The Lenzing Group – A Sustainable Company

Sustainability for Lenzing is a living reality.

The effort and performance of our staff members is the basis of our economic success.

We set high standards for ecologically sound production at all our sites.

**Anammox waste water cleaning system for biological sulfate removal:** A novel system for the biological removal of sulphates from waste water. This waste water treatment process is new to the viscose fiber industry. Anaerobic bacteria decompose the relevant substances primarily into sulphide and methane. The waste gas contains methane and is used for the generation of electricity and process heat.

**Avigize:** The application of saponaceous substances during the last stage of washing. The adhesive properties of fibers are set in such a way as to optimize properties for the common processes of textile and fleece production. The effect is similar to that of domestic fabric softeners. Mixtures of lubricants, adhesives and antistatics are employed.

**Vapors condensate extraction:** A process for recovering volatile ingredients from the condensed vapors of evaporation units by means of extraction.

**Cellulose:** The raw material of viscose production. Cellulose is a plant constituent. The cellulose content of wood is 40%.

**Chain of Custody:** The verification management of certified wood, from forest to final product. It ensures that only products manufactured from wood obtained from sustainable utilization receive the PEFC label.

**COD:** Chemical oxygen demand. Another method for assessing the organic load of waste water, next to BOD (biological oxygen demand). The measure used is the chemical oxidation potential of the waste water.

**Emission:** The giving off of substances, noise, vibration, light, heat, radiation, odors or similar phenomena which are detrimental to the environment.

**Fiber:** The Lenzing Group fiber products - viscose, modal and Lyocell. All three are cellulose fibers made of wood, the natural raw material. Lenzing Viscose®, and Lenzing Modal® are viscose fibers (produced by the viscose process); TENCEL® is produced by the Lyocell process and constitutes a separate fiber category.

**Dissolving pulp:** A special kind of pulp used to manufacture viscose, modal and Lyocell fibers and other cellulose-based products.

**Furfural:** A chemical product generated at pulp production. It is used as a plant protection agent, for example.

**FSC Certification:** Forest Stewardship Council (FSC) is a system for the certification of wood products (forest certificate). It has been developed to secure sustainable forest management. The management standards are intended to lead to forest management that is sustainable in social, ecological and economic terms.

**Hydroentanglement:** A common technology for fleece solidification. It is used for sanitary, medical and cosmetics purposes.

**Immission:** The impact of emissions on the environment. Among these are mainly air pollutants, odors, noise, vibration, light, radiation and heat.

**Integration:** All stages of fiber production are located at one site - from wood, the raw material, to pulp and fiber production.

**JSE-SRI Index:** An index maintained by the South African JSE Securities Exchange. The SRI (Social Responsibility Index) measures corporate policies, performance and reporting in terms of ecological, economic, and social sustainability, as well as corporate governance.

**Lyocell® Fiber:** A novel fiber developed by Lenzing, produced by an environmentally very sound solvent process. Its properties enable the design and production of new and innovative products.

**Man-made cellulose fibers:** Industrially manufactured fibers made of natural raw materials (for example wood).

**Modal:** Viscose refined by modified spinning conditions. It is characterized by its special softness and is the preferred fiber for high-quality linge and similar products. Usage properties (such as tenacity, dimensional stability, and others) are improved.

**Nonwovens:** Non woven materials, fleece. The fleece materials made from Lenzing fibers are used for sanitary, medical and cosmetics purposes.

**PEFC:** Pan-European Forest Certification. Global labeling of wood from ecologically, economically and socially sustainable forestry. An initiative of the private forest and timber industry based on the consensus of all substantial interest groups. These groups pursue the idea of sustainable forest management on a national and regional level. www.pefc.at

**Needlepunch technology:** A technology for fleece solidification.

**Viscose fiber:** Regenerate cellulose fiber, produced by the viscose process from the natural raw material wood.

**Xanthogenate:** Preliminary or intermediate product of viscose production.

**Xylose:** Wood sugar, component of thick liquor, base material for xylitol (caries inhibiting sweetener).
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The Lenzing Group has been living sustainability for years now. We are convinced that responsible ecological and social action is a precondition for our success. Improvement of our economic, ecological and social performance is a result of our corporate strategy which is consistent with the concept of sustainability.

We are a global company and we implement our high environmental standards in all our production processes at all locations. Careful utilization of resources, reduction of emissions and careful management of energy sources are some of our principles for ensuring ecological sustainability.

Our most valuable asset, however, are our staff members. Without their effort and performance our enormous success of the recent years would certainly not have been possible. Our social responsibility not only means continual training and further education, the organizational and creative setting of opportunities for personal growth and development, but also the steady improvement of safety standards in the working environment.

It is our goal to maintain our dialog with all interest groups and to take their needs into consideration. That is why the Lenzing Group is a responsible partner for the local communities at its sites and supports non-profit projects there.

Well targeted measures allowed us to reach our sustainability goals. As part of capacity expansion at Lenzing we set
new industrial standards: The successful introduction of a new technology for sulfate reduction as part of an anaerobic waste water treatment plant. Moreover, an additional air purification plant was put into service.

It is our future goal to continually improve our economic, ecological and social performance and to thereby prove ourselves as a company group committed to the principles of sustainability.

Peter Untersperger
The Lenzing Group, an international corporate group with headquarters in Upper Austria, is present on world markets. With quality and innovation, the company sets standards in the field of man-made cellulose fibers. Lenzing fibers, made of wood, a renewable raw material, are used by the textile industry – for garments, home textiles and technical textiles – as well as by the nonwovens industry.

With its more than 65 years of experience in the production of fibers, the Lenzing Group is the only manufacturer that unites all three generations of man-made cellulose fibers – from viscose to modal and lyocell fibers.

The success of the Lenzing Group is based on a consistent focus on its customers, combined with its leadership in technology and quality. Its economic strength is secured both by focusing on special fibers and by its good position with respect to costs.

In addition to its core business fibers the Lenzing Group also operates in the business sectors paper, engineering and systems construction, and plastics.
Lenzing Group 2004

Sales:
EUR 871.1 mill.

Staff: 4,845

Production:
414,000 tons of fibers

Chemicals
- Sodium sulfate
- Acetic acid
- Furfural

Energy
- Electricity
- Heat
- Utilities
- Disposal

Engineering
- Viscose technology
- Pulp and environmental technologies
- Separation technology
- Automation
- Systems construction and industrial services
- Marking systems
- Electronics

Plastics
- Films, tapes, fabrics and laminates
- Fibers and yarns for filtration
- Yarns for braided packings

Paper
- Recycling paper
- Poster paper
- Envelope paper
The prominent position of the Lenzing Group is based on several cornerstones:

- Long-term raw-material supply secured
- Only manufacturer of cellulose fibers with global activities and production sites in all relevant regions of the world
- Only corporate group worldwide with cellulose fibers as its core business
- By far the largest research and development center for the cellulose fiber industry worldwide
- Three generations of cellulose fibers under one roof: Viscose, Modal and Lyocell fiber
- Technology leader in the cellulose fiber industry
- Lenzing/Austria: the world's largest integrated cellulose fiber plant – therefore also leadership in pulp production know-how
Within a period of 15 years the Lenzing Group has developed from a European textile fiber manufacturer into a global supplier. This success is based on a clear positioning in world markets:

01. Consistent expansion of the special-products segment.

02. Customer-orientation through applications support and services with a global reach, as well as a high reliability of deliveries.

03. A high rate of innovation through close involvement with the textile chain, all the way to the retail trade.

04. Absolute focus on quality for all Lenzing products.

05. Lenzing manufactures branded articles in the business-to-business sector.

Building on its market position, Lenzing pursues a globally oriented growth strategy with consistent development of its technology leadership.
Innovative technologies and major investments into environmental protection have made the Lenzing Group the quality and technology leader for man-made cellulose fibers. The milestones along this road are: Founding new companies and introducing new processes.

1882
Industrialist Emil Hamburger operates a papermill in Lenzing.

1938
Zellwolle Lenzing AG founded. Viscose fiber plant construction starts.

1949
Acquisition of the Lenzing Pulp and Paper Factory. Magnesium bisulfite technology for pulp production developed at Lenzing allows for the recovery of wood cooking process chemicals and reduces pollution.

1982
December: South Pacific Viscose (SPV) goes operational in Purwakarta, Indonesia.

1983
Vapors condensate extraction developed and implemented: Acetic acid and furfural are obtained from wood components, water pollution is further reduced.

1985
First listing of Lenzing shares at the Vienna Stock Exchange.

1987
Tencel fiber pilot plant
Lenzing and Courtaulds acquire basic patents for solvent-based cellulose fiber production.

1988
Tencel fiber pilot plant
After almost ten years of research Courtaulds plc, a British company, starts lyocell fiber production at a semi-commercial pilot plant at Grimsby/Great Britain.

1992
First large-scale plant in United States
Courtaulds starts up its first commercial plant in the USA in Mobile, Alabama. The fiber is marketed as TENCEL®.

