Sustainable trend for man-made fibres

by Edda Walraf, Head Marketing, Machines & Systems.

Fibre consumption is rising and in particular, filaments are finding use in an increasing number of applications. For the short staple spinning mill, the trend is also towards man-made fibres, but especially to blends with various fibre materials. Thus the functionality of the end product can be specifically influenced.

Experts agree that with growing prosperity, the fibre consumption per head will continue to increase. Forecasts assume that by 2030 the worldwide fibre consumption will rise to approx.. 115 million tons (PCI, 2015) (Fig. 1).

All raw materials will contribute to this growth, however filaments more than staple fibres. The share of filaments will increase from 39% in 2010 to 49% in 2030.

New applications, particularly in the finer yarn count range, will contribute to this trend. Filaments have good functional properties for textile as well as technical applications. The development is also driven by the growing share of knitted fabric applications with increasingly finer gauge. Notably with fine yarn counts, filaments are particularly economical.

Despite this development, the consumption of short staple fibres will rise to around 58 million tons (Fig. 2).

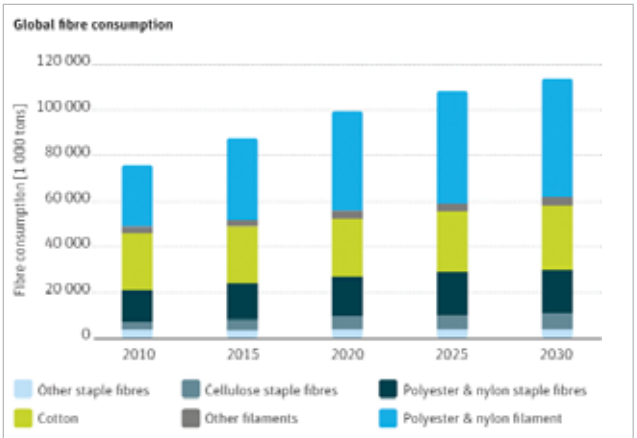

Fig. 1:The worldwide fibre consumption will continue to grow (Source PCI).

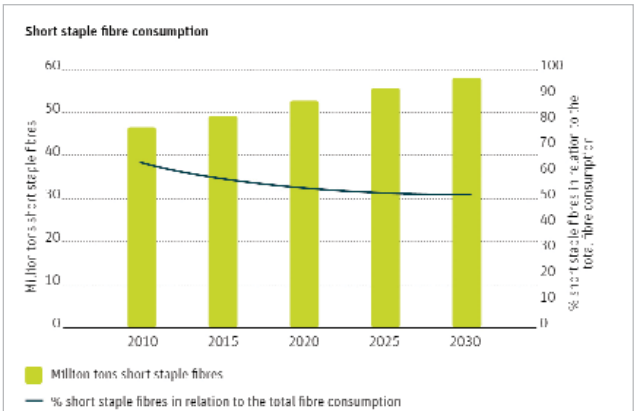

Fig. 2: Despite the reduction of the staple fibres from 61% to 51% of the total fibre consumption, the staple fibre consumption demonstrates an absolute increase from 46 to 58 million tons (Source PCI 2015).

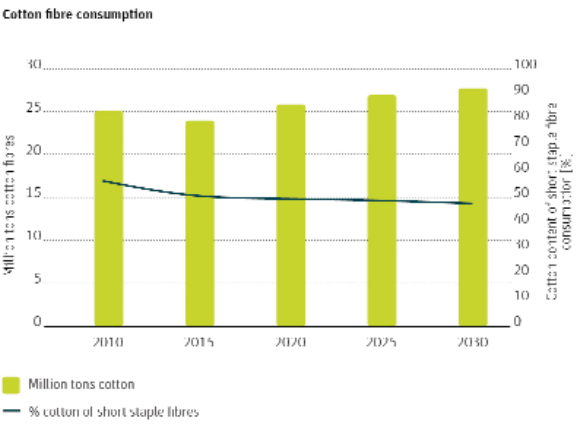

Fig. 3: The requirement for cotton will further increase from 25 to 28 million tons. The cotton content of the total short staple fibre requirement will, however, decline from 54% to 48% (Source PCI 2015).

