The Fiber Year 2013
World Survey on
Textiles & Nonwovens
Dear Readers,

This textile yearbook is now the 13th edition thanks to the support of Lenzing Group. All market data, however, are result of the independent research by The Fiber Year GmbH. Thus, statements and conclusions in the report do not necessarily reflect the assessment of the Lenzing Group.

This coverage of the world textile industry, however, looks back on a much longer history. The basic idea of reporting annual production figures traces back to Vereinigte Glanzstoff-Fabriken AG, the former world market leader in manmade fibers. Dr. Vits, chairman of the board from 1940 to 1969, used to inform at press conferences about the status of the international manmade fiber industry. On the occasion of a presentation on February 8, 1966 he expressed that this industry would enjoy dynamic growth in the years to come. A truly appropriate evaluation when manmade fiber output was 5.5 million tonnes back then.

The target of this report is to deliver an objective survey on the world fiber industry and latest trends. This necessitates compiling as many official data as possible. Additionally, it requires reviewing data received and making plausibility checks whenever needed.

A further essential part involves talks with industry experts to finally validate market size and its appropriate development. At this point I would like to express my gratitude to all who have made a valuable contribution by providing articles, supporting me in data collection and exchanging views on the industry.

I do hope this piece of information will be useful to conduct your business. This survey hopefully makes a contribution to the transparency of global industry trends, individual market segments and fiber competition.

Yours sincerely,

Andreas W. Engelhardt
General Manager
The Fiber Year GmbH
Speicher, Switzerland
www.thefiberyear.com
The year 2012 brought a new name to the Industrial Fibres Community. In September 2012, PHP Fibers arose from the combined business of Polyamide High Performance and Polyester High Performance. This change marked the final integration of the German Diolen PET business which has been taken over in 2009.

PHP Fibers now produces both Polyamide and Polyester Industrial Fibres, well-known under the brand names Enka® Nylon and Diolen®, in an integrated operation in Obernburg (Germany). Additional plants focussing on PA 6.6 fine denier yarns are located in Scottsboro (AL, USA) and Pingdingshan (China).

The main driver for the demand of Polyamide 6.6 Industrial Yarn is the global automotive industry, but the development was quite different in the various regions of the world during 2012. In Europe demand for new cars reached the lowest level recorded since 1995, totaling 12.1 Mio units in 2012. This is a 8.2% downturn of the EU market compared to 2011 and resulted in a significant reduction of the demand for PA 6.6 Industrial Yarns for OEM business like airbags and tires, but also for tire replacement business. Progressing strong exports of luxury brand cars from Europe to Asia (mainly to China) had a positive impact on the sales of Porsche, Audi, BMW and Mercedes, but could not compensate the downturn of car sales in Europe.

This situation continues into 2013 and the numbers for car registration in EU 27 during the first quarter showed another downturn of 9.8% from 2012 to 2013 and first improvements of this situation can be expected for 2014 at earliest. From 2013 to 2017, we project a yearly growth of 4.1% in car production in Europe and demand for PA 6.6 airbag yarn as well as for tire yarn will start to increase again.

China is following a steady upward movement for car production and sales. In 2012 car sales grew by 5.4% and this underlying trend continues into the first quarter of 2013, showing record sales each month. Until 2017 the car production in China will expand from 18.6 Mio units in 2012 to 20.4 Mio units in 2013 and 28.1 Mio units in 2017, representing a yearly growth rate of 8.6% (2012 to 2017). This development has a positive impact on the yarn demand for airbag in China and Asia in general. To follow this expanding market, PHP will start a new spinning line for PA 6.6 airbag yarns in Pingdingshan this year, which will bring the total fine denier capacity of PHP in China to 11 kt.

North America as well showed a significant increase in car production of 17.6% up to 15.4 Mio. units in 2012. The trend continues into 2013 and leads to a healthy demand for PA fine denier airbag yarns. To fulfil this growing demand PHP again has invested into additional PA 6.6 fine denier capacity in Scottsboro in the summer 2012, lifting the total capacity in North America to 10 kt.