1998
Courtaulds starts its second production plant for TENCEL® at Grimsby/ Great Britain.
Challenges

- Textile industry globalization
- Shift of customer base and textile processing chain to Asia
- Growing interfiber competition
  (cotton, polyester vs. viscose, lyocell, modal)

Lenzing Group

1986/89
Construction of a multi-stage biological waste-water treatment plant.

1987
Construction of a fluidized-bed boiler for burning sludge, bark and other biogenic fuels.

1992
A global first: Commercial ozone bleach plant for pulp goes operational.

1990
Lyocell fiber pilot plant
After more than five years of preparation, pilot production of lyocell fibers begins at Lenzing. Key customers are integrated into the development process to optimize the production process of the new fiber.

1995
Ground breaking ceremony at Heiligenkreuz in Burgenland
Construction work for Lenzing’s first commercial lyocell fiber plant begins.

1997
Production start at Heiligenkreuz
The plant goes operational with an annual capacity of 12,000 tons.

1997
A European first: The commercial lyocell plant at Heiligenkreuz goes operational.

2000
End of patent litigation
After many years of litigation, Lenzing and Courtaulds mutually recognize their respective technological developments. The licensor of the basic patent is party to the agreement. Mutual exchange of know-how begins.

2003
Heiligenkreuz expansion
Lenzing starts doubling capacity to 40,000 tons per year. Start up of the new plant scheduled for 2004.

2004
Acquisition of Tencel
Lenzing takes over the Tencel group of companies. Lyocell production capacity is tripled to 120,000 tons per year.

2005
Construction work for the Nanjing viscose production plant in China starts.


2000 2004 2005

Lenzing Lyocell

2003
Heiligenkreuz expansion
Lenzing starts doubling capacity to 40,000 tons per year. Start up of the new plant scheduled for 2004.

2004
Acquisition of Tencel
Lenzing takes over the Tencel group of companies. Lyocell production capacity is tripled to 120,000 tons per year.
Worldwide fiber consumption:
- Nonwovens: +13%
- Textile fibers: +12%

Growth market Asia:
- Growth rate of nonwovens: +30%
- Growth rate of textile fibers: +15%

Important consumer market
- Highest per-capita consumption of finished textiles and nonwovens end products (wiping cloths, tampons and others)
- Presence of important brands and commercial chains
- Lenzing Plastics: PTFE (dental floss)

Western Europe:
- Focus on innovation and design in the textile industry
- Specialty fibers for home textiles and lingerie
- Promising core market for nonwovens
- Important consumer market
- Lenzing Technik and Business Unit Paper: core market
- Lenzing Plastics: fabrics and laminates

Source: Lenzing AG
Production Site
Lenzing, Austria
The largest integrated pulp and viscose fiber production site worldwide
Staff: approximately 2,800
Capacity: 200,000 tons of fibers per year
Plastic products, systems construction and engineering, paper products

Sales market China:
Booming fiber market
- The world’s most important sales market for Viscose and Modal fibers
- Consumption: approximately 800,000 tons of viscose staple fibers
- 40% share in world consumption of chemical fibers
- Emerging market for special fibers
- Important Lenzing Technik projects (1990s: pioneer in China)

Per-capita fiber consumption
International average: 9.8 kg/year
USA: 39 kg/year
Western Europe: 22 kg/year
China: 10 kg/year
Source: Lenzing AG

Production Site
Heiligenkreuz, Austria
Lyocell fibers (TENCEL®)
Staff: ca. 180
Capacity: 40,000 tons of fibers/year

Production Site
Nanjing, China
Under construction
Staff: ca. 500 (from 2006)
Capacity (as of 2006): 60,000 tons of viscose fibers/year

Marketing and Sales Office
Lenzing Fibers Shanghai
Logistics

Marketing and Sales Office
Lenzing Fibers Hong Kong

Production Site
Purwakarta, Indonesia
Viscose fiber production
Staff: approximately 1,500
Capacity: 150,000 tons of fibers per year

Indonesia:
- Largest viscose market for Lenzing

Lenzing Technik Representative Office Beijing
Japan Representative Office, Tokyo
Japan:
- Innovative market for special fibers (textile and nonwoven fibers)
- Lenzing Plastics: PTFE (filtration)

Sales Office
Jakarta, Indonesia

Korea:
- Innovative market for special fibers

Sales Office
Jakarta, Indonesia

Sales Office
Shanghai

Sales Office
Hong Kong

Marketing and Sales Office
Lenzing Fibers Shanghai
Logistics
The fundamental goal of sustainability is simple: Entrepreneurial action must create a balance between environment and society – for today and for tomorrow. Achieving sustainability is a long-term process. Ecological, social and economic concerns, occasionally conflicting, must be reconciled. Long-term and competitive value addition in production, fair distribution of resources, social responsibility and appropriate working environments are the central issues.

**Sustainable corporate citizenship**
- fosters the trust of customers and suppliers,
- deepens the relationships with all stakeholders,
- increases long-term economic growth,
- enhances social and ecological awareness.

The Lenzing Group operates globally with a long-term profit perspective – a company close to the market in all fields of activity. This market flexibility is based on our organization into
seven business units. The demands of the individual markets are forever changing, this requires room for independent initiatives by these individual units. The ability to make their own commercial decisions is the key to their success.

Corporate guidelines are provided for those areas that apply to all business units, such as:

- Finance
- Information technology (IT)
- Human resources
- Communication.

Moreover, the company sets standards that are now applied in a broad range of sectors. They will be fully implemented in a gradual process. Among these are:

- Quality management (ISO 9001)
- Safety standards (safety and health philosophy, OHSAS 18001)
- Environmental standards (environmental policy, ISO 14001)

As the world’s largest producer of cellulose fiber, continuous product innovation, process optimization and active market development are the basis of our future. Economic sustainability, environmental and social awareness, as well as respect for cultural diversity are the guiding principles of our corporate activities and of our management leadership.

The practical implementation of these aims is the responsibility of the individual business units. They decide on the means best suited to the unique demands of their tasks in order to achieve our common goals.
In Dialog with our Stakeholders

Enterprises do not exist in isolation, they are interconnected with many other companies, groups and individuals. All these stakeholders contribute to defining the success of a company. Therefore lasting success of an enterprise must consider the social, cultural and economic environment when taking commercial decisions.

Economic activity has become a matter of public concern, more and more dealing with the claims of diverse groups of society. Balancing these differing needs is a central task of corporate management. The social responsibility of enterprises includes the marketing of socially and environmentally sound products and their production processes. The degree of customer perception of these qualities is a decisive success factor, next to technological competence. The more fundamental an innovation, the more stakeholders must be considered in corporate decisions making.

Stakeholders of the Lenzing Group

The integration of stakeholders and the development and maintenance of relationships with the different groups is an important element of the long-term success of the company.
Business Unit Textile Fibers – In dialog with the textile processing chain

The complexity of communication with the diverse stakeholders becomes evident when looking at the lines of communication of the business unit Textile Fibers. The network of sites, offices and representatives of this business unit not only attends to direct clients (spinning mills), but also to the textile chain as a whole:

Moreover, close contacts are maintained with:
- chemical industry (manufacturers of auxiliary materials and dyestuff)
- diverse textile associations
- independent textile institutes (for example the International Textile Research Institute in Hohenstein, Germany, or the Institute for Textile Chemistry and Chemical Fibers in Denkendorf, Germany)
- a series of academic partners (EU projects, joint research projects, as well as industrial projects up to market introduction)
- engineering (manufacturers of machines for spinning, knitting, weaving, as well as dyeing and finishing)
- public authorities: relationships here touch on a broad range of topics concerning patent rights, the environment and issues of certification
- press: communication with trade publications is another aspect of the network of business unit Textile Fibers
Responsibility for Economic Success

Continuous increase of production capacity.

Profound knowledge of international fiber markets.

Core competence in wood, cellulose and fiber chemistry as the basis for active research.

Innovative products for promising new business opportunities.
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Responsibility for Economic Success

Business development in the Lenzing Group

Growth and innovation are at the core of the Lenzing business development process.

Our long-term prosperity is secured by continuous investment in the future. We are committed to providing the resources and expertise required for developing new business streams through the Corporate Innovation Group and to accomplishing the goal of strategic growth by mergers, acquisitions and organic development.

The Lenzing Group has committed resources and expertise to the fields of innovation, strategic planning and business development in order to provide momentum for progress.

These teams work together with the market development and Research and Development groups of the individual business units. It is their task to deliver the medium term strategic objectives which have been identified in the business planning process.

The continuous development of our manufacturing capacity is a key feature of our development process. Production capacity at the Lenzing site alone has almost doubled in the last 10 years. Concurrently, our capital investment program has focused on improving productivity and efficiency in every aspect of our manufacturing processes.

New products and new production technologies require protection by a corresponding intellectual property rights portfolio. This portfolio secures our competitive edge in manufacturing and marketing. It offers specific opportunities for company growth through expansion, collaboration and licensing revenue.
The Lenzing research center is the key to our sustainable innovation process. Developing an international collaboration network with academic research partners keeps us in touch with the latest developments in science and state-of-the-art technology. It supplements those internal development activities with long-term and fundamental research potential.

