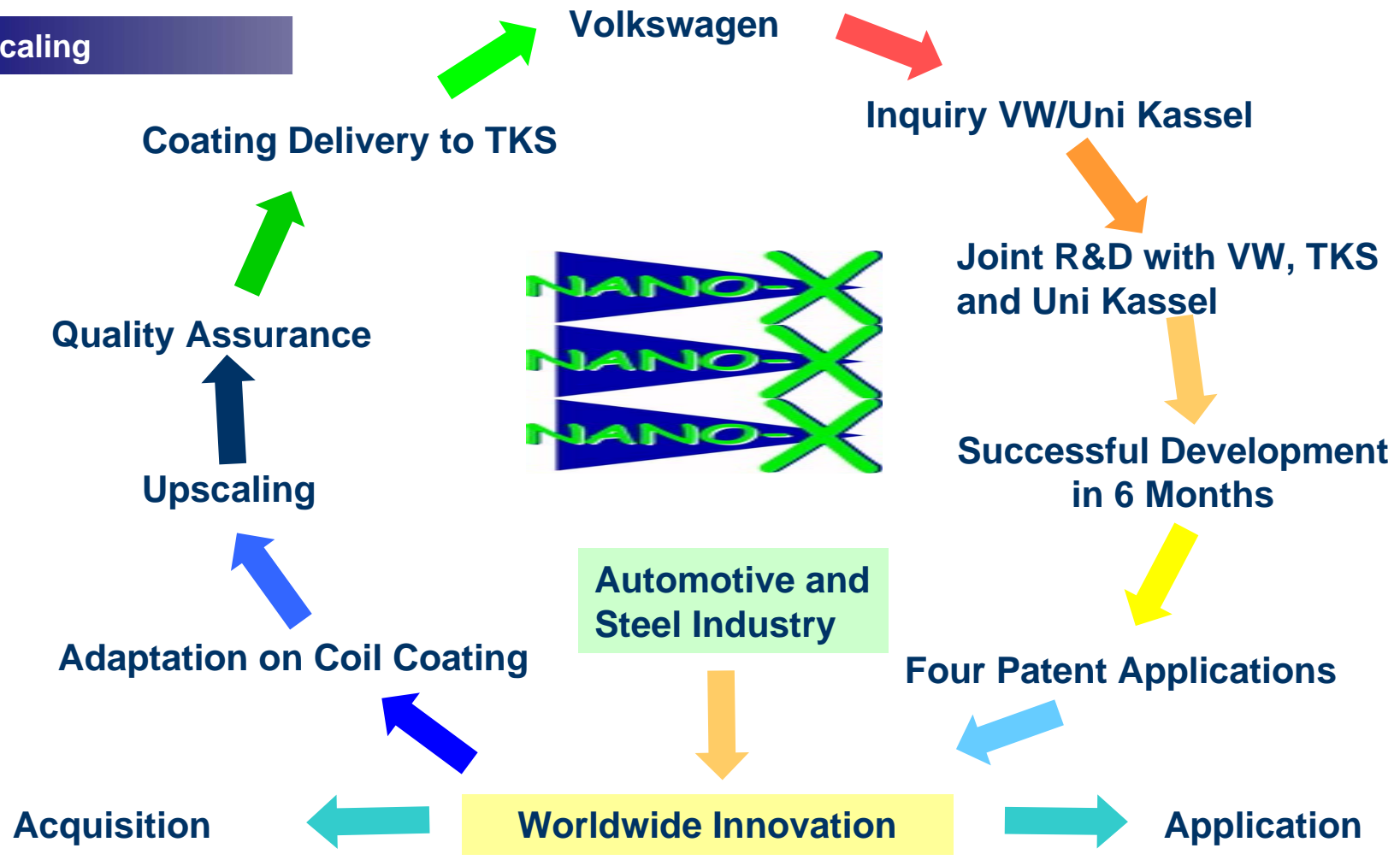
Scaling Protection of 22MnB5 Steel



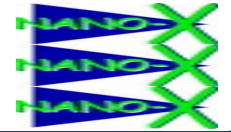


The Example

Anti-scaling



World Market



Demand for Anti-scaling



Automotive industry:

- Volkswagen, Skoda, Audi
- BMW
- Toyota
- Subaru
- Mazda
- DaimlerChrysler
- Honda
- Nissan etc.



Freude am Fahren

HONDA
The Power of Dreams



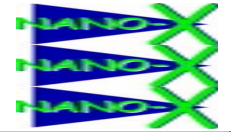
Steel industry:

- ThyssenKrupp
- Salzgitter
- Arcelor
- JFE
- Posco
- Sumitomo etc.

