Chemicals for Sustainable Leather Manufacture

53rd LERIG

Prasanna Maduri, Campus Manager, 29 January 2020
Stahl at a glance (2018)

**WORKFORCE**
- 2,000 people
- 61 nationalities

**COUNTRIES**
- 27 countries
  - 48% EMEA
  - 20% Asia-Pacific
  - 19% India-Pakistan
  - 10% Americas

**Human capital**
- 35 sales offices
- €867 million sales revenue in 2019

**Research & Development**
- 100 people working on innovations every day
- R&D Labs

**Products & markets**
- Leather Chemicals
- Performance Coatings
- Polymers
- Automotive | Fashion/Apparel & Accessories | Architecture/Interior Design | Industrial Applications | Labour & Lifestyle | Home Furnishing

**Responsible operations**
- 9 Centers of Excellence
- 1,200 employees trained on ethical practices
- 60% of our leading solutions are water-based
- 50% of energy supplied by on-site solar panels at Stahl Brand
- CO₂ emission goal: -10% by 2020

**Energy & CO₂ emissions**
- -2.5% energy consumption further reduced
- 100% green energy at European manufacturing sites
- UN Global Compact | UNIDO, Solidaridad | Global universities | ZDHC

**Trusted partnerships**
- NGOs, academic cooperation

**Energy & CO₂ savings**
- 38 Technical Centers
- 13 Manufacturing Sites

**Stahl Campus®**
- 780 people trained at Stahl Campus®
Stahl Policy
Sustainability & Climate Change

Stahl has aligned itself to the Paris Climate Agreement the 17 Sustainable Development Goals established at the UN General Assembly in 2015
The chemistry we create

Chemistry that triggers our senses while lowering the environmental impact.

<table>
<thead>
<tr>
<th>Leather Chemicals</th>
<th>Shoe Finish &amp; Aftercare</th>
<th>Performance Coatings</th>
<th>Polymers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet-end</td>
<td>New materials</td>
<td>Elastomer coatings</td>
<td>Bio-based portfolio</td>
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<tr>
<td>Waterproofing</td>
<td>Waterproofing</td>
<td>Seat &amp; trim</td>
<td>Architectural polymers</td>
</tr>
<tr>
<td>Improvement</td>
<td>Improvement</td>
<td>Coated fabrics</td>
<td>Printing and packaging</td>
</tr>
<tr>
<td>Finishing</td>
<td>Finishing</td>
<td>Powder coatings</td>
<td>Electronics &amp; plastics</td>
</tr>
<tr>
<td>Aftercare</td>
<td>Aftercare</td>
<td>Flame retardants</td>
<td>Carbodiimide crosslinkers</td>
</tr>
</tbody>
</table>

stahl.com
Anticipating to emerging trends

The world is changing. Ever since our foundation in 1930, we listen to the world around us and anticipate to emerging trends.

- Regulations
- Safety
- Durability
- Sustainability
- People’s needs
- Consumer trends
### Our vision on Responsible Chemistry

#### Low-impact chemicals
- We are committed to **phase out restricted substances** and replace and reduce solvents and substances.
- We help others to make **more sustainable materials**.

#### Biotechnology
- We aim to **replace non-renewable resources**.
- We use **science and technology** to redesign our materials, processes and products.
- We **measure and assess** to evaluate the product impact.

#### Circular economy
- We use **waste and by-products** for durable and sustainable new materials.
- We give **used materials a new life** with our aftercare products.
- We need a better understanding of the end-of-life of our products.

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We measure the impact with **Life Cycle Assessment (LCA)**
LCA indicators

- Climate Change
- Abiotic Depletion
- Land Use
- Water Consumption
- Eutrophication
- Acidification
- Toxicity
- Photochemical Ozone Formation
- Ozone Depletion
We are a **one-stop-shop** covering the entire value chain of everyday materials

We work directly with **leading luxury brands and OEMs**

We offer **global services** for our clients:
- Stahl Campus®
- Stahl Design Studio®
- Brand services
- Expert services
- Centers of Excellence
Centers of Excellence

- Leather Finish
- Shoes & Leather Goods
- Edge Dyes
- Performance Coatings
- Powder Coatings
- Leather Furniture Upholstery
- Apparel & Home Furnishing
- Automotive
Promoting good practices and transparency
Training all kinds of stakeholders
Stahl Design Studio®

- Your go-to partners for the newest trends and latest technological possibilities
Training & education

- Safety, Health & Environment (SHE) training
- Compliance e-training
- International Management Training Program
- Stahl Campus®
Leather Chemicals & Performance Coatings

A unique story of complimentary

- Pillar cover
- Sun screen
- Consoles
- Filter materials
- Windshield wiper
- Instrument panels
- Steering wheel
- Door panels
- Gear Shift knobs and boots
- Air bags
- Headrests
- Safety belts
- Seat upholstery
- Door seals

Leather Chemicals (WE & LF)
Performance Coatings
Leather Chemicals & Performance Coatings

A unique story of complimentary
Leather Process with Key Environmental Impact

1. Raw hides
   - Source
   - Salt usage

2. Beamhouse
   - Water usage
   - Substances
   - Effluent quality

3. Tanning
   - Salt usage
   - Water usage
   - Energy usage

4. Retanning
   - Substances
   - Water usage

5. Finishing
   - Substances
   - Solvents
   - Energy usage

Raw Material to Wet Blue

Dyeing & Finishing
Stahl Sustainable Technology in Leather

<table>
<thead>
<tr>
<th>Stage 1: Raw Hides</th>
<th>Stage 2: Beamhouse</th>
<th>Stage 3: Tanning</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Localize</td>
<td>• PROVIERA</td>
<td>• EASYWHITE</td>
</tr>
<tr>
<td>• Salt Free</td>
<td>• DRYFAST</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 100% biodegradable</td>
<td>• Chrome Free</td>
</tr>
<tr>
<td></td>
<td>• ↓ Global Warming</td>
<td>• Less Water</td>
</tr>
<tr>
<td></td>
<td>• ↓ BOD/COD</td>
<td>• Salt Free</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pickle-Free</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Stage 4: Retanning</th>
<th>Stage 5: Finishing</th>
</tr>
</thead>
<tbody>
<tr>
<td>• STAHLITE</td>
<td>• STAHL NEO</td>
</tr>
<tr>
<td>• Toxin Free</td>
<td>• Solvent Free</td>
</tr>
<tr>
<td>• Reduces COD</td>
<td>• Toxin Free</td>
</tr>
<tr>
<td>• ↑ Air Quality</td>
<td>• ↑ Air Quality</td>
</tr>
<tr>
<td>• ↑ H₂O Quality</td>
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— Raw Material to Wet Blue

— Dyeing & Finishing
If it can be imagined, it can be created