Our knowledge of the international fiber markets and our core competence in wood, cellulose, and fiber chemistry are the basis for active research, which identifies new applications, additional market segments and products for promising new businesses. Substantial efforts are undertaken to increase the utilization of wood, our major raw material, by converting its non-cellulose constituents to value adding chemicals.
Responsibility for Economic Success

Cellulose Fibers

The annual global demand for fibers amounted to 62.4 million tons in 2004, which represents an average per-capita consumption of 9.8 kg. Fiber demand for textiles and non-wovens will continue to grow by 3-4% p.a. triggered by both the growth in population and the improved standard of living in the developing and newly industrializing countries.

Fiber materials are split into:
- Natural fibers originating from plants or animals such as cotton, wool or silk
- Synthetic fibers based on mineral oil such as polyester, polyamide or acrylics
- Man-made cellulose fibers based on wood such as viscose, modal, lyocell or cellulose acetate.

Synthetic fibers account for 57% of the global fiber production, natural fibers for 38% and man-made cellulose fibers for 5%. In textile products synthetic fibers provide durability and easy care properties whereas cellulose fibers provide wear comfort and moisture management. Therefore blends of synthetic and cellulose fibers are well established for many applications.
Cotton is still the dominating cellulose fiber in the textile industry. However, the agricultural area for growing cotton has not significantly changed during the past 50 years and competes with the demand for fertile land for food production especially in the developing and newly industrializing countries. An increase in cotton yield has only been achieved by means of artificial irrigation, the extensive use of fertilizers, pesticides, herbicides and defoliants and the genetic modification of cotton plants. In view of the predicted increase in demand for cellulose fibers, cotton production will probably not be able to cover this demand by pursuing the same strategy as in the past. Additional land will not be available due to the priority for food production, artificial irrigation already leads to a shortage of water and the extensive use of pesticides creates significant environmental problems and health concerns and will not allow a substantial further increase in the yield.

There is, however, an increasing share of world cotton acreage planted with genetically modified cotton which leads to higher yield and reduced production costs. It remains to be seen whether this trend will continue in the coming years, as there is a multitude of consumer concerns with regard to GM products, especially in industrialized countries.

This gap between demand and supply of cellulose fibers can be filled by viscose, modal and lyocell. These fibers consist of pure cellulose – like cotton – but they are derived from the natural raw material wood. During industrial production of man-made fibers wood is processed into wood pulp in the first step and then converted into viscose and modal fibers according to the traditional viscose process or into lyocell fibers by means of the novel lyocell process. Unlike cotton, man-made cellulose fibers can be manufactured in a broad variety of physical dimensions tailor-made and in consistent quality for the downstream industry.

Viscose is appreciated for its softness and its water retention capability, which is twice that of cotton. Due to its purity viscose is the dominating cellulose fiber in nonwoven hygiene applications. Modal – the second generation cellulose fiber characterized by its superior textile care properties – is the preferred material for high quality lingerie and knitwear. Lyocell represents the latest generation of cellulose fibers for various textile and nonwoven applications. It is characterized by a unique nanofibrillar structure, which provides superior moisture management properties. TENCEL® is the brand name for lyocell fibers produced by Lenzing.
Responsibility for Economic Success

Ecological Aspects of Cotton

The average yield for cotton is about 700 kg/ha. The annual growth of a natural European forest – sustainably managed – produces twice the amount of cellulose per ha. So even without artificial irrigation, fertilizers and pesticides the biosynthesis of cellulose in a natural forest is much more efficient than in a cotton plantation.

Traditionally, high amounts of pesticides are used to achieve high yields in cotton production. It has been estimated that up to 25% of the world’s pesticide production is used to grow cotton. In recent years new technologies such as genetic modification were introduced for pest control. In the United States – one of the major cotton producing countries – more than 70% of the cotton plants are genetically modified. More environmentally sound concepts like organic cotton or green cotton, which avoid the use of pesticides and fertilizers, are not able to produce fibers at competitive prices and their market share is insignificant.

Viscose, modal and lyocell fibers are manufactured by industrial processes, which consume a significant amount of process water. Specific figures for Lenzing fibers are between 100 m³/t for lyocell and up to 500 m³/t for viscose and modal. However, compared to the amount of water used for the artificial irrigation of cotton, these figures are still very low. For cotton farming figures between 7,000 m³/t in Israel and 29,000 m³/t in Sudan are reported. Extraction of water from Lake Aral for artificial irrigation will probably make the lake disappear in the near future.

A couple of decades back the industrial production of viscose was associated with significant pollution problems. The technologies applied in the Lenzing fiber plants have made the production processes clean by recycling of waste streams, recovery of by-products and introduction of efficient purification systems for aqueous and gaseous emissions. Tremendous efforts were made and novel technologies had to be developed to reduce the environmental impact of pulp and viscose fiber production. By integration of pulp and fiber production on the Lenzing site 80% of the process energy is provided by biogenic fuels (see chart “Fuel Mix at Lenzing AG” page 64). The new lyocell process has been designed as a closed loop process from the very beginning in order to minimize emissions and was awarded the “European Award for the Environment”.

Synthetic fibers are manufactured from synthetic polymers, which are based on mineral oil. Oil is not only the major raw material, significant amounts of oil and gas are also used as fuel. While total energy consumption for synthetic and cellulosic fibres is of similar magni-
tude, a substantial proportion of the fuels for cellulose fibers at the Lenzing site is derived from biomass. Another important difference between synthetic and cellulose fibers is biodegradation. Cellulose fibers are completely biodegradable under aerobic and anaerobic conditions and are decomposed by naturally occurring micro-organisms into CO₂ and water while synthetics are not accessible to microbial degradation.

**The Role of man-made Cellulose Fibers in Nonwovens**

Whereas the European textile industry went into decline and migrated into low-cost countries, the European nonwovens industry has been enjoying steady and sustainable growth for the last 20 years.

Viscose and lyocell are the dominating cellulose fiber materials, providing absorbent properties to a wide variety of nonwoven products, from dry or premoistened wipes and hygiene products to highly sensitive applications, such as surgical drapes and gowns, wound care products or tampons. The particular advantage of man-made cellulose fibers in all these nonwoven applications lies in their exceptional purity, their superior absorbency and their softness and opacity. For many single-use products disposability is a crucial factor as well. Nonwovens manufactured from pure cellulose fibers by hydroentanglement or needlepunch technology are fully biodegradable.

### Comparison of the Absorbency of Fiber Types:
(water retention acc. to DIN 53814)

<table>
<thead>
<tr>
<th>Fiber Type</th>
<th>Water Retention (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polypropylene</td>
<td>0</td>
</tr>
<tr>
<td>Polyester</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>Cotton</td>
<td>38 – 45</td>
</tr>
<tr>
<td>Modal</td>
<td>60 – 65</td>
</tr>
<tr>
<td>Lyocell/ENCEL®</td>
<td>60 – 70</td>
</tr>
<tr>
<td>Viscose</td>
<td>90 – 100</td>
</tr>
</tbody>
</table>
Our Technologies

Cellulose is generated during photosynthesis. It is the most important building material in nature and available in abundance.

Wood, the renewable raw material, is the basic material for all fibers produced by the Lenzing Group.

In Austria, where Lenzing has its own pulp mill integrated with its viscose fiber plant, beech wood from sustainably managed forests are used as raw material.
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Wood – The Renewable Raw Material

Wood, the renewable raw material, is the basic material for all fibers of the Lenzing Group – from viscose to lyocell fibers. The pulp obtained from wood and the fibers produced from pulp are therefore materials derived from nature. The production of Lenzing fibers is compatible with nature – it is sustainable.

The pulp and fiber industry is part of a natural carbon cycle. Cellulose is generated during plant photosynthesis. During this biochemical process, carbon dioxide from the air and water are transformed into organic substances with the help of solar energy and plants emitting oxygen. Cellulose is the most important building material in nature and available in abundance. Every year, some 40 billion tons grow worldwide. 0.3% of the total cellulose involved in this biological cycle is used by the pulp industry.

In Austria, where Lenzing has its own pulp mill integrated with its viscose fiber plant, beech wood is used as raw material. More than half of the wood comes from Austria, with the rest originating from surrounding countries. The wood is derived exclusively from forests that are managed sustainably, in keeping with forestry regulations.

### Origin of Wood 2004

- **Austria**: 54.8%
- **Others**: 0.3%
- **Romania**: 0.9%
- **Hungary**: 3.0%
- **Czechia**: 14.8%
- **Slovakia**: 16.9%
- **France/Belgium**: 1.8%
- **Germany**: 7.5%
Lenzing processes about 95% of the Austrian beech wood generated by thinning and selective cutting. For quality reasons, these industrial timber qualities cannot be used for high-grade products, such as furniture. As a major customer, Lenzing supports forestry in beech production and thereby contributes to maintaining these ecologically valuable mixed forests. When Lenzing buys pulp, the wood types our suppliers use include eucalyptus, acacia, fir, spruce and pine.
How would you describe your partnership with Lenzing?