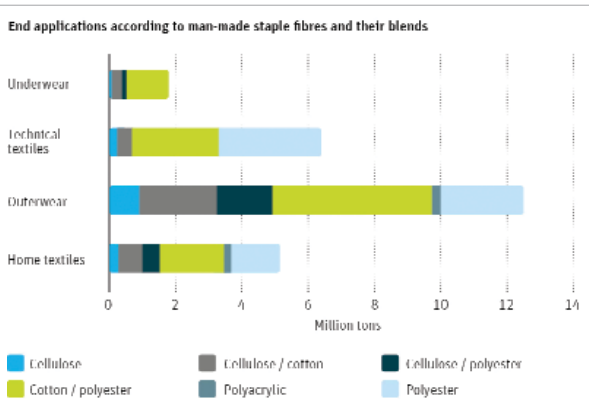

Fig. 4: Typical applications of man-made fibres and their blends (Source Rieter).

In the short staple spinning mill, the share of cotton will decrease from 54% in 2010 to 48% in 2030. The absolute consumption will grow slightly from 25 million tons in 2010 to 28 million tons in 2030 (Fig. 3).

Around half the fibres will be processed in their pure form. The other half will be spun to blended yarns. The blends from cotton with polyester dominate the blended yarns with almost 50%.

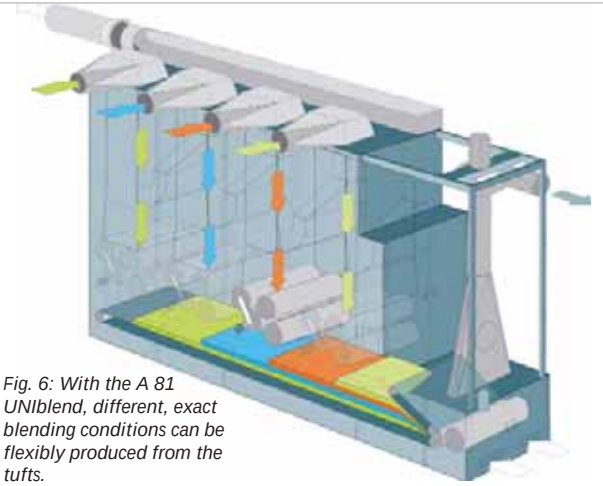

Fig. 6: With the A 81 UNIblend, different, exact blending conditions can be flexibly produced from the tufts.

Fig. 7: Blends of cotton with man-made fibres are increasing. The SB-D 22 draw frame is ideally suitable for mixing the fibres.

The blending of fibres is made for two important reasons. One is that polyester is a cost-effective fibre and the raw material price is an important parameter for the whole yarn costs. The other is that the yarn characteristics can be specifically influenced by blends (see also Th.Weide, 2014, „Rieter Manual of Spinning" Volume 7, Chapter 4).

These two reasons, costs and function, as well as the limited growth potential of cotton, mean that the share of blends will continue to increase. Looking at the use of the yarns, cotton dominates the underwear sector.

Viscose is also used as 100% raw material in all applications.

With technical textiles, 100% polyester or its blends dominate. With outerwear, polyester dominates especially in blends with cotton and viscose as is similarly the case with home textiles (Fig. 4).

With the increasing use of man-made fibres, new questions arise for the short staple spinning mill. The Rieter Manual of Spinning Volume 7 deals comprehensively with the technological questions (Fig. 5).

To manufacture a yarn from different fibre types, the spinning mill has to fulfil two requirements: produce the right blend ratio and mix the two fibre types well. A good and even blend is important for a uniform distribution of the fibres in the yarn diameter and on the running length of the thread. This, so that at every point in the yarn the blended fibre types appear in the same ratio. The fibre therefore has the same characteristics, such as strength and dyeing capacity, at every point.◆

Fig. 5: Volume 7 of the Rieter Manual of Spinning can be downloaded from the Rieter website. The QR Code guides you straight there.

Fig. 8: The special print "Unique Solutions for the Spinning of Synthetic Fibres and Blends".