The market for PET Industrial Yarn in 2012 was characterized by the consequences of the excessive overinvestment into PET Industrial Filament in China. While the total Chinese PET Industrial yarn capacity was at about 2.5 Mio t, the production were only at around 1.1 Mio t. Different understanding of the market mechanism have led to uncontrolled growing yarn stocks in China, putting tremendous pressure on the value chain. Due to the economic situation in Europe the demand of PET Industrial Yarn fell from 293 kt in 2011 to 263 kt in 2012 with a stable share of imported yarn of around 56%. The European PET market remains depressed during 2013 due to the weakness of the tire and broad woven segments.
Being active in all three major regions of the world and together with its technical and market experience since decades, PHP Fibers feels well positioned to meet the upcoming challenges in the Polyamide and Polyester Industrial Yarn markets.”

(Sources: ACEA, IHS, own market research)

**About PHP Fibers GmbH**

PHP Fibers is a globally operating company in the area of industrial filament yarns whose origins extend back to 1899. More than 900 employees work in the development, production and sale of high-tenacity polyester and polyamide filament yarns and their polymers at locations in Europe, America and Asia. Excluding the joint venture in China, the company achieved a turnover of around 250 million Euros in 2012. In 2012, the merger of Polyamide High Performance Gmbh and Polyester Higher Performance GmbH under the new name PHP Fibers GmbH was completed.
Summary

World Fiber Production
The production volume in the world textile industry in 2012 rose by 1.9% to 88.5 million tonnes. This includes increases in manmade fiber segments while natural fibers were down by 4.3% to 32.5 million tonnes. Manmade fibers went up by 6.0% to 56.0 million tonnes.

As a matter of common knowledge natural fibers production is not precisely projectable due to climatic and other natural imponderabilities. Hence, annual cotton production is quite often in no accordance with consumption. It needs to be adjusted while basically manmade fiber stocks are controlled to match demand. As global cotton stocks have been traced by international organizations like ICAC, consumption figures for cotton are included in a world-fiber-use figure. This data delivers a more accurate indication for further processing volumes.

World Fiber Use
Referring to this approach, last year’s use of fibers amounted to 85.8 million tonnes, up by 4.5%. This sizeable acceleration in growth compared with a rise of 1.7% in 2011 was realized despite persistent economic uncertainties and even negative growth in the European Union.

The market size of 85.8 million tonnes corresponds with an average per capita consumption of 12.2 kg. Last year’s growth rate of 4.5% succeeded to outperform the long-term growth rate of 2.7% since 1970 and the short-term average annual growth of 3.4% since the year 2000. The recent acceleration of fiber demand reflects the impact of rapidly rising disposable incomes in populous nations like the BRIC-countries.

Trading Activities
However, most of the leading textile and clothing exporting nations suffered from declining shipments abroad. Corresponding import flows into the EU(27) and NAFTA region declined 7.2% to USD238 billion while PR China managed to lift world exports by 2.8% to USD255 billion.

Cotton and Wool
Drifting down of cotton prices has prompted many countries to reduce area under cotton cultivation. This explains the reduction in current season’s cotton output. But then, planning reliability has improved as the fluctuation range in prices has come down to a level we have been used to until the unprecedented upswing in cotton prices has begun in August 2010.

After the enthusiastic sentiment has given way to a sense of reality global investments in cotton spinning equipment fell considerably. Last year’s installations of short-staple spindles dropped 28% and open-end rotors contracted by 21%.

Weaker consumer demand from the EU and the United States together with lower wool prices have led to a new historical low in wool production. Surprisingly, long-staple spindle installations jumped 29%.

Cellulosic Fibers
The global cellulosic fiber industry has again achieved a new all-time high. Last year’s production will actually converge to 5.2 million tonnes, equal to a 10.2% growth over 2011. These fibers confirmed their position as the most dynamic segment of the century, achieving an average annual growth rate of 5.4% since the year 2000.