Why is Lenzing as a quantity buyer of beech wood important to the Austrian Federal Forests?

How would you, as a partner of many years, rate Lenzing’s endeavor for sustainability?

Sustainability is a concept rooted in forestry. Where is sustainability on the priority list of your company?

To merely say that we tend a sustainable partnership to our mutual benefit would be an understatement. Lenzing and the Federal Forests have been dynamically developing their partnership. We created a new dimension of cooperation for our industry, which is characterized by its long-term perspective. We had the courage to actually leave the frame of quarterly, or at the most, annual contracts behind. We are now thinking in a different timeframe. This type of long-term contracting has become trend-setting for the timber industry as a whole.

We pursue a key client strategy. Lenzing is located close to our resources and therefore plays a very important role. In this particular case the logic of big player cooperation comes in as well. We can provide Lenzing with large quantities of beech wood of the desired quality. Vice versa, Lenzing is by far the biggest buyer of this product line. The pricing process for the delivered product is fair, the handling of business transactions is professional.

These efforts cannot be rated highly enough. The more the concept of sustainability gains admission into the value creation chain, the greater the credibility of companies actually striving for the implementation of ecological, social and economic ideals!

Right at the top. Sustainability is anchored in our mission statement, in our overall strategy and in our corporate culture. We took it to the operational level last year. Implementation is assessed and controlled by the Sustainability Balanced Scorecard developed by us. I maintain that the Federal Forests have developed into a sustainability enterprise of the first order in the last three years. They have become a model company for Austrian, and even European forestry.
In Dialog with Georg Erlacher –
CEO Österreichische Bundesforste AG

In a wooded country like Austria, the role of Austrian Federal Forests is a major one: With about 856,000 hectares it owns a tenth of Austria’s territory and 15% of Austria’s woodland. It is the biggest forestry enterprise and holds the largest area of hunting preserves and fishing waters. It also is Lenzing’s most important wood partner.

What does that mean in practical terms?

It means that we consider three dimensions. Our strategic and our operational activities are not just guided by economic considerations. We take into account the requirements and interests of the individual and of society at the same time. We protect and conserve nature and its resources. This stands to reason as forests by virtue of forestry legislation are multifunctional entities. Forests provide economic, ecological, welfare and recreational functions. At the same time they are habitats for animals and plants. We have to consider all these in our day-to-day operations.

What is your attitude towards certification?

The complete forest area of Austrian Federal Forests is PEFC* certified. We manage our forests according to the most exacting ecological standards. We continually develop these criteria and adapt them to the ever changing requirements.

Certification is necessary and beneficial. But there is still a lot of work to be done before the end consumers – and their awareness – are touched. To this end we will have to pull together – at the Chain of Custody!

Do you apply sustainability criteria in your supplier selection process?

There are no standardized criteria, but sustainability considerations continue to gain more and more weight in the decision making process. This applies to large scale issues, like logging contractors, as well to small scale issues, like the paper we use for printing our sustainability reports on. Our options are: To shape the awareness and the opinions of our stakeholders and to demand compliance with ecological and social standards, or to exclude companies from our selection that do not operate and produce according to the principles of sustainability.

* Pan-European Forest Certification: see page 43
Our Technologies

Pulp

The various production processes for viscose, modal and lyocell fibers require the raw material, pulp, to possess specific properties. There are only few manufacturers globally that produce dissolving pulp. The Lenzing Group sources pulp from Europe, America and South Africa. Transport is carried out by ship, wherever possible.

The Lenzing site produces the pulp required for fiber production at Lenzing itself and part of the pulp required at the Heiligenkreuz site in a plant employing the acidic magnesium bisulfite process. The plant’s ecologically sound production process and its high degree of utilization of the resource wood are exemplary. Pulp is bleached with oxygen, ozone and hydrogen peroxide, making the process absolutely chlorine-free. Downstream production steps produce marketable co-products, such as acetic acid, furfural and xylose. Thus more than half of the wood employed is converted into high-grade products. The remainder is used as the most important – biogenic – source of energy at the Lenzing plant.
In Dialog with our Partners: Sappi Saiccor

Lenzing is the world’s largest producer of cellulose fiber and Saiccor the world’s largest producer of chemical cellulose. This is a formula for a strong, growing and mutually beneficial relationship lasting decades. Lenzing’s environmental footprint reflects this global standing.

Sappi recognizes that to provide the highest shareholder return and to be the outstanding company in the global pulp and paper sector, it must actively manage and measure its contribution to sustainable development. Sustainable development is part of Sappi’s strategy and it is given an extremely high priority, both with regards to Sappi’s own operations as well as those of its business partners. This commitment is reflected at the Sappi Limited Board and senior management level and at the different operational levels of the organization.

Sappi is making steady progress towards introducing sustainable development at an operational level throughout the organization, but recognizes that a lot more work still needs to be done. Examples of visible actions in this regard include:

- **Leadership:** Creation of the Group Sustainable Development Management Team (GSMT) tasked with driving sustainable development in the organization.
- **Leadership platforms:** Participation in global leadership platforms, Sappi is a member of the World Business Council on Sustainable Development. Technology and innovation as well as investment decisions are influenced by sustainable development considerations, e.g. for two years in a row Sappi has been listed on the JSE-SRI index.
- **Certification and mutual recognition:** Sappi makes use of independent certification organizations to enhance environment management. For example, about 70% of timber from Sappi Forests is FSC certified and downstream mills such as Saiccor have attained the FSC Chain of Custody certificate.
- **Corporate social investment programs:** Sappi has made significant impact on the regions in which it operates with its numerous social investment programs.

Sustainability depends on the performance of the entire value chain and when choosing partners, Sappi takes a long-term view of these partners. This entails taking a holistic look at the social, economic and environmental attributes of each of these partners.

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1) Johannesburg Stock Exchange-Social Responsibility Index: see glossary page 65
2) See glossary page 65
Fiber Production

A chemical-technological process consisting of several process stages is used to produce fibers from pulp using viscose technology. The individual steps are controlled electronically and monitored continuously. This is essential in order to control the processing properties of the viscose to achieve the desired fiber quality. When mixed with caustic soda, the pulp is transformed into alkali cellulose. Cellulose xanthate forms when carbon disulfide is added. The xanthate is dissolved in diluted caustic soda, filtered and pressed through the fine holes of the spinneret into the acidic spinning bath. In a last step, the fibers are stretched, cut, bleached, washed, dried, and ultimately pressed into bales. Sodium sulfate is the by-product derived by using sulfuric acid and caustic soda.
The lyocell process differs from viscose fiber production in that a direct solvent process is used for the cellulose. N-methylmorpholine-N-oxide (NMMO) is used as the solvent. The pulp is finely dispersed in concentrated aqueous NMMO and dissolved. The excess water is evaporated to form a solution of cellulose. The highly viscous solution is filtered and then pressed through spinnerets into an aqueous spinning bath, where cellulose precipitates in the form of fibers.

The production process for lyocell is characterized by an almost completely closed solvent cycle. The spinning bath is cleaned, the excess water is removed by evaporation and the NMMO solvent is then recovered for re-use. The water generated during evaporation is used in the washing process. On account of the closed-loop process, the solvent necessary for the production process is recovered almost completely. The remaining, minimal emissions are treated before disposal.

**TENCEL®** is the Lenzing brand for lyocell fibers.
Environmental Responsibility

With its high environmental standards, the Lenzing Group plays a leading role in the pulp and viscose fiber industry.

Lenzing is continuously investing into adequate production technologies and optimizing measures that reduce emissions.

We are engaged in a forward-looking environmental policy, which encompasses the responsible, provident and careful use of all resources as the central feature of sustainability.
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Environmental Policy

The Lenzing Group is committed to the principles of sustainable development. We strive to secure the ecological foundations of life, while giving due regard to social equilibrium.

We practice a foresighted environmental policy. This includes the responsible, provident and careful use of all resources as the central feature of sustainability.

We manufacture products made of renewable raw materials, with a high rate of yield. Our production processes and our energy production serve as models of ecological management.

We continuously monitor and evaluate the environmental impact of our production by internal and external assessment.

We consider environmental aspects before taking decisions and making investments. Before employing new materials, we evaluate their ecological compatibility and test new products for their environmental impact already in the planning phase.

We strive to anticipate the impact of new ecological findings on future legal and technological developments.

We are committed to continuously improving our environmental performance.
We assume responsibility

We take our social and ecological responsibility for society seriously. In addition to our commitment to comply with existing environmental regulations and environment-related ordinances, we expect a large measure of individual responsibility from our staff members.

A safe work environment, health issues and environmental protection are of the same top priority as economic concerns. We conduct voluntary audits in order to improve safety, health and environmental standards even further.

We are open to and ready for dialog

We are engaged in ongoing dialog about environmental issues with representatives from politics, public authorities and the general public. We want to be open to and accessible for our direct neighbors as partners.