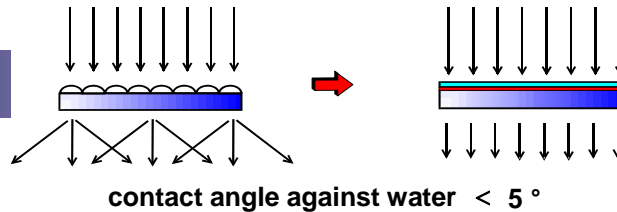


NANO-X is technology leader in this market!

Other Commercial Products



x-view® AB Materials



- Nanostructured hydrophilic surface
- No fogging
- Water-based systems
- Series for Volvo glass headlamps since June, 2001
- On PC end of 2003 (VW Phaeton)
- Auditing and certification process
- High-tech-application in a modern robot steering plant

Valeo
Genthe -X- Coatings

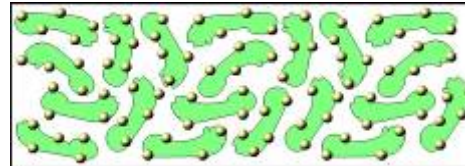


VOLVO

Other Commercial Products



x-tec® CA Materials



- Coating with catalytical nanoparticles in an inert inorganic matrix
- Use on soot filters in diesel exhaust gas systems for passenger cars, busses, trucks, machineries
- Soot regeneration on diesel particulate filters in combination with excellent low back pressure performance
- High chemical and thermo-corrosion resistance
- Now in market!!!

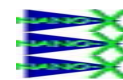


HJS
Abgas-Systeme • Katalysatoren

**Sintered Metal Filter,
SMF® City-Filter®**

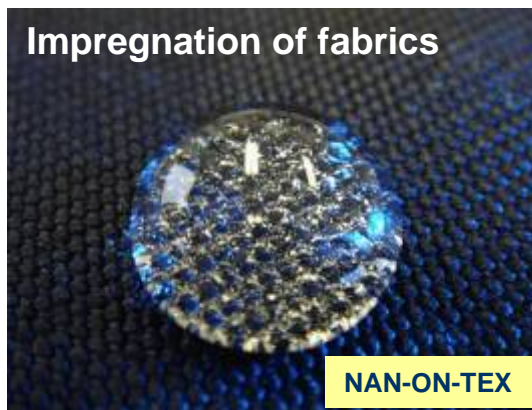


Other Commercial Products



Automotive Market

Impregnation of fabrics



NAN-ON-TEX

Protection of plastics

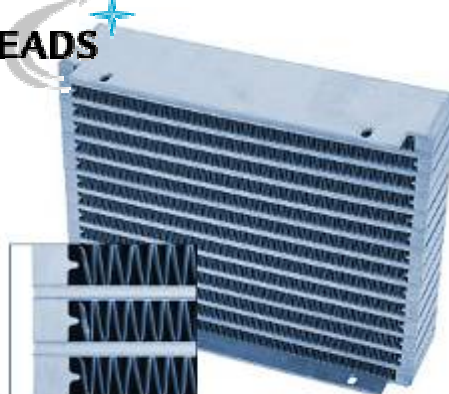


Fresnel Optics

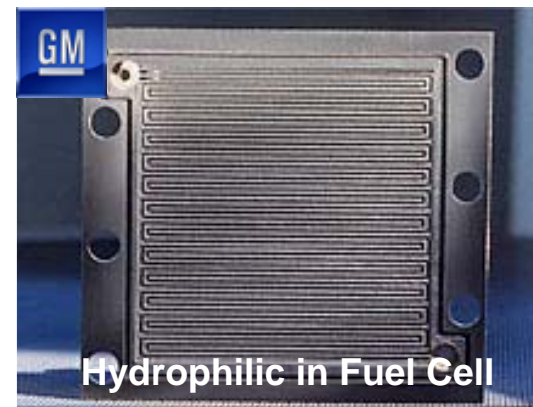
Anti-fingerprint + ETC



Tribological coating

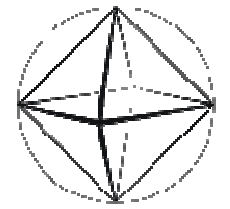


Corrosion protection



Hydrophilic in Fuel Cell

Location



NANO-X is located in SAARLAND

- 50 % of the European Union's GNP is generated in Germany and France
- Roughly 140 million people are living in Germany and France
- Global center of chemical nanotechnology



Conclusion



- At present the NANO-X portfolio includes more than 50 products for a large variety of applications
- A lot of materials in the automotive series
- A lot of R&D projects with the automotive industry
- NANO-X is a leading company for chemical nanotechnology

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Thank you for your kind attention!