Synthetic Fibers
For the first time in history the output of synthetic fibers has surpassed the size of 50 million tonnes. Last year’s growth of 5.6% has resulted in a new peak level of 50.8 million tonnes. Staple fibers have produced a lean 1.9% growth while the filament sector strongly rose 7.6% to 33.3 million tonnes. The entire industry was primarily driven by ongoing increases in the polyester fiber business that has exceeded a volume of 41 million tonnes in the previous year. Nylon and polypropylene reached a slightly higher level whereas acrylic fibers declined after three years of growth.
Contributions from Industry Experts:

Eklovya Bajaj  
Assistant General Manager Marketing  
Thai Acrylic Fibre Co. Ltd.  
Shanghai, PR China  
www.birlaacrylic.com

Ketevan Bochorishvili  
Deputy Minister  
Ministry of Economy and Sustainable Development, Tbilisi, Georgia  
www.economy.ge

Duan Xiaoping  
Chairman  
China Chemical Fibers Association  
Beijing, PR China  
www.ccfa.com.cn

Andreas Eule  
CEO  
CORDENKA GmbH  
Obernburg, Germany  
www.cordenka.com

Robert Gregan  
CEO  
Trevira GmbH  
Hattersheim, Germany  
www.trevira.de

Andrew Hong  
Chief Executive Officer  
Malaysian Textile Manufacturers Ass.  
Kuala Lumpur, Malaysia  
www.fashion-asia.com

Katharina Schaus  
Managing Director  
it fits  
Constance, Germany  
www.itfits.de

Dr. Alejandro Plastina  
Economist  
ICAC  
Washington DC, United States  
www.icac.org

Dr. Wilhelm Rauch  
Managing Director  
IVC  
Frankfurt/Main, Germany  
www.ivc-ev.de

Dr. Christian Schindler  
Director General  
ITMF  
Zurich, Switzerland  
www.itmf.org

Volker Siejak  
Business Director Europe & Asia  
PHP Fibers GmbH  
Wuppertal, Germany  
www.php-fibers.com

Jens Soth  
Senior Advisor Sustainable Commodities  
HELVETAS Swiss Intercooperation  
Zurich, Switzerland  
www.helvetas.org

Friedrich Weninger  
COO  
Lenzing AG  
Lenzing, Austria  
www.lenzing.com
# Table of contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Foreword and Summary</td>
<td>8</td>
</tr>
<tr>
<td>2. Demographics As Driver for Textile End-Use Changes</td>
<td>13</td>
</tr>
<tr>
<td>3. Upstream Feedstock Industry</td>
<td>15</td>
</tr>
<tr>
<td>including Cotton Cultivation, Sheep Farming and Forecast 2005—2016 for Dissolving Pulp, PX, PTA, DMT, MEG, CPL</td>
<td></td>
</tr>
<tr>
<td>4. Staple Fibers</td>
<td>46</td>
</tr>
<tr>
<td>including Natural Fibers, Cellulosic Fibers and Synthetic Fibers</td>
<td></td>
</tr>
<tr>
<td>5. Filament Yarns</td>
<td>75</td>
</tr>
<tr>
<td>including Polyester, Polyamide, Polypropylene and Cellulosic Filament</td>
<td></td>
</tr>
<tr>
<td>6. Other Manmade Fibers</td>
<td>93</td>
</tr>
<tr>
<td>including Carbon, Aramid and Fibers Spandex Fibers</td>
<td></td>
</tr>
<tr>
<td>7. World Fiber Market 2012</td>
<td>100</td>
</tr>
<tr>
<td>including summary on World Fibers and Yarns, Manmade Fibers and Filaments as well as Filament and Spun Yarn</td>
<td></td>
</tr>
<tr>
<td>8. Nonwovens and Unspun Applications</td>
<td>109</td>
</tr>
<tr>
<td>including Spunbond, Carded, Airlaid and Wetlaid</td>
<td></td>
</tr>
<tr>
<td>9. Textile and Clothing Trade 2012</td>
<td>115</td>
</tr>
<tr>
<td>including PR. China, India, Bangladesh, Turkey, Pakistan, Taiwan, Vietnam, Indonesia, Thailand, South Korea, Cambodia, Sri Lanka, Malaysia, Myanmar, Mexico, Brazil, Russia, Japan, European Union and United States</td>
<td></td>
</tr>
<tr>
<td>10. Statistical Appendix</td>
<td>152</td>
</tr>
</tbody>
</table>