We inform staff members and the general public of our guiding principles and our environmental protection efforts.

We are a customer-oriented company

We undertake every effort to manufacture products that are ecologically sustainable and economically successful, products that are safe to use and safe to dispose. We want to satisfy our customers who expect ecologically sound products.
Energy Production in the Lenzing Group

Energy production at the Lenzing Group sites is assured and state-of-the-art.

In particular the larger production sites are equipped with highly efficient energy production units and multi-fuel functionality.

As far as possible, the plants are equipped with combined heat and power generation. Fuel efficiency is therefore high.

Sites

**Lenzing, Austria**

- **Steam and hot water supply:** 100% self-generated
- **Electricity supply:** 94% self-generated, 6% external and water power – high level of co-generation
- **Plant units:** 3 recovery boilers
  - 2 natural gas boilers
  - 2 fluidized bed boilers (together with RVL plant)
  - 7 steam turbines
- **Fuels:** Thick liquor, thick bleaching liquor bark, sewage sludge, internal waste material external waste material (RVL plant) oil, natural gas, coal
- **Installed capacity:** 487 MW thermal/101 MW electrical
- **Electricity consumption:** 65 MW (average)

**Heiligenkreuz, Austria**

- **Steam and hot water supply:** 100% self-generated
- **Electricity supply:** 100% self-generated (excl. downtime) co-generation
- **Plant units:** 3 steam boilers
  - 2 gas turbines with heat recovery boiler
- **Fuel:** Natural gas
- **Installed capacity:** 74 MW thermal/10.5 MW electrical
- **Electricity consumption:** 5.9 MW (average)
Biogenic fuels are used to the greatest possible extent. This is the case especially at the Lenzing site, where cellulose production is integrated into the process. Moreover, the Lenzing site uses internal and external waste materials for its energy production. (See chart “Fuel Mix at Lenzing AG” page 64).

<table>
<thead>
<tr>
<th>Location</th>
<th>Steam supply</th>
<th>Electricity supply</th>
<th>Plant units</th>
<th>Fuels</th>
<th>Installed capacity</th>
<th>Electricity consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Pacific Viscose, Indonesia</td>
<td>Self-generated</td>
<td>Self-generated and external</td>
<td>3 fluidized bed boilers, 4 oil powered boilers and 2 heat recovery boilers</td>
<td>Coal and oil</td>
<td>135 MW thermal/19.2 MW electrical</td>
<td>20 MW (average)</td>
</tr>
<tr>
<td>Grimsby, Great Britain</td>
<td>Steam and electricity supply: 100% external power and steam are integrated into a co-generation power plant on the adjacent site</td>
<td>100% self-generated</td>
<td>2 plants</td>
<td>Fuel: Mainly natural gas, occasionally oil</td>
<td>56 MW thermal</td>
<td>7.1 MW (average)</td>
</tr>
<tr>
<td>Mobile, Alabama, USA</td>
<td>Steam and hot water supply: 100% self-generated</td>
<td>Electricity supply: 100% external</td>
<td>2 steam boilers</td>
<td>Fuel: Natural gas</td>
<td>Installed capacity: 19.2 MW electrical</td>
<td>Electricity consumption: 6.6 MW (average)</td>
</tr>
</tbody>
</table>
Environmental Plants in the Lenzing Group

The type and scope of the environmental protection equipment implemented by the Lenzing Group depend on the local conditions. In particular, production technology, immission control requirements (service capability of waters) and the legal environment play a decisive role.

The environmental protection equipment at the Austrian sites is the most highly evolved. The reasons for this are the extremely restricted capacity of the site water supply and the environmental regulatory standards, which are generally high.

Moreover, it is essential that the production of lyocell fiber creates far less water-borne emissions than that of viscose fiber. Air-borne emissions are negligible for the lyocell fiber process.

Sites

**Lenzing, Austria**

- Multi-stage biological waste water treatment plant
- Elimination of sulfates: gypsum precipitation and anaerobic biological reduction of sulfates
- Mechanical pre-processing
- Neutralization
- Primary clarification, zinc precipitation
- Dual stage biological waste water treatment plant
- Precipitation filter
- Sludge treatment (thickening, dewatering, combustion)
- External slag utilization
- 2 cooling towers (cooling water and waste water)

**Heiligenkreuz, Austria**

- Equalizing tank
- Internal waste water treatment plant
  (single stage biological waste water treatment plant)
- Discharge of pre-processed waste water into communal sewage plant
At Lenzing Group sites producing viscose fiber (Lenzing, Austria and Purwakarta, Indonesia), several waste gas purification technologies like Sulfosorbon® and Supersorbon® systems, CS₂ condensation and catalytic combustion are employed for minimizing atmospheric load. These systems serve the recovery of sulfurous compounds, as well as the substantial reduction of H₂S and CS₂ emissions.

Since 2004 both viscose productions have been equipped with modern Topsoe plants for catalytic waste gas combustion. Moreover, the weak odorous gases from fiber production are used as combustion air for energy production boilers. This further reduces sulfur emissions.

At the Lenzing production site, the sulfurous gas emissions from the pulp process are covered completely by the odorous gas collection system and burnt in the recovery plants.

The production of lyocell fibers generates no gaseous emissions, due to the environmentally sound production process.
Awards and Certificates

- ÖKO-TEX Standard 100 Certificate
  “Confidence in Textiles – Textiles Tested for Pollutants” (Product Class I, Babies) for all Lenzing fibers

- Responsible Care
  “Initiative for Health, Safety and the Environment” – awarded by the Austrian Association of the Chemical Industry on 11 July 2000

- Certification of the quality management system according to ISO 9001

- Certification of the environmental management system according to ISO 14001

Eco Label of the European Commission
The Brussels “European Flower” proves the ecological technology leadership of Lenzing fibers. The European Eco-Label has been a symbol for environmentally friendly products since 1992. It allows consumers in the European Union, Norway, Liechtenstein and Iceland to identify environmentally friendly products such as Lenzing fibers. In December 2002 the European Eco-Label was for the first time awarded to a fiber manufacturer.
European Award for the Environment
This prize was awarded to Lenzing Lyocell (today Lenzing Fibers GmbH) in the year 2000 by the European Union. The award criteria include consideration of ecological and social elements by the corporate management for products, technology and international partnerships. In this context the focus is on the sustainable protection of the environment resources.

Panda Award (WWF Austria)
This prize was awarded in recognition of Lenzing’s support for the WWF objectives, especially the WWF Water Program, as well as for its special achievements and commitment to nature conservation.

PEFC Chain of Custody Certificate
PEFC (Pan-European Forest Certification): global labeling of wood from ecologically, economically and socially sustainable forestry. An initiative of the private forest and timber industry based on the consensus of all substantial interest groups. These groups pursue the idea of sustainable forest management on a national and regional level.

Chain of Custody: verification management of certified wood, from forest to final product. It ensures that only products manufactured from wood obtained from sustainable utilization receive the PEFC label.
Environmental Responsibility

In Dialog with our Partners: Marks & Spencer

Mike Barry has been Sustainable Development Manager at the UK retailer Marks & Spencer since the year 2000. In the middle of 2005 he was appointed “Head of Corporate Responsibility”. He provides the vision and the energy to effect change and to ensure a leading and efficient approach to sustainability across his company.

His wide range of issues covers sustainable fish farming, data privacy concerns, genetically modified foods, fair-trade, forestry, and cotton cultivation, to name but a few.

I’d consider Lenzing to be one of our key fiber partners. We have well developed links with the Lenzing team in the UK and are well supported on product developments and technical support.

Yes, we believe that to be successful in the future we will have to balance economic, social and environmental issues. As a retailer we are exposed to just about every conceivable sustainable development issue somewhere in our business, from animal welfare to labor standards, fish sourcing to pesticide reduction, fair-trade to wood sourcing. For a key supplier of ours to take the lead on defining what sustainability means to it is a great assistance at a time when we have so many issues to manage.

We do not use the words Sustainable Development within our business. For our customers, employees and shareholders we talk about trust. Trust that we will treat them fairly and honestly. Trust that we will operate responsibly in our supply chains and minimize our impact on the environment and society. Trust is one of our five core brand values, it always has been and always will be. Our challenge today is not whether we do trust but rather how we do it. Our customers have been very clear with us, they expect us to provide great quality, value, service and innovation, but only if we do it in a trustworthy manner. Trust can only get more important for us and our customers as the ability of governments to regulate global supply chains diminishes, consumer confidence in business remains at relatively low levels and the number of social and environmental issues associated with retail and its supply chains grows.
Have you defined criteria for your selection of suppliers?

In many areas yes. Sometimes these criteria are to do with single issues – we only use free range eggs in our food business (250 million per year), we have banned 60 pesticides in fruit and vegetable production and we do not allow genetically modified ingredients in any of our food. In other cases we expect our suppliers to operate more holistic systems that touch on wider aspects of supplier management e.g. managing labour standards in factories and sourcing fair-trade products. However, we have yet to set over-arching sustainability criteria for whole product ranges and supply chains. We are thinking about how we do this though. For example, we have a researcher who is in the middle of a four year project to look at how we source food sustainably.

