Sustainable Fibres

Good for the People – Good for the Planet

Planet Textiles, 18th March 2010, Hong Kong

Geoff Collins
contents

- Introduction to Lenzing
- Good for the planet
  - raw material
  - measuring sustainability
  - LCA of fibre production
- Good for the people
  - products made from Lenzing fibres
Introduction to Lenzing

- Lenzing is a global company
  - HQ in Austria, Europe
  - ~6000 employees
  - $1.5 billion turnover

- Main activities in cellulosic fibres

- Supply to textile and nonwoven industries
Production Sites

- Lenzing / Austria
- Purwakarta / Indonesia
- Nanjing / China
- Mobile / USA
- Grimsby / UK
- Heiligenkreuz / Austria
## Production Volumes 2010

<table>
<thead>
<tr>
<th>Country</th>
<th>Location</th>
<th>Product</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>LAG</td>
<td>Lenzing Viscose</td>
<td>660,000</td>
</tr>
<tr>
<td>Austria</td>
<td>LFG</td>
<td>Lenzing Modal</td>
<td>75,000</td>
</tr>
<tr>
<td>Indonesia</td>
<td>SPV</td>
<td>Lenzing Viscose</td>
<td>220,000</td>
</tr>
<tr>
<td>China</td>
<td>LNF</td>
<td>Lenzing Viscose</td>
<td>75,000</td>
</tr>
<tr>
<td>USA</td>
<td>LFI</td>
<td>TENCEL</td>
<td>25,000</td>
</tr>
<tr>
<td>UK</td>
<td>LFFGG</td>
<td>TENCEL</td>
<td>35,000</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>660,000</td>
</tr>
</tbody>
</table>
Good for the Planet...
Sustainable Fibres

- Sustainability is a global megatrend
- Covers almost all aspects of life
- Fibres are a critical component in textiles and nonwovens
- Consumers, brands and retailers show increasing interest in raw materials sourcing and production
Cellulose – The Natural Raw Material

- Cellulose is generated by photosynthesis

\[ \text{CO}_2 + \text{H}_2\text{O} \xrightarrow{\text{Photosynthesis}} \text{CH}_2\text{O} + \text{O}_2 \]

- Most important natural building block
- Available in abundance
- Renewable
- Biodegradable
What is Sustainability?

- Improved quality of life without compromising future generations
Lenzing AG, Austria

Largest integrated pulp and fibre production plant in the world
How to measure sustainability?

- Accepted approach is Life Cycle Analysis (LCA) and Impact Assessment (LCIA)

- Internationally recognised methodologies like ISO 14040

- Allows comparison between fibres

- Lenzing fibres, cotton, polyester, polypropylene
Natural Cycle of Cellulosic Fibres

- **LCA**
- **Green Finishing**
- **Eco-Metrics**
LCA Study of fibres

- Comparison of fibre types
  - are there differences between natural, man-made and synthetic fibres?

- Conducted at Cornelius Institute, Utrecht University by Dr Martin Patel and Li Shen

- Data provided by Lenzing and from published sources

- Subject to peer review in USA, UK and Germany
Land Use
Water Use

Water consumption in cubic meters per ton

- TENCEL® Austria: 263
- Lenzing Viscose® Asia: 319
- Lenzing Viscose® Austria: 445
- Lenzing Modal® Austria: 472
- Cotton USA and China: 5,730
Relative Environmental Impact

- Global warming
- Consumption of non-renewable resources
- Human health
- Soil pollution
- Water pollution
- Air pollution
- Ozone layer depletion
- Acidification of air, water and soil
- Eutrophication
Good for the people…
100% TENCEL®
$145.00

Armani Exchange
TENCEL®
linen, polyester
$79.00

TENCEL®
linen, spandex
$89.00
80% TENCEL®
20% ramie
$80.00
BANANA REPUBLIC

30% TENCEL®
70% rayon
$45.00

Ribbed Wrap
90% TENCEL®
10% silk
$39.50

100% TENCEL®
$49.50
Lenzing Modal®
cotton, polyester
$98.00

Lenzing Modal®
cotton, spandex
$88.00

Lenzing Modal®
Pima cotton, polyester
$78.00

Lenzing Modal®
cotton, spandex
$78.00

Lenzing Modal®
cotton, spandex
$88.00

Lenzing Modal®
Pima cotton, polyester
$78.00
Express

Lenzing Modal®, Cotton, spandex
$34.50

Lenzing Modal®, Cotton
$29.50

Lenzing Modal®, Cotton
$59.50
Victoria’s Secret
TENCEL®
94% Lenzing Modal®
6% spandex
Cami: $29.50
Pants: $39.50
Juicy Couture
Lenzing Modal®
cotton
$42.00

Juicy Couture
Lenzing Modal®
cotton
Briefs: $18.00
PANTS: TENCEL®
linen, polyester
$196.00
57% TENCEL®
43% cotton
$85.00

45% TENCEL®
55% cotton
$85.00

65% TENCEL®
35% cotton
$155.00

57% TENCEL®
43% cotton
$98.00
BOSS
TENCEL®, cotton
$62.00
Lenzing Modal®
silk
$120.00
Splendid Littles
50% Lenzing Modal®
50% Supima cotton
Nonwoven wipes and eco-bags
Conclusions

- Lenzing fibres are good for the planet
  - made from wood a renewable resource
  - low environmental impact production

- Products made from Lenzing fibres are good for the people
  - apparel, hometextiles, technical textiles, nonwovens
  - aesthetic, performance and environmental

- TENCEL®, Lenzing Modal® and Lenzing Viscose® are positive choices for sustainable products
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