Do your customers appreciate goods from sustainable processes, i.e. are they prepared to pay more for higher (sustainable) value?

Our customers have very high expectations of us on trust but they also have very high expectations of us on value for money. Where our customers believe that our products offer clear and demonstrable benefits (whether in design, quality or functionality) they will pay more for a product. If customers are to pay more for sustainable products the reasons must be clear and compelling. We have already used trust to differentiate our eggs (all free range), the coffee sold in our 190 cafes (all fair-trade) and milk (all sourced from known farmers paid a stable price). In each case trust is reinforcing the differentiation of our products and our brand.

In the very competitive economic environment of today the price of goods seems to be one of the most critical success factors – considering that, what do you think will be the importance of sustainability in the future?

Economic value is a key part of sustainability, holding or even reducing prices is something we must strive to do constantly. Sustainability is not about making products more expensive it is about making products smarter. By operating more efficiently we reduce the impact on the environment but also the costs of manufacture. By operating sustainably we can demonstrate that our products have a greater value for our customers. But we cannot assume any of this will come to pass automatically; we must work hard to demonstrate our products really are worth more.

Do you have any suggestions for Lenzing as a fiber producer on how to deal with the issue of sustainability?

I am hugely impressed already with what Lenzing has done to date. It is a leader on sustainable development in the fiber sector just as we are in the retail sector. The challenge for both of us is to communicate our difference to the marketplace in an engaging but honest way.
Responsibility for People

Our success is a result of the dedication, creativity and qualifications of our staff members.

Safety at the workplace is a high priority. It is integrated into all business processes.

We offer our staff members a working environment that empowers them to face the challenges of both their personal and professional lives.
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Human Resources as a Basis for Success

The pursuit of economic goals by the Lenzing Group does not, however, prevent our support for sustainable organizational policies which recognize our social and business responsibilities.

As a global organization we are committed to universal standards which go beyond the statutory obligations, and our policies and actions express the values we hold. It is through the people that work for the company that we demonstrate our desire to constantly improve our performance and our business practices. Our success is in no small measure a result of the dedication, creativity and qualifications of our staff members and above all on their motivation and willingness to learn.

Wherever we operate we show respect for the national culture and way of life with the real intention of understanding the special character of our host country. Our business should lead to improved quality of life for the people who are affected by our operations and we wish to be good neighbors in each of our locations.

We offer our staff members a working environment that empowers them to face the challenges of both their personal and professional lives in an optimum fashion. In this regard, promoting individual responsibility and independent action, as well as providing support for personal education and development are the priorities. The company supports these goals through many activities and measures in order to position itself as an attractive and reliable employer.

The diversity of the jobs offered, such as chemical process engineer, plastics processing engineer, testing and control engineer, system assembling technician, papermaker, textile technician, textile finisher, accountant, payroll accountant, project engineer, marketing manager, programmer, chemical engineer, research worker, laboratory worker, etc., is an incentive for many people to work for Lenzing at our sites around the world. In keeping with a farsighted Human Resources policy, the majority of skilled workers at the Lenzing site begin by being trained as apprentices in the company. With this policy Lenzing provides a valuable contribution to the stability of jobs in Upper Austria.
Great emphasis is placed on cooperation with schools and universities. Every year, some 300 students and pupils find summer jobs and traineeships in business and technical departments, as well as in research and production.

**These are some of the attractive features of jobs in the Lenzing Group:**

- Interesting and challenging work
- Development opportunities
- Team work
- Global remuneration schemes in conformity with local markets and oriented to success
- A high level of safety at work
- Occupational health services provided at all sites
- National and international advancement opportunities

Students at technical colleges are also offered job opportunities for compulsory traineeships, with Austrian students also signing up for work in Indonesia.

In addition, the Lenzing Group also commissions a number of doctoral theses and diploma papers on technical-chemical and marketing-related subjects. In the field of basic research, the company provides a valuable, practice-oriented contribution to science.
Responsibility for People

As at 31 December 2004, the Lenzing Group employed 4,845 people worldwide. The joint venture in China will result in a growth in employment in Asia during the next two years as the project develops.

One of the principles of our Human Resources policy is to make every effort to identify labor market trends, such as new forms of employment, alternative working time arrangements and modern forms of staff development.

We wish to promote the economic growth of our business and the long-term employment and personal development of our staff members through a variety of measures, including job assignments, education and training.
It is the responsibility of the relevant management and Human Resources to determine staffing requirements, but staff members are encouraged to take responsibility for their own development. We assign in-house staff to the majority of vacancies resulting from internal advertisements and selection processes. Intra-group job applications and placements are possible and encouraged, both within specific countries and internationally.

Specifically tailored special seminars and training courses are offered to allow staff members to further their qualifications. Specialized training options include courses on topical IT topics and different modules in the fields of metal, electrical systems, plastics, chemistry and languages. The seminar program for personal development comprises team training activities, communication, management training and courses to improve potential.

In Indonesia, too, a special training center offers employees adult training courses on an ongoing basis to allow them to become skilled workers.

Good ideas from our own ranks contribute towards increasing the company’s success. The Ideas Exchange is the contact point for creative staff members who actively think beyond their own immediate scope of work. Numerous suggestions for improvements have been beneficial to the company and staff members in the form of improved results, or bonuses for staff members.

Team orientation is an important building block of our Human Resources policy. For a long time, the Lenzing Group has relied on the principle of team work. In this type of organizational structure, the staff members cooperate with a high level of personal responsibility in order to reach the goals that they have set themselves together. This helps to achieve visible success that can be measured in economic terms. However, team work also leads to changes in the attitude and conduct of staff members. Working in a group leads to a better team spirit and better communication, while at the same time reinforcing the competency and qualification of the individual team member. The market challenges, but also internal differences can be solved more easily. This approach also promotes cooperation between staff members and managers.
Responsibility for People

Global Remuneration Schemes

As a global enterprise we require a competitive reward system to ensure that our staff members are remunerated in an equitable way in line with local market rates in each country in which we operate and are motivated to be successful.

On the basis of collective-bargaining agreements special remuneration systems have been developed for the different groups of staff members. The different job descriptions are used as a basis along with expertise, know-how, responsibility, environmental factors and experience to determine the value of the work provided. Depending on the location and the business activity, different remuneration schemes are applied.

Profit-sharing schemes, which are linked directly to the business results, round off the remuneration policy. This has helped to promote the general interest of staff members in the economic development of the company, as well as letting them share financially in success.

As a matter of principle, all our staff members enjoy equal opportunities free of discrimination, which, of course, also applies to remuneration.

Safety Philosophy

- Sustainable business success requires healthy employees.
- All workplace injuries and illnesses are preventable.
- All employees are expected to work safely, comply with safety regulations and assume personal responsibility. Managers are responsible for demonstrating safety leadership.
- We promote a safe and healthy lifestyle for all employees.
- We invest in safe systems and processes, safe and healthy workplaces and training.
- We benchmark ourselves against the best in our industry.

The safety philosophy is the backbone of all joint thinking and acting in the Lenzing Group.

Safety at the work place is the responsibility of all staff members; it is integrated into all business processes. This is reinforced, in particular, by safety committees, which meet...
Occupational Health Services

regularly to decide on targets, strategies and specific programs, to be implemented at each location across the Lenzing Group.

The health of staff members is a top priority. At each of the sites appropriate measures are taken to provide professional occupational health support.

When we send our staff members abroad we provide them and their partners and children with medical care tailored to their needs and the requirements of the country in question, including detailed medical check-ups before and during assignments.

An excellently equipped center for occupational medicine at the Lenzing site is available to staff members, both for treatment and prevention purposes. In addition to a number of health-promoting programs such as special medical examinations, preventive check-ups, stop-smoking projects, eye tests for computer workers, health exercises, muscle function tests and vaccinations, “Health Days” have been launched to promote the awareness of health among staff members by actively involving them in such topics as nutrition, exercise and stress prevention. The focus is on implementing the knowledge acquired in everyday practice.

In Indonesia the measures taken to contribute to the health of staff members include the provision of special health and sports facilities. In addition, the company’s concerns also extend to providing support to the surrounding villages where many staff members live, with regard to their drinking-water supplies.

Promoting Shared Transport

At the bigger sites, the company operates its own commuter system transporting staff members from and to their homes in the surrounding communities. Staff members pay the public transport rates, and the company covers the remaining costs.

Retirement

Most of the companies in the Lenzing Group offer pension schemes to help employees plan for their retirement. Staff members contribute to these schemes and when they retire they receive a pension, as a supplementary old-age pension.
Responsibility for People

In Dialog with our Partners: Rudolf Baldinger

My views on sustainability are very positive. The concept should enter all aspects of life. As a matter of course, it is in particular enterprises which are asked to build lasting relationships with customers, as well as with suppliers. This results not only in relationships built on trust, but also provides security to both parties. Sustainability is of particular importance, however, with regard to enterprise-staff relations: Only committed and motivated employees secure the long-term success of an enterprise.

At the Lenzing site, many employees have been with the company for decades – and often the tradition runs in the family. Annually up to 100, sometimes even more, members of staff are honored for 25, 35 or 40 years’ seniority. That means that employees feel good about the company and like to be “Lenzingers”. There are many reasons for that. The general income level is good and above that of other industries, the social contributions offered cannot necessarily be taken for granted elsewhere. Moreover, we try to enhance corporate community life by recreational events, such as excursions and championships which nurture communication and boost the company spirit. We all consider ourselves to be “Lenzingers”.

The age we live in is fast moving and profit-maximization clearly takes top-priority, overriding anything else. This situation is highly counterproductive to the issue of sustainability. It may lead to customers, as well as employees, feeling that they are being taken advantage of. Sustainability presupposes trust and long-term relationships with mutual benefit. For our company that means considering social needs, like taking care not to affect the environment in the course of production, carrying communal and regional interests, promoting culture and sports. It is especially important, however, to perceive employees as a very essential part of the whole.
How do you view the effect of the Lenzing Group internationalization on company staff?

Past experience has been mixed. The first major step towards globalization in Indonesia (SPV) has been very successful. Others have been far less so, with location Lenzing having to bear the burden, sometimes for years. Internationalization for many ‘Lenzingers’ means the opportunity to see the world – with all the prospects attached. It cannot be denied, on the other hand, that families living abroad for years, or inevitable family separation, do constitute major strains. Basically I view internationalization as necessary for a global enterprise, and I do hope that the location Lenzing, and our jobs, can be secured for the future.

How can the workers’ council and how can staff contribute to sustainable development?

We strive towards continuity for and with our employees. We start with vocational training for 40 young employees annually. Their training as skilled workers is very important for production. Moreover, advanced vocational training is very much encouraged by the workers’ council, as this enhances the strength of location Lenzing. Management development is a prerequisite for any international company. Satisfied employees, highly committed to doing their job in a positive working atmosphere, are an essential contribution to sustainable development. We, as the workers’ council, can certainly do our share to create the required social environment.

Rudolf Baldinger,
born 1954, has been working for the Lenzing Group since the start of his apprenticeship in 1970. His career as exempted member of the workers’ council began in 1987. Rudolf Baldinger has been Chairman of the Blue-Collar Workers’ Council at Lenzing since 1998 and Chairman of the Company’s Works Committee since 2000.

Moreover, he currently is:
Chairman of the Chemical Workers’ Union of Upper Austria,
Chairman of the Professional Group of the Chemical Workers’ Union of Austria.
Responsibility for People

Regional Support

The Lenzing Group’s social responsibility does not end at the plant gates. In each location the company plays a part in its local community.

Lenzing is the region’s lead company. It puts a clear emphasis on the locality with regular sponsoring activities.

A variety of activities are promoted – many social and sportive, as well as some cultural. The company especially supports charitable and social initiatives, such as a SOS Children’s Village, local social organizations, like the Vöcklabruck Hospice Movement, Upper Austrian Life Aid (Lebenshilfe), or Clini Clowns, an organization providing mental support to children by visiting them during their hospital stay.

Sponsoring activities in the cultural sector focus on the support of events by the numerous regional clubs and neighboring communities.

The “Arbeiter Turn- und Sportverein ATSV Lenzing Modal” has been the Lenzing AG home sports club ever since its foundation 80 years ago. For a long time this club was the only opportunity for many employees to find active recreation from work. To express the closeness to the site community Lenzing, all sections of the club are supported. Similar forms of cooperation exist with sports clubs of neighboring communities.

The Heiligenkreuz plant, too, fosters relations with the local community with a broad range of activities. Apart from projects with schools, clubs and the Red Cross, institutions such as the “Sterntalerhof” (a center for severely disabled children), “Rettet das Kind” (a sheltered workshop) and “Elisabethheim” (a day-care center for disabled persons) are supported.
The Purwakarta Site

The viscose plant at Purwakarta, West Java, Indonesia is characterized by a multi-national corporate culture. Approximately 98% of the staff members are Indonesian. The middle management comprises many Indians, and the top management positions are held by European employees.

A residential complex right on the plant premises offers homes to 160 families comprising a total of 600 individuals, largely Indonesian staff members and their families. The houses are provided and maintained by the company. There is a special playground for the children of the workers’ families, as well as a soccer field and a swimming pool.

A mosque on site is available to the mainly Muslim staff members. A small clinic for labor medicine offers medical assistance.

There are also many different social activities off site. In addition to sponsoring projects in the immediate vicinity of the region, support is given to the closest neighbors. In recent years, SPV has taken a fair number of initiatives in order to improve the prevailing living conditions. A foundation, in which the village community is represented, as well as the responsible people from SPV, carries out a wide range of projects. For four years, work has been ongoing on refurbishing houses. Food products are given to needy people. Furthermore, SPV finances scholarships so that the children in the surrounding villages can attend schools that require the payment of tuition fees.

The Grimsby Site

The Tencel plant at Grimsby in the United Kingdom has staff who are involved in working in the community. Shift groups undertake projects such as refurbishing local schools and a women’s refuge.

Every year Great Coates Primary School (ages ten to eleven) is invited to a plant tour during which basic health and safety concepts are explained. As part of the curriculum, local textile students are provided with a tour of the plant and given talks on textiles.

The Grimsby site has been accredited as an Investor in People. This is a national award which recognizes the company’s commitment to the training and development of employees in line with the business strategy.
The Mobile Site

The Tencel plant at Mobile in southern Alabama in the United States sees being a good neighbor in the local community as a high priority for the business. The site has been a Partner in Education with the local high school for many years while participating in a business partnership to provide resources to the teachers and students not available through the school system.

The site is closely involved with the United Way, a community-based organization that provides resources for a variety of programs to help individuals and families in times of need. The company matches employee contributions to the United Way and provides volunteers to help in fund raising and worthwhile community projects.

The Mobile site is an active member of the local LeMoyne Industrial Park, participating on the Advisory Board, the Community Action Panel, and the annual Family Community Day Picnic. All of these activities associated with the Industrial Park are designed to foster a cooperative relationship between industry and the community for the betterment of all.

The company supports an Employee Charitable Contributions Committee which reviews requests by employees to sponsor local youth sports teams and other community-related activities and events. Special consideration is given to activities in which employees personally volunteer their time.
It is our future goal to continually improve our economic, ecological and social performance and to thereby prove ourselves as a company group committed to the principles of sustainability.
### Key Data

<table>
<thead>
<tr>
<th>under IFRS</th>
<th>under US GAAP</th>
<th>under Austrian law (SPV – fully consolidated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales and result</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales</td>
<td>EUR mill.</td>
<td>871</td>
</tr>
<tr>
<td>Sales outside of Austria</td>
<td>%</td>
<td>83.7</td>
</tr>
<tr>
<td>Income from operations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating result</td>
<td>EUR mill.</td>
<td>104</td>
</tr>
<tr>
<td>Financial result</td>
<td>EUR mill.</td>
<td>0</td>
</tr>
<tr>
<td>Result from ordinary business activities</td>
<td>EUR mill.</td>
<td>104</td>
</tr>
<tr>
<td>Income before taxes</td>
<td>EUR mill.</td>
<td>104</td>
</tr>
<tr>
<td>Extraordinary result</td>
<td>EUR mill.</td>
<td>0</td>
</tr>
<tr>
<td>Taxes on income</td>
<td>EUR mill.</td>
<td>-26</td>
</tr>
<tr>
<td>Result from discontinued operations</td>
<td>EUR mill.</td>
<td>0</td>
</tr>
<tr>
<td>Net income / Profit/loss for the year</td>
<td>EUR mill.</td>
<td>78</td>
</tr>
<tr>
<td>Share of net income of shareholders of Lenzing AG</td>
<td>EUR mill.</td>
<td>68</td>
</tr>
</tbody>
</table>

### Cash flow

- Gross cash flow | EUR mill. | 128 | 116 | 104 | 102 | 86 | 37 | 70 | 70 | 55 | 33 | 72 |
- Gross cash flow in % of sales | % | 14.7 | 15.5 | 16.8 | 16.3 | 13.9 | 6.2 | 11.1 | 12.8 | 10.5 | 5.8 | 11.3 |
- Net cash from operating activities | EUR mill. | 95 | 127 | 109 | 127 | 82 | 50 | 49 | 49 | 67 | 73 |      |
- Net cash used in investing activities | EUR mill. | -36 | -11 | -16 | 85 | 59 | -9 | 22 | 48 | -38 | 104 | 22 |
- Investments (intangible assets and property, plant and equipment) | EUR mill. | 61 | 139 | 131 | 42 | 67 | 41 | 39 | 87 | 154 | 56 |      |

### Assets structure**

- Non-current assets | % | 64.9 | 60.8 | 63.1 | 63.6 | 65.0 | 59.4 | 62.0 | 63.2 | 60.1 | 58.2 | 47.2 |
- Current assets | % | 35.1 | 39.2 | 36.9 | 36.4 | 35.0 | 40.6 | 38.0 | 36.8 | 39.9 | 41.0 | 52.8 |
- Balance-sheet total | EUR mill. | 946 | 897 | 809 | 868 | 869 | 896 | 868 | 869 | 840 | 850 | 775 |

### Capital structure**

- Equity | % | 48.5 | 45.3 | 49.6 | 51.1 | 45.6 | 39.3 | 33.7 | 33.3 | 22.1 | 29.6 | 32.5 |
- Social capital | % | 7.0 | 7.2 | 7.5 | 8.7 | 8.6 | 8.3 | 19.1 | 19.0 | 14.1 | 13.5 | 14.3 |
- Liabilities (exclusive of social capital) | % | 44.5 | 47.5 | 42.9 | 40.2 | 45.8 | 52.4 | 47.2 | 47.7 | 63.8 | 56.9 | 53.2 |

### Key data

- Return on sales (ROS) | % | 8.9 | 10.3 | 10.0 | 8.8 | 7.7 | 10.5 | 1.5 | 3.1 | -6.4 | 2.0 | 5.4 |
- Return on equity (ROE) | % | 18.0 | 17.0 | 15.8 | 14.5 | 18.6 | 16.9 | 1.9 | 2.5 | -21.7 | -0.9 | 9.1 |
- Capital structure**
- Equity | % | 48.5 | 45.3 | 49.6 | 51.1 | 45.6 | 39.3 | 33.7 | 33.3 | 22.1 | 29.6 | 32.5 |
- Social capital | % | 7.0 | 7.2 | 7.5 | 8.7 | 8.6 | 8.3 | 19.1 | 19.0 | 14.1 | 13.5 | 14.3 |
- Liabilities (exclusive of social capital) | % | 44.5 | 47.5 | 42.9 | 40.2 | 45.8 | 52.4 | 47.2 | 47.7 | 63.8 | 56.9 | 53.2 |

### Staff at year-end

Staff at year-end | 4,845 | 4,523 | 3,058 | 3,365 | 3,282 | 3,216 | 3,166 | 3,226 | 4,781 | 4,936 | 4,906 | 4,956 |

| 1) | = NOPAT (= Income from operating activities x EBIT less proportional income taxes) / sales |
| 2) | NOPAT | = | Return on equity (ROE) x Average of stockholders’ equity and minority interests + Interest bearing debt - Cash |
| 3) | = Income before taxes, minority interest and financial result / Income from operations |
| 4) | = EBIT plus depreciation and amortization of intangible fixed assets and property, plant and equipment |

Note: LUSAC Group shown as continuing operation.

Development Fiber Production
Lenzing Group
1,000 tons/year

Emissions into the Atmosphere

CO₂ fossil
Lenzing + Purwakarta + Grimsby + Mobile

SO₂
Lenzing + Purwakarta + Grimsby + Mobile

NOx
Key Data

**Development Fiber Production**
Lenzing Group
1,000 tons/year

<table>
<thead>
<tr>
<th>Year</th>
<th>Key Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>331.6</td>
</tr>
<tr>
<td>2002</td>
<td>366.1</td>
</tr>
<tr>
<td>2003</td>
<td>379.0</td>
</tr>
<tr>
<td>2004</td>
<td>414.2</td>
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**H₂S**
Lenzing + Purwakarta

<table>
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<th>Key Data</th>
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</thead>
<tbody>
<tr>
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<td>948</td>
</tr>
<tr>
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<tr>
<td>2003</td>
<td>1,634</td>
</tr>
<tr>
<td>2004</td>
<td>2,095</td>
</tr>
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</table>

**Emissions into the Hydrosphere**

**Cooling Water**
Lenzing + Purwakarta + Grimsby

<table>
<thead>
<tr>
<th>Year</th>
<th>Key Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>54,318</td>
</tr>
<tr>
<td>2002</td>
<td>55,489</td>
</tr>
<tr>
<td>2003</td>
<td>61,454</td>
</tr>
<tr>
<td>2004</td>
<td>66,251</td>
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</table>

**Waste Water**
Lenzing + Purwakarta + Heiligenkreuz + Grimsby + Mobile

<table>
<thead>
<tr>
<th>Year</th>
<th>Key Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>43,204</td>
</tr>
<tr>
<td>2002</td>
<td>45,591</td>
</tr>
<tr>
<td>2003</td>
<td>45,774</td>
</tr>
<tr>
<td>2004</td>
<td>48,485</td>
</tr>
</tbody>
</table>
Development Fiber Production
Lenzing Group
1,000 tons/year

CSB
Lenzing + Purwakarta + Heiligenkreuz + Grimsby + Mobile

SO₄
Lenzing + Purwakarta + Heiligenkreuz

ZN
Lenzing + Purwakarta
**Key Data**

**Fuel Mix at Lenzing AG**
(incl. RVL)
Total annual fuel quantity (2004):
11,743,000 GJ

**Biogenic fuels and residual substances**
82.3% CO₂ neutral

- **Liquors**: 43.5%
- **Bark/Sawdust**: 10.2%
- **Residual Substances/Sedimentation Sludge**: 28.6%
- **Natural Gas**: 7.9%
- **Oil**: 0.9%
- **Coal**: 8.9%

**Fossil fuels**: 17.7%

**Development of Injuries**
Lenzing Site
The Lenzing Group – A Sustainable Company

Sustainability for Lenzing is a living reality.

The effort and performance of our staff members is the basis of our economic success.

We set high standards for ecologically sound production at all our sites.

Glossary

Anaerobic waste water cleaning system for biological sulfate removal:
A novel system for the biological removal of sulfates from waste water. The waste water treatment process is new to the viscose fiber industry. Anaerobic bacteria decompose the relevant substances primarily into sulfide and methane. The waste gas contains methane and is used for the generation of electricity and process heat.

Avigene:
The application of saponaceous substances during the last stage of washing. The adhesive properties of fibers are set in such a way as to optimize properties for the common processes of textile and fleece production. The effect is similar to that of domestic fabric softeners. Mixtures of lubricants, adhesives and anti-statics are employed.

Vapors condensate extraction:
A process for recovering volatile ingredients from the condensed vapors of evaporation units by means of extraction.

Cellulose:
The raw material of viscose production. Cellulose is a plant constituent. The cellulose content of wood is 40%.

Chain of Custody:
The verification management of certified wood, from forest to final product. It ensures that only products manufactured from wood obtained from sustainable utilization receive the PEFC label.

COD:
Chemical oxygen demand. Another method for assessing the organic load of waste water, next to BOD (biological oxygen demand). The measure used is the chemical oxidation potential of the waste water.

Emission:
The giving off of substances, noise, vibration, light, heat, radiation, odors or similar phenomena which are detrimental to the environment.

Emission:
The giving off of substances, noise, vibration, light, heat, radiation, odors or similar phenomena which are detrimental to the environment.

Fiber:
The Lenzing Group fiber products - viscose, modal and lyocell. All three are cellulose fibers made of wood, the natural raw material. Lenzing Viscose® and Lenzing Moda l® are viscose fibers (produced by the viscose process); TENCEL® is produced by the Lyocell process and constitutes a separate fiber category. Dissolving pulp:
A special kind of pulp used to manufacture viscose, modal and lyocell fibers and other cellulose-based products.

Furfural:
A chemical product generated at pulp production. It is used as a plant protection agent, for example.

FSC Certification:
Forest Stewardship Council (FSC) is a system for the certification of wood products (forest certificate). It has been developed to secure sustainable forest management. The management standards are intended to lead to forest management that is sustainable in social, ecological and economic terms.

Hydroentanglement:
A common technology for fleece solidification. It is used for sanitary, medical and cosmetics purposes.

Lyocell fiber:
A novel fiber developed by Lenzing, produced by an environmentally very sound solvent process. Its properties enable the design and production of new and innovative products.

Man-made cellulose fibers:
Industrially manufactured fibers made of natural raw materials (for example wood).

Modal:
Viscose refined by modified spinning conditions. It is characterized by its special softness and is the preferred fiber for high-quality lingerie and similar products. Usage properties (such as tenacity, dimensional stability, and others) are improved.

Nonwovens:
Non woven materials, fleece. The fleece materials made from Lenzing fibers are used for sanitary, medical and cosmetics purposes.

PEFC:
Pan-European Forest Certification. Global labeling of wood from ecologically, economically and socially sustainable forestry. An initiative of the private forest and timber industry based on the consensus of all substantial interest groups. These groups pursue the idea of sustainable forest management on a national and regional level. www.pefc.at

Needlepunch technology:
A technology for fleece solidification.

Viscose fiber:
Regenerate cellulose fiber, produced by the viscose process from the natural raw material wood.

Xanthogenate:
Preliminary or intermediate product of viscose production.

Xylose:
Wood sugar, component of thick liquor, base material for xylitol (caries inhibiting